Fastställelseintyg

Undertecknad styrelseledamot i Cyclife Sweden Holding AB, 559037-4749 intygar härmed dels att denna kopia av
årsredovisningen överensstämmer med originalet, dels att resultat- och balansräkningen fastställts på årsstämma 2024-06- 25
Stämman beslutade också att godkänna styrelsens förslag till resultatdisposition.

20240627406966

Nyköping 2024- 06- 25

Estelle Desroches

20240627406689

Styrelsen för

Cyclife Sweden Holding AB

Org nr 559037-4749

upprättar härmed

Årsredovisning

för räkenskapsåret 1 januari - 31 december 2023

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20240627040690

Förvaltningsberättelse

Allmänt om verksamheten
Företagets verksamhet är att bedriva utveckling och förvaltning av bolag som verkar inom den kärntekniska industrin i Europa. Bolagen som förvaltas skall i huvudsak bedriva verksamhet inom avfallshantering och rivning av nukleära anläggningar.

Ekonomisk översikt	*2023*	*2022*	*2021*	*2020*
Nettoomsättning	–	–	–	–
Balansomslutning	401 858 691	241 808 490	206 883 165	175 484 715
Soliditet %	95,3	93,3	92,3	90,8

Definitioner: se not

Ägarförhållanden
Bolaget är helägt dotterbolag till Cyclife Holding SAS, bolagsregistreringsnummer 808 537 856 R.C.S. med säte i Nanterre, Frankrike.

Väsentliga händelser under räkenskapsåret
Bolaget har en skuld till moderbolaget i EUR. Då företagets redovisningsvaluta är SEK sker per bokslutsdagen en omvärdering av skulden till moderbolaget mot gällande växelkurs mellan SEK och EUR. Denna förändring har under räkenskapsåret 2023 varit till bolagets nackdel då den svenska valutan försvagats.jämfört med EUR. Huvuddelen av bolagets redovisade underskott detta år kommer från denna omvärdeing. Denna valutakursförlust är orealiserad då lånet löper som en långfristig skuld utan amorteringar. Bolaget har under 2023 erhållit ett aktieägartillskott om 70 000 000 SEK från moderbolaget. Motsvarande belopp har under räkenskapsåret lämnats som aktieägartillskott.

Eget kapital

2023-12-31	**Bundet eget kapital**	**Fritt eget kapital**		
	Aktiekapital, Pågående nyemission	*Övrigt fritt eget kapital*	*Årets resultat*	*Summa eget kapital*
Ingående balans	50 000	315 518 755	-1 606 533	313 962 222
Erhållet aktieägartillskott		70 000 000		70 000 000
Resultatdisp. enl. beslut av årsstämma		-1 606 533	1 606 533	–
Årets resultat		–	-1 157 609	-1 157 609
Årets resultat	50 000	383 912 222	-1 157 609	382 804 613

Förslag till disposition av företagets vinst eller förlust
Styrelsen föreslår att fritt eget kapital, kronor 382 754 613, disponeras enligt följande:

Balanseras i ny räkning	382 754 613
Summa	382 754 613

Vad beträffar resultat och ställning i övrigt, hänvisas till efterföljande resultat- och balansräkningar med tillhörande noter.

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Cyclife Sweden Holding AB

Org nr 559037-4749

20240627740691

Resultaträkning

Belopp i kr	*Not*	*2023*	*2022*
Nettoomsättning		-	-
Bruttoresultat		-	-
Administrationskostnader		-60 136	-8 425
Rörelseresultat		-60 136	-8 425
Resultat från finansiella poster			
Ränteintäkter och liknande resultatposter	2	147	29
Räntekostnader och liknande resultatposter	3	-1 097 620	-1 598 137
Resultat efter finansiella poster		-1 157 609	-1 606 533
Resultat före skatt		-1 157 609	-1 606 533
Årets resultat		-1 157 609	-1 606 533

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Cyclife Sweden Holding AB

Org nr 559037-4749

20240627740692

Balansräkning

Belopp i kr	*Not*	*2023-12-31*	*2022-12-31*
TILLGÅNGAR			
Anläggningstillgångar			
Finansiella anläggningstillgångar			
Andelar i koncernföretag	4	401 853 497	331 853 497
		401 853 497	331 853 497
Summa anläggningstillgångar		401 853 497	331 853 497
Omsättningstillgångar			
Kassa och bank		5 194	6 597
Summa omsättningstillgångar		5 194	6 597
SUMMA TILLGÅNGAR		401 858 691	331 860 094

Balansräkning

Belopp i kr	*Not*	*2023-12-31*	*2022-12-31*
EGET KAPITAL OCH SKULDER			
Eget kapital			
Bundet eget kapital			
Aktiekapital		50 000	50 000
		50 000	50 000
Fritt eget kapital			
Balanserat resultat		383 912 222	315 518 755
Årets resultat		-1 157 609	-1 606 533
		382 754 613	313 912 222
		–	–
Långfristiga skulder			
Skulder till koncernföretag	5	17 872 871	17 872 871
		17 872 871	17 872 871
Kortfristiga skulder			
Skulder till koncernföretag		1 097 620	–
Upplupna kostnader och förutbetalda intäkter		83 587	25 001
		1 181 207	25 001
SUMMA EGET KAPITAL OCH SKULDER		401 858 691	331 860 094

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20240627406693

Noter

Belopp i kr om inget annat anges

Not 1 Redovisningsprinciper

Årsredovisningen har upprättats i enlighet med årsredovisningslagen och Bokföringsnämndens allmänna råd BFNAR 2012:1 Årsredovisning och koncernredovisning (K3).

Redovisningsprinciperna är oförändrade jämfört med tidigare år.

Tillgångar, avsättningar och skulder har värderats till anskaffningsvärden om inget annat anges nedan.

För säkring av fordran eller skuld mot valutakursrisk används valutaterminer. För skydd mot valutarisk tillämpas inte säkringsredovisning eftersom en ekonomisk säkring avspeglas i redovisningen genom att både den underliggande fordran eller skulden och säkringsinstrumentet redovisas till balansdagens valutakurs och valutakursförändringarna redovisas i årets resultat. Valutakursförändringar avseende rörelserelaterade fordringar och skulder redovisas i rörelseresultatet medan valutakursförändringar avseende finansiella fordringar och skulder redovisas i finansnettot.

Andelar i dotterföretag, intresseföretag, gemensamt styrda företag och företag med ägarintresse i

Andelar i dotterföretag, intresseföretag, gemensamt styrda företag och företag det finns ägarintresse i redovisas till anskaffningsvärde minskat med ackumulerade nedskrivningar [med tillägg för uppskrivningar]. I anskaffningsvärdet ingår förutom inköpspriset även utgifter som är direkt hänförliga till förvärvet.

Not 2 Ränteintäkter och liknande resultatposter

	2023	*2022*
Övrigt	147	29
	147	29

Not 3 Räntekostnader och liknande resultatposter

	2023	*2022*
Räntekostnader, koncernföretag	-861 911	-460 899
Kursdifferens	-235 709	-1 137 239
	-1 097 620	-1 598 137

Not 4 Andelar i koncernföretag

	2023-12-31	*2022-12-31*
Ackumulerade anskaffningsvärden		
Vid årets början	331 853 497	241 853 497
Aktieägartillskott	70 000 000	90 000 000
Vid årets slut	401 853 497	331 853 497
Redovisat värde vid årets slut	401 853 497	331 853 497

Spec av företagets innehav av andelar i koncernföretag

			2023-12-31	*2022-12-31*
Dotterföretag / Org nr / Säte	*Antal andelar*	*Andel i % l)*	*Redovisat värde*	*Redovisat värde*
Cyclife Sweden AB, 559019-2455, Nyköping, Sverige	10 000	100,0	311 853 497	241 853 497
Cyclife UK Ltd, 04772229, Workington, England	1 022 500	100,0	90 000 000	90 000 000
			401 853 497	331 853 497

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Cyclife Sweden Holding AB
Org nr 559037-4749

20240627406944

Not 5 Långfristiga skulder

	2023-12-31	*2022-12-31*
Skulder till koncernföretag	17 872 871	17 872 871

Not 6 Koncernuppgifter

Bolaget är helägt dotterbolag till Cyclife Holding SA, bolagsregistreringsnummer 808 537 856 R.C.S. med säte i Nanterre, Frankrike. Bolaget är moderbolag, men med stöd av ÅRL 7 kap 2 § upprättas inte någon koncernredovisning.
Övergripande koncernredovisning upprättas av Electricité de France S.A., bolagsregistreringsnummer 552 081 317 med säte i Paris, Frankrike.

Not 7 Nyckeltalsdefinitioner

Soliditet: (Totalt eget kapital + egetkapitaldel av obeskattade reserver) / Totala tillgångar

Nyköping, enligt digital signering

Estelle Desroches
Styrelseledamot

Vår revisionsberättelse har lämnats
KPMG AB.

Susann Eriksson
Auktoriserad revisor

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2024-06-20 06:16:25 UTC

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20240627740697

Revisionsberättelse

Till bolagsstämman i Cyclife Sweden Holding AB, org. nr 559037-4749

Rapport om årsredovisningen

Uttalanden

Vi har utfört en revision av årsredovisningen för Cyclife Sweden Holding AB för år 2023.

Enligt vår uppfattning har årsredovisningen upprättats i enlighet med årsredovisningslagen och ger en i alla väsentliga avseenden rättvisande bild av Cyclife Sweden Holding ABs finansiella ställning per den 31 december 2023 och av dess finansiella resultat för året enligt årsredovisningslagen. Förvaltningsberättelsen är förenlig med årsredovisningens övriga delar.

Vi tillstyrker därför att bolagsstämman fastställer resultaträkningen och balansräkningen.

Grund för uttalanden

Vi har utfört revisionen enligt International Standards on Auditing (ISA) och god revisionssed i Sverige. Vårt ansvar enligt dessa standarder beskrivs närmare i avsnittet Revisorns ansvar. Vi är oberoende i förhållande till Cyclife Sweden Holding AB enligt god revisorssed i Sverige och har i övrigt fullgjort vårt yrkesetiska ansvar enligt dessa krav.

Vi anser att de revisionsbevis vi har inhämtat är tillräckliga och ändamålsenliga som grund för våra uttalanden.

Styrelsens ansvar

Det är styrelsen som har ansvaret för att årsredovisningen upprättas och att den ger en rättvisande bild enligt årsredovisningslagen. Styrelsen ansvarar även för den interna kontroll som den bedömer är nödvändig för att upprätta en årsredovisning som inte innehåller några väsentliga felaktigheter, vare sig dessa beror på oegentligheter eller misstag.

Vid upprättandet av årsredovisningen ansvarar styrelsen för bedömningen av bolagets förmåga att fortsätta verksamheten. Den upplyser, när så är tillämpligt, om förhållanden som kan påverka förmågan att fortsätta verksamheten och att använda antagandet om fortsatt drift. Antagandet om fortsatt drift tillämpas dock inte om styrelsen avser att likvidera bolaget, upphöra med verksamheten eller inte har något realistiskt alternativ till att göra något av detta.

Revisorns ansvar

Våra mål är att uppnå en rimlig grad av säkerhet om huruvida årsredovisningen som helhet inte innehåller några väsentliga felaktigheter, vare sig dessa beror på oegentligheter eller misstag, och att lämna en revisionsberättelse som innehåller våra uttalanden. Rimlig säkerhet är en hög grad av säkerhet, men är ingen garanti för att en revision som utförs enligt ISA och god revisionssed i Sverige alltid kommer att upptäcka en väsentlig felaktighet om en sådan finns. Felaktigheter kan uppstå på grund av oegentligheter eller misstag och anses vara väsentliga om de enskilt eller tillsammans rimligen kan förväntas påverka de ekonomiska beslut som användare fattar med grund i årsredovisningen.

Som del av en revision enligt ISA använder vi professionellt omdöme och har en professionellt skeptisk inställning under hela revisionen. Dessutom:

- identifierar och bedömer vi riskerna för väsentliga felaktigheter i årsredovisningen, vare sig dessa beror på oegentligheter eller misstag, utformar och utför granskningsåtgärder bland annat utifrån dessa risker och inhämtar revisionsbevis som är tillräckliga och ändamålsenliga för att utgöra en grund för våra uttalanden. Risken för att inte upptäcka en väsentlig felaktighet till följd av oegentligheter är högre än för en väsentlig felaktighet som beror på misstag, eftersom oegentligheter kan innefatta agerande i maskopi, förfalskning, avsiktliga utelämnanden, felaktig information eller åsidosättande av intern kontroll.
- skaffar vi oss en förståelse av den del av bolagets interna kontroll som har betydelse för vår revision för att utforma granskningsåtgärder som är lämpliga med hänsyn till omständigheterna, men inte för att uttala oss om effektiviteten i den interna kontrollen.
- utvärderar vi lämpligheten i de redovisningsprinciper som används och rimligheten i styrelsens uppskattningar i redovisningen och tillhörande upplysningar.
- drar vi en slutsats om lämpligheten i att styrelsen använder antagandet om fortsatt drift vid upprättandet av årsredovisningen. Vi drar också en slutsats, med grund i de inhämtade revisionsbevisen, om huruvida det finns någon väsentlig osäkerhetsfaktor som avser sådana händelser eller förhållanden som kan leda till betydande tvivel om bolagets förmåga att fortsätta verksamheten. Om vi drar slutsatsen att det finns en väsentlig osäkerhetsfaktor, måste vi i revisionsberättelsen fästa uppmärksamheten på upplysningarna i årsredovisningen om den väsentliga osäkerhetsfaktorn eller, om sådana upplysningar är otillräckliga, modifiera uttalandet om årsredovisningen. Våra slutsatser baseras på de revisionsbevis som inhämtas fram till datumet för revisionsberättelsen. Dock kan framtida händelser eller förhållanden göra att ett bolag inte längre kan fortsätta verksamheten.
- utvärderar vi den övergripande presentationen, strukturen och innehållet i årsredovisningen, däribland upplysningarna, och om årsredovisningen återger de underliggande transaktionerna och händelserna på ett sätt som ger en rättvisande bild.

Vi måste informera styrelsen om bland annat revisionens planerade omfattning och inriktning samt tidpunkten för den. Vi måste också informera om betydelsefulla iakttagelser under revisionen, däribland de eventuella betydande brister i den interna kontrollen som vi identifierat.

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20240627040698

Rapport om andra krav enligt lagar och andra författningar

Uttalanden

Utöver vår revision av årsredovisningen har vi även utfört en revision av styrelsens förvaltning för Cyclife Sweden Holding AB för år 2023 samt av förslaget till dispositioner beträffande bolagets vinst eller förlust.

Vi tillstyrker att bolagsstämman disponerar vinsten enligt förslaget i förvaltningsberättelsen och beviljar styrelseledamoten ansvarsfrihet för räkenskapsåret.

Grund för uttalanden

Vi har utfört revisionen enligt god revisionssed i Sverige. Vårt ansvar enligt denna beskrivs närmare i avsnittet Revisorns ansvar. Vi är oberoende i förhållande till Cyclife Sweden Holding AB enligt god revisorssed i Sverige och har i övrigt fullgjort vårt yrkesetiska ansvar enligt dessa krav.

Vi anser att de revisionsbevis vi har inhämtat är tillräckliga och ändamålsenliga som grund för våra uttalanden.

Styrelsens ansvar

Det är styrelsen som har ansvaret för förslaget till dispositioner beträffande bolagets vinst eller förlust. Vid förslag till utdelning innefattar detta bland annat en bedömning av om utdelningen är försvarlig med hänsyn till de krav som bolagets verksamhetsart, omfattning och risker ställer på storleken av bolagets egna kapital, konsolideringsbehov, likviditet och ställning i övrigt.

Styrelsen ansvarar för bolagets organisation och förvaltningen av bolagets angelägenheter. Detta innefattar bland annat att fortlöpande bedöma bolagets ekonomiska situation och att tillse att bolagets organisation är utformad så att bokföringen, medelsförvaltningen och bolagets ekonomiska angelägenheter i övrigt kontrolleras på ett betryggande sätt.

Revisorns ansvar

Vårt mål beträffande revisionen av förvaltningen, och därmed vårt uttalande om ansvarsfrihet, är att inhämta revisionsbevis för att med en rimlig grad av säkerhet kunna bedöma om styrelseledamoten i något väsentligt avseende:

- företagit någon åtgärd eller gjort sig skyldig till någon försummelse som kan föranleda ersättningsskyldighet mot bolaget, eller
- på något annat sätt handlat i strid med aktiebolagslagen, årsredovisningslagen eller bolagsordningen.

Vårt mål beträffande revisionen av förslaget till dispositioner av bolagets vinst eller förlust, och därmed vårt uttalande om detta, är att med rimlig grad av säkerhet bedöma om förslaget är förenligt med aktiebolagslagen.

Rimlig säkerhet är en hög grad av säkerhet, men ingen garanti för att en revision som utförs enligt god revisionssed i Sverige alltid kommer att upptäcka åtgärder eller försummelser som kan föranleda ersättningsskyldighet mot bolaget, eller att ett förslag till dispositioner av bolagets vinst eller förlust inte är förenligt med aktiebolagslagen.

Som en del av en revision enligt god revisionssed i Sverige använder vi professionellt omdöme och har en professionellt skeptisk inställning under hela revisionen. Granskningen av förvaltningen och förslaget till dispositioner av bolagets vinst eller förlust grundar sig främst på revisionen av räkenskaperna. Vilka tillkommande granskningsåtgärder som utförs baseras på vår professionella bedömning med utgångspunkt i risk och väsentlighet. Det innebär att vi fokuserar granskningen på sådana åtgärder, områden och förhållanden som är väsentliga för verksamheten och där avsteg och överträdelser skulle ha särskild betydelse för bolagets situation. Vi går igenom och prövar fattade beslut, beslutsunderlag, vidtagna åtgärder och andra förhållanden som är relevanta för vårt uttalande om ansvarsfrihet. Som underlag för vårt uttalande om styrelsens förslag till dispositioner beträffande bolagets vinst eller förlust har vi granskat om förslaget är förenligt med aktiebolagslagen.

Västerås det datum som framgår av elektronisk signatur

KPMG AB

Susann Eriksson
Auktoriserad revisor

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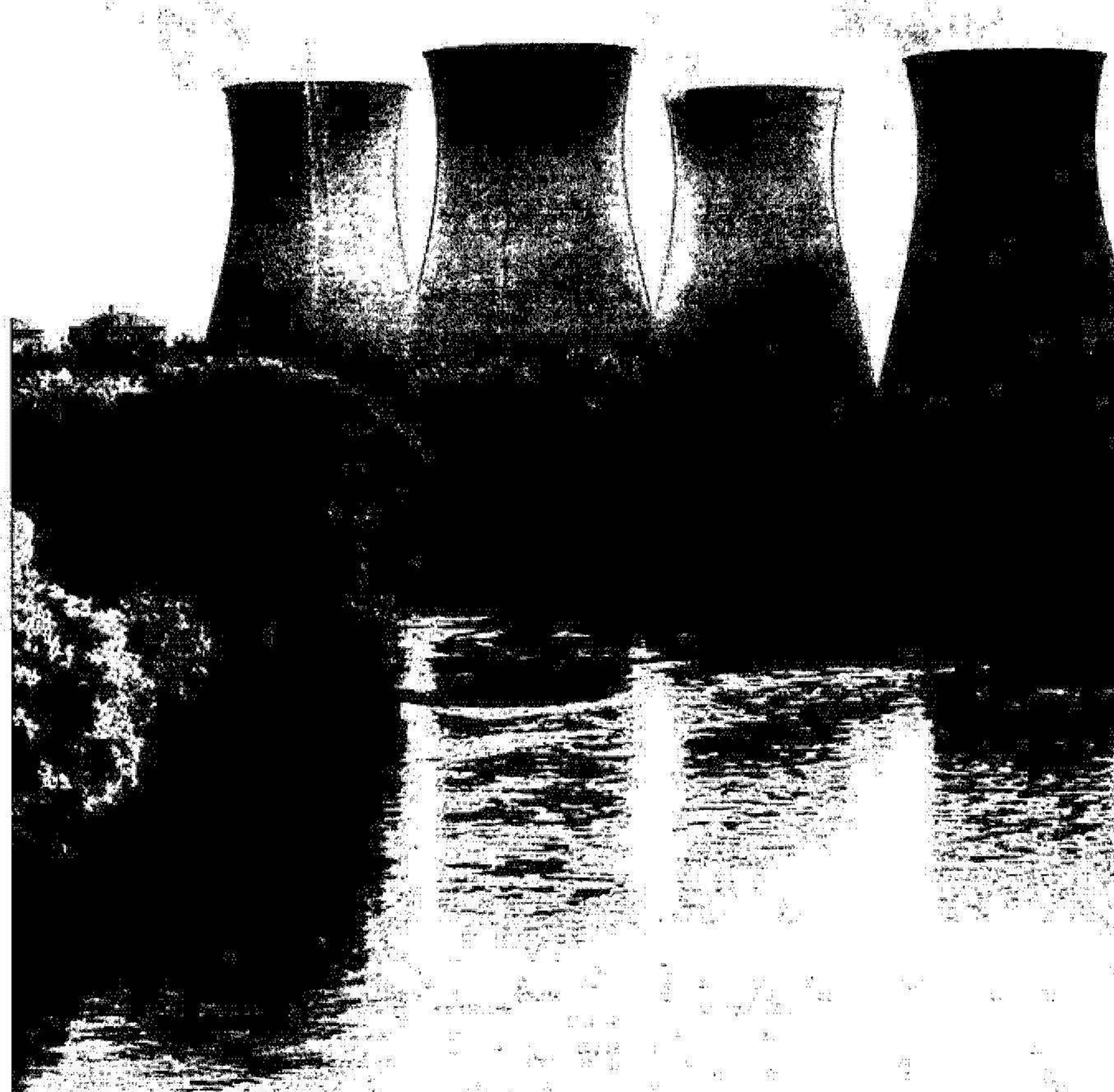
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THE "RAISON D'ÊTRE" OF EDF

To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development

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/AFR/ This information is part of annual financial report, as required by Article L. 451-1-2 of the French Monetary and Financial Code.

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Universal Registration Document 2023

Including the annual financial report

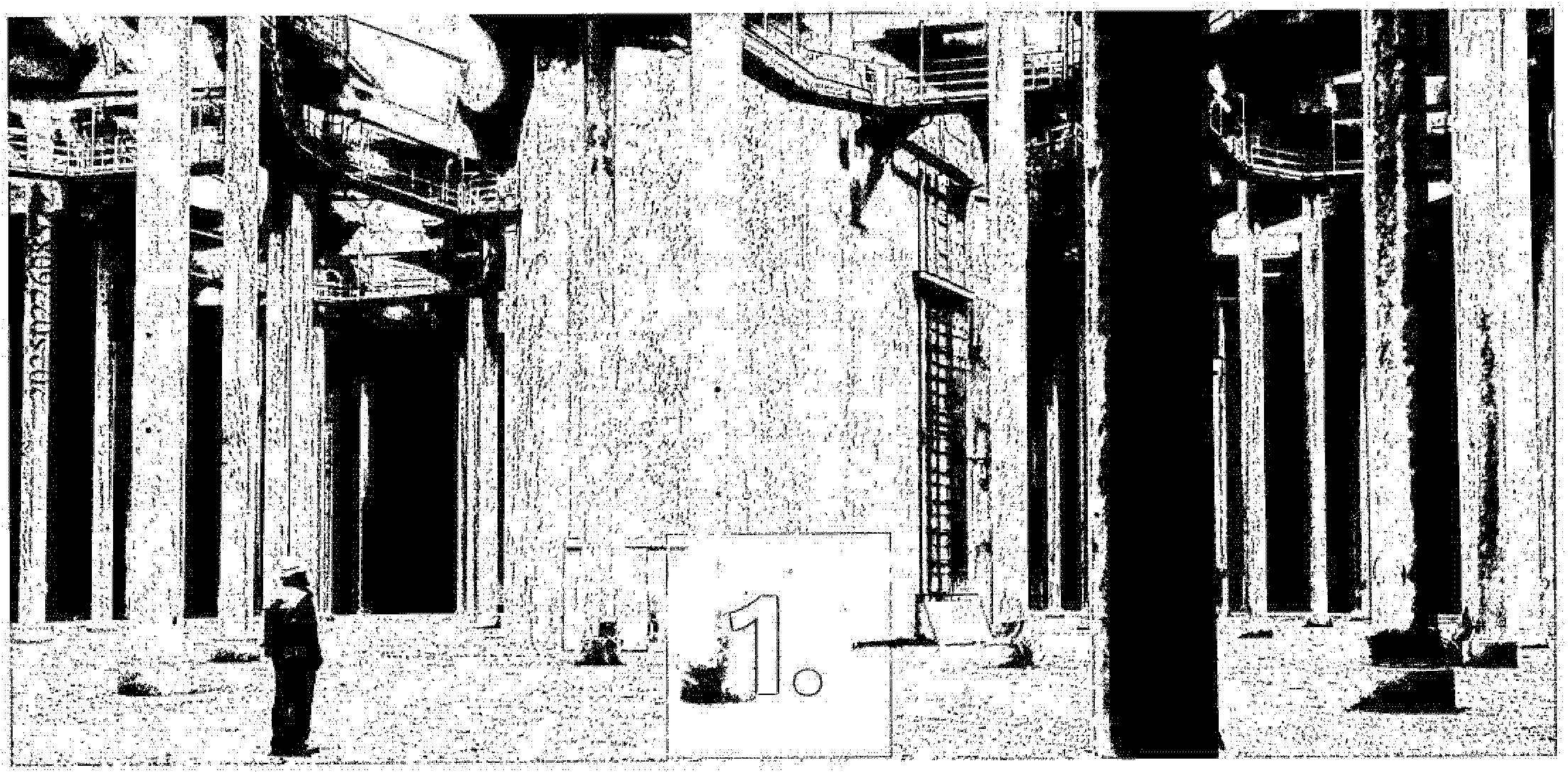
BE THE ENERGY FOR CHANGE

This Universal Registration Document (URD) was filed on 4 April 2024 with the French Financial Markets Authority (AMF), the competent authority under Regulation (EU) 2017/1129, without prior approval in accordance with Article 9 of that Regulation.

This Universal Registration Document may be used for the purposes of an offer of securities to the public or the admission of securities to trading on a regulated market if it is supplemented by a securities note and, if applicable, a summary and any amendments made to the Universal Registration Document. The set of documents formed thereof is approved by the AMF in accordance with EU Regulation 2017/1129. This document is a translation into English of the Universal Registration Document issued in French and it is available on the Company's website. All possible care has been taken to ensure that the translation is an accurate presentation of the original. However, the version of the URD issued in French is the only binding version.

Copies of this 2023 Universal Registration Document are available free of charge from EDF (22-30, avenue de Wagram, 75382 Paris cedex 08) and on its website (https://www.edf.fr), as well as on the AMF's website (https://www.amf-france.org).

This document should be read with the reading caveats on the last page of this document [available by clicking here].



1.

The Group, its strategy and activities

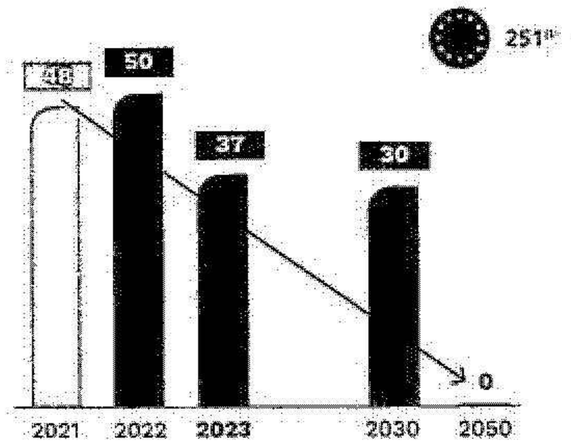
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1.1 Key figures and business model

EDF Carbon trajectory

Carbon intensity trajectory
(In gCO_2/kWh)

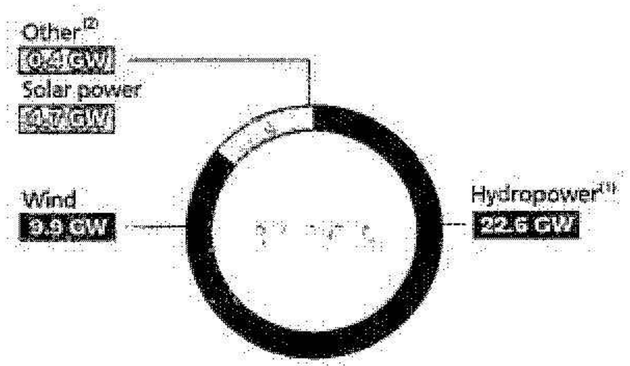
More than 6 times lower than the European average.



(1) EU 27 value in 2022, European Environment Agency.

EDF, the renewable energy leader in Europe

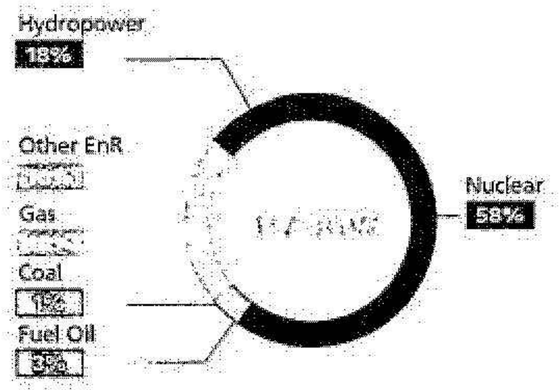
Net installed renewable capacity by sector at end-2023



(1) Including sea energy, 0.24GW.
(2) Biomass, geothermal energy.

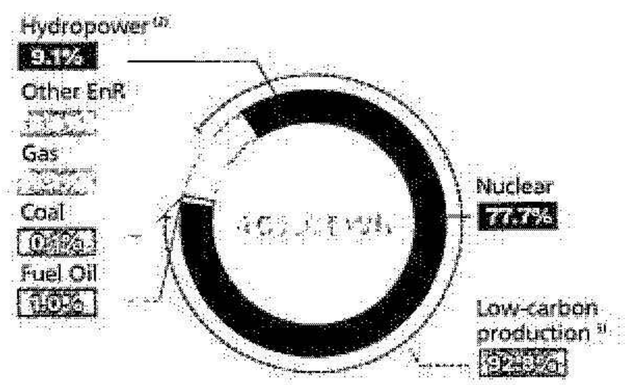
Key figures 2023

Installed capacities(1)



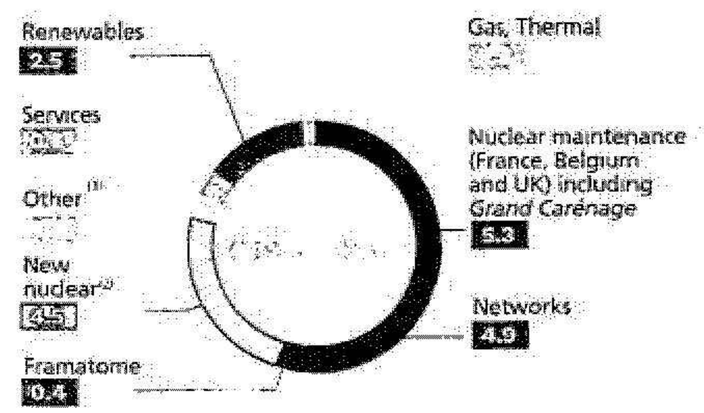
(1) Consolidated data.

Electricity generation(1)



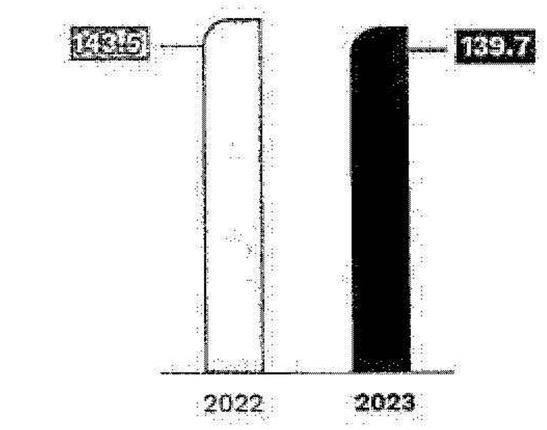
(1) Generation by fully consolidated entities.
(2) Hydropower generation including pumped storage consumption and sea energy
(3) Direct CO_2 emissions related to generation, excluding life cycle analysis (LCA) of the means of generation and fuels

Net investments excluding disposal plan

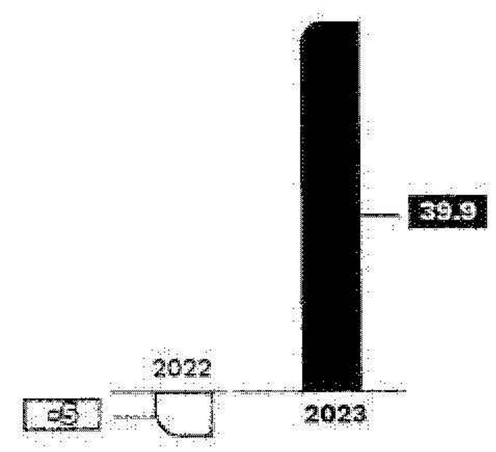


(1) Mainly thermal maintenance, gas, property, central functions
(2) Including Hinkley Point C, Flamanville 3, EPR2.

Sales
In billions of euros



EBITDA
In billions of euros

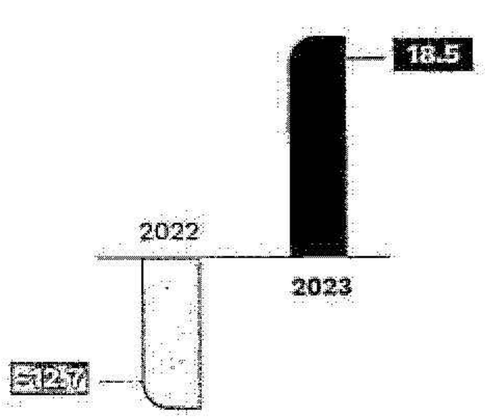


France – Generation and supply activities: **24.7**
France – Regulated activities(1): **3.7**
United Kingdom: **4.0**
Italy: **1.9**
Other international: **0.9**
Other activities: **3.3**
Framatome: **0.3**
EDF Renewables: **0.9**
Dalkia: **0.4**

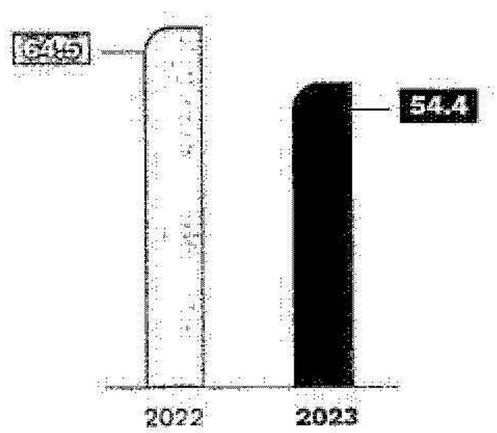
(1) Regulated activities: Enedis, ES and island activities; Enedis, an independent EDF subsidiary as defined in the French energy code

NB: Estimated figures for changes in EBITDA

Net income excluding non-recurring items
In billions of euros



Net financial debt
In billions of euros



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The Group, its strategy and activities
Key figures and business model

Assets and resources

Customer proximity

- **34.3** million electricity customers
- **6.6** million gas customers[1]
- **Leading brands:** EDF, Edison, Luminus, Dalkia
- **198.2** million visits on digital consumption monitoring platforms[2]

A human ambition

- **179,550 employees**[3]
- **80.6%** of employees took part in a skills development initiative during the year[3]

An ambitious innovative ecosystem

- **2,098** R&D employees in EDF SA
- Consolidated R&D budget of **€706** million in 2023 (Group scope)
- **747** innovations patented by R&D (EDF & Enedis) at the end of 2023

Major industrial assets

- **117.3 GW** of electricity generation capacity[4]
- An integrated nuclear industry
- EPR technology
- A portfolio of wind and solar projects of *circa* **98 GW** gross[5]
- **1.4** million km of distribution networks[6]
- **42.6** million smart meters installed[3]
- **330** heating and cooling networks operated by Dalkia

• A strong CSR commitment

- **A-** rating by CDP Climate Change & Water Security
- **4th** in the WBA Climate and Energy Benchmark ranking
- **€25.3 billion** of green & sustainable funding

(1) Consolidated scope. Counted per site.
(2) EDF SA scope excluding French overseas departments and Corsica.
(3) Group scope.
(4) Consolidated data at Group scope
(5) Group scope. Pipeline excluding capacity under construction. All the projects in prospection phase included in the pipeline, starting 2020.
(6) Enedis distribution network under concession

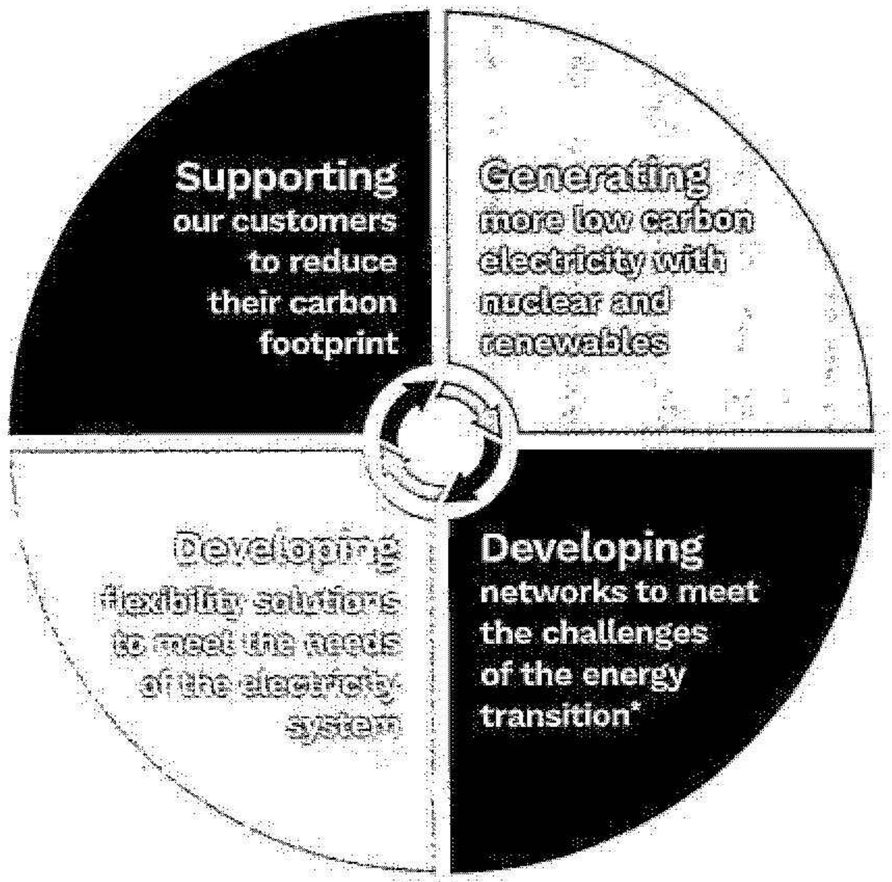
Business model

The *Raison d'être* of EDF

To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development.

2035

Industrial and human challenges for all of the Group's business lines, in France and internationally.



LEPLANSOLAIRE · LE PLAN stockage électrique · LE PLAN MOBILITÉ ÉLECTRIQUE · LE PLAN excell · LE PLAN HYDROGÈNE

* In France, the public distribution network is managed independently by Enedis.

The breakdown of CSR issues into 16 commitments

- Ambitious carbon trajectory
- Carbon contribution solutions
- Adapting to climate change
- Developing electricity use and energy services
- Biodiversity
- Responsible land management
- Integrated and sustainable water management
- Radioactive and conventional waste, and circular economy
- Security, health and safety for all
- Ethics, compliance and human rights
- Equality, diversity and inclusion
- Energy poverty and social innovation
- Dialogue and consultation with stakeholders
- Responsible regional development
- Development of industrial sectors
- Data responsible company

Value creation 2023

For the climate and environment

- A « **net zero emissions** » ambition by 2050
- Electricity generation of **467.6 TWh, 93%** decarbonised[1] with emissions of **37 gCO_2/kWh**[2]
- EDF, a water sharing player: water intensity of **0.83 l/kWh**[3]
- New commitments for **biodiversity** (2023-2025) as part of the **Act4nature** international initiative and implementation of the new **TNFD**[4] reporting framework expected by 2025

For customers

- High customer satisfaction level
- Nearly **390,000** energy advice actions for customer as part of Energy Support Service[5]

For partners and territories

- SMEs account for **22,7 %** of the procurement of EDF and Enedis
- **1** direct EDF SA job generates **4.3** jobs in France
- **100%** of projects are subject to consultation[6]

For the employees

- An employee engagement index of **74%**[7]
- **31.7%** of women on the Management Committees[8]
- An average salary equity ratio[9] of **5.8**

Sales
€139.7 bn

EBITDA
€39.9 bn

Net income excluding non-recurring items
€18.5 bn

Sharing added value with our stakeholders

Suppliers
Purchases[10]
€10.5 bn
EDF Group Global CSR agreement

States and Territories
Taxes[11]
€4.1 bn

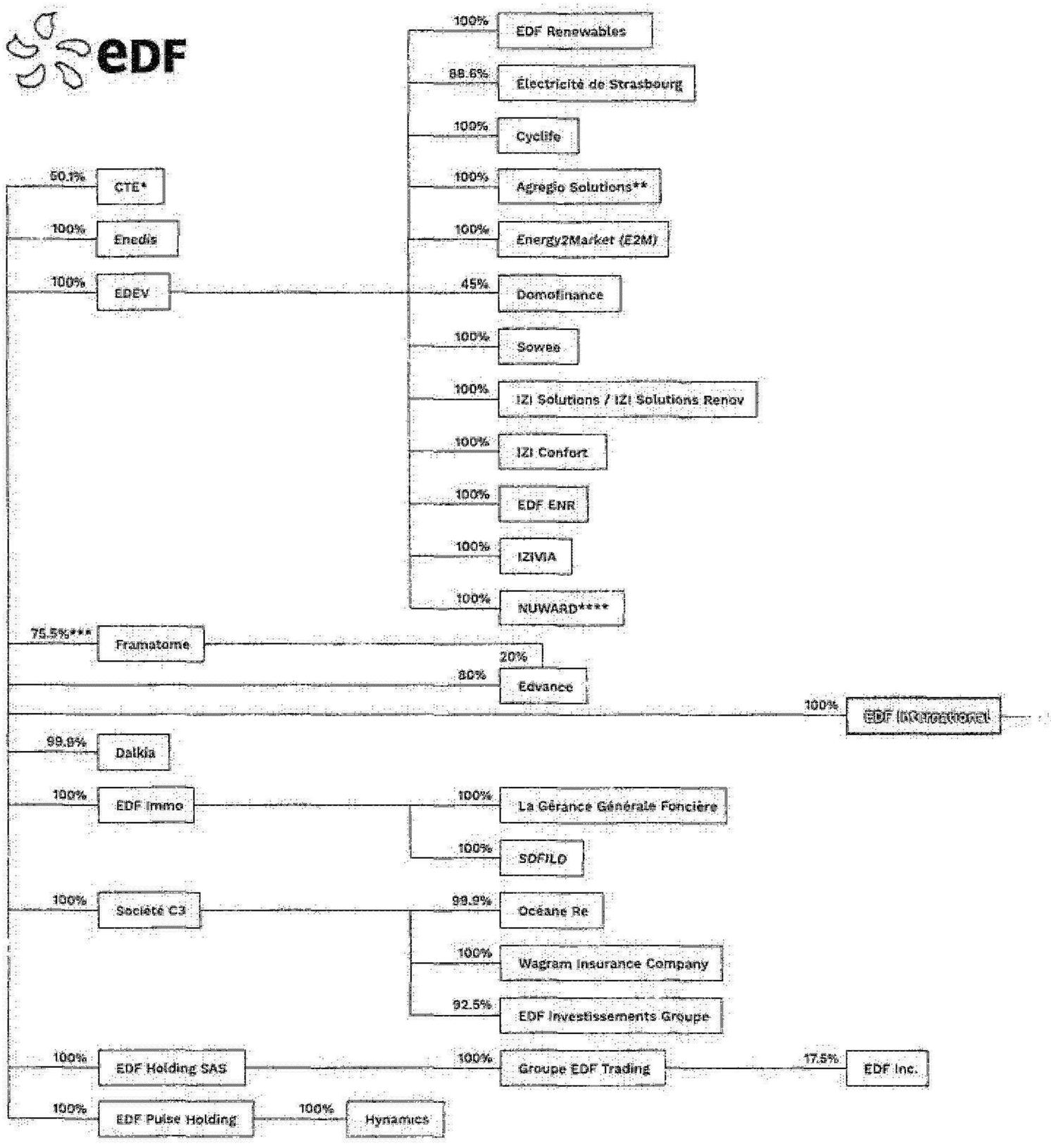
Employees
Remuneration[12]
€15.5 bn

(1) Direct CO_2 emissions related to generation, excluding life cycle analysis of generation plants and fuel.
(2) Specific CO_2 emissions due to heat and electricity generation. Group scope
(3) Water consumed / total electricity generation of the fleet. Group scope
(4) Taskforce on Nature-related Financial Disclosure (TNFD)
(5) EDF SA scope
(6) Projects over €50 million in accordance with the Equator Principles - Group scope.
(7) MyEDF Group internal survey.
(8) Group scope
(9) EDF SA scope - ratio established in accordance with the guidelines published by AFEP
(10) Consolidated other external expenses
(11) Consolidated taxes, excluding income taxes.
(12) Consolidated personnel expenses.

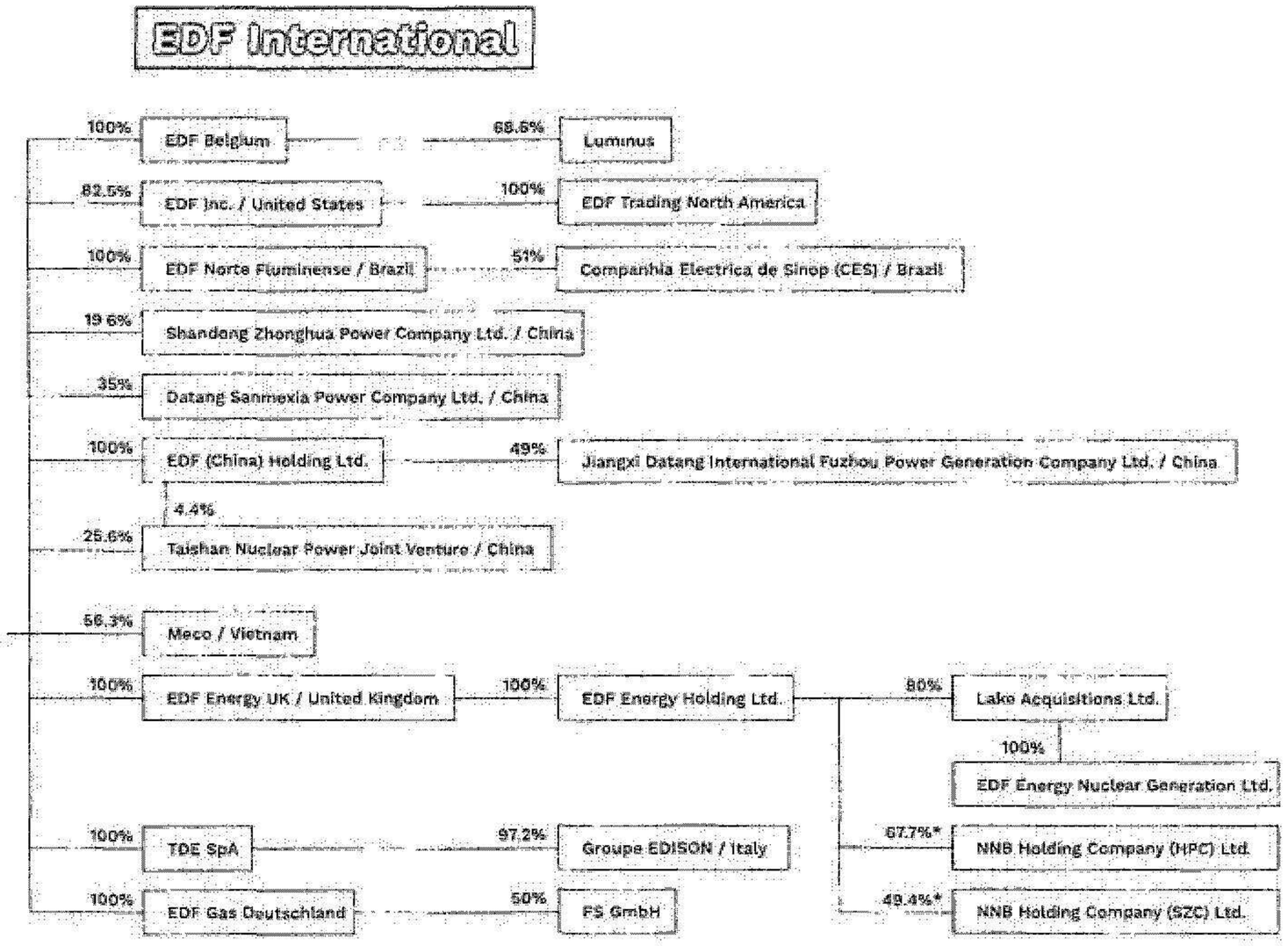
1.2 Group presentation

1.2.1 Organisation of the Group

A simplified organisational chart for EDF group at 31 December 2023 is shown below. The percentages for each entity correspond to the ownership interest in capital. The companies or groups of companies within EDF group's scope of consolidation are indicated in note 3.3 of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023. The changes in the 2023 scope are discussed in note 3.1.1 of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.



* Coentreprise de Transport d'Electricité (CTE), a company owning 100% of RTE.
** Agregio Solutions is the result of the merger of two existing subsidiaries: Agregio and EDF Store and Forecast (see the press release of 16 May 2023 "The EDF Group launches Agregio Solutions for an enhanced offer of flexibility and renewable energy management").
*** EDF acquired Assystem's 5% share in Framatome, and thus raised its investment to 80.5% (see note 14.5 "Non-controlling interests" to the consolidated financial statements for the financial year ended on 31 December 2023).
**** Subsidiary created in 2023. See the press release of 30 March 2023 "EDF announces the creation of its subsidiary NUWARD to boost the development of its SMR now entering the basic design phase".



* See note 14.5 "Non-controlling interests" to the consolidated financial statements of the financial year ended on 31 December 2023.

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The Group, its strategy and activities
Group presentation

1.2.2 Group history

1946
- Nationalisation of the electricity and gas sectors. Creation of EDF as an EPIC* in accordance with the law of 8 April 1946.
- Development of the French industrial base, including hydroelectric and nuclear power plants.

1963
- Launch of the commercial-scale nuclear programme.

1990
- Start of the international development, first in South America, then in Europe with the United Kingdom (from 1998 onwards), Germany (2001) and Italy (2005).

1999
- Opening of the French market, first for B2B (2000 to 2004), then for B2C (2007).

2004
- On November 2004, EDF becomes a French SA.

2005
- IPO of EDF. Spin-off of RTE to guarantee non-discriminatory access to the market.

2009
- Acquisition of British Energy.

2011
- Buy-out of EDF Renouvelables (formerly EDF Énergies Nouvelles).

2012
- Takeover of Edison.

2014
- Acquisition by EDF of Dalkia's activities in France.

2016
- Signature of final contracts for Hinkley Point C EPR construction project in the UK.

2017
- Indirect sale of 49,9% of RTE to Caisse des Dépôts and CNP Assurances and capital increase of approximately €4 bn.
- Acquisition of 75.5% of Framatome capital.
- Launch of the Solar Plan.

2018
- Commissioning of the 1st EPR of Taishan.
- Ramp-up in offshore wind power

2019
- France multi-year energy programme (PPE): project published on 25 January 2019.
- Launch of "excell", an excellence plan for the nuclear industry.
- Success of the first fourth 10-year inspection 900MW fleet (Tricastin 1).
- Commissioning of Taishan Unit 2.
- Commissioning of the Sinop hydropower plant in Brazil.

2020
- EDF adopts a *raison d'être* in its articles of association.
- Commissioning of the new Romanche-Gavet hydroelectric plant.

2022
- Commissioning of the first offshore wind farm in France in Saint-Nazaire.
- Launch of the Hydrogen Plan.

2023
- Acquisition of the entire EDF's share capital by the French State following the squeeze-out of shares and OCEANE.

- Structural changes in the EDF group
- Development in France
- International development

* EPIC: Public Industrial and Commercial Establishment.

1.2.3 Significant events

Significant increase of 41.4TWh in nuclear generation in France in a context of historically high prices

COMPLETION OF THE SIMPLIFIED PUBLIC TENDER OFFER

- Following the simplified public tender offer initiated by the French State for the equity securities, the squeeze-out of the shares and OCEANEs issued by EDF took place on 8 June 2023.
- The French State now holds all of EDF's share capital and voting rights.

NUCLEAR

- 46 reactors were online in France at the beginning of January 2024, representing 50GW.
- 15 of the 16 reactors most sensitive to stress corrosion were repaired by end-2023 and the last one will be repaired with during its 10-year inspection starting in February 2024. In addition, the 2023 programme of checks on welds repaired during reactor construction has been completed.
- The estimates of nuclear output in France are confirmed at 315-345TWh for 2024 and 335-365TWh for 2025 and 2026[1].

NUCLEAR NEW BUILD

- Flamanville 3: successful completion of the tests to requalify the entire installation with a view to the fuel loading, which will be carried out after obtaining the decision of the French Nuclear Safety Authority authorising the commissioning[2].
- Hinkley Point C:
  - > new schedule for the start of power generation by Unit 1 based on three scenarios: a project organisation for 2029, a base case in 2030, and an unfavourable scenario in 2031[3];
  - > revised completion cost: $_{2015}$£31 to 34 billion (the unfavourable scenario would entail an additional cost of $_{2015}$£1 billion);
  - > impairment of Hinkley Point C assets and EDF Energy goodwill for a total of €12.9 billion[4];
  - > since end-2023, construction work is financed by the shareholders on a voluntary basis and EDF is currently financing all costs.
- Sizewell C: further preparatory work on the project.
- EPR2: applications have been filed for approval to build the first pair of EPR2 reactors on the Penly site and the Bugey site chosen to host two future EPR2 reactors, after the choice of Penly and Gravelines.
- EPR1200: EDF has been shortlisted to continue the tender process for the construction of 1 to 4 EPR1200 reactors in the Czech Republic.
- Nuward SMR[5]: joint early review to develop a standardised design with an extended group of European nuclear safety authorities.

RENEWABLES

- The 14% increase in wind and solar generation to 28.1TWh was largely due to new installed capacities including Al Dhafra (2.1GW in the United Arab Emirates, one of the most powerful solar power plants in the world), and Serra do Seridó (phase 1, 480MW in total, in Brazil, the largest wind power farm in South America), to reach 15.1GW net. The portfolio of wind and solar power projects also increased by 15% to 98GW gross.
- Inauguration of the Lazer floating solar power plant (20MWp) on the Lazer hydro power plant reservoir in France, allowing the combination of photovoltaic and hydroelectric power generation at a single site[6].
- EDF, in partnership, won the tender for the 1GW Manche Normandie offshore wind power project in France[7].

HYDROPOWER

- The 6.3TWh increase in hydropower generation in France[8] to 38.7TWh is explained by high availability rates and better hydraulic conditions.
- Completion of the impoundment of the Nachtigal dam in Cameroon (420MW).
- Selection of EDF as a consortium member for the development of the Mphanda Nkuwa dam in Mozambique (1.5GW)[9].

THERMAL

- EDF continues to decarbonise its thermal power generation with the conversion to liquid biomass of the Port Est fuel oil power plant (212MW), making EDF's power generation on Reunion Island 100% renewable[10].
- Permanent closure of EDF's last coal-fired power plant in the United Kingdom, West Burton A, on 31 March 2023.
- Edison: inauguration of the 780MW Marghera Levante CCGT (Combined cycle gas turbine). It reduces the CO_2 emissions by 30% compared to the average for italian thermal fleet and has the technological ability to run on up to 50% hydrogen.
- Successful trial of a bioliquid on the Brennilis combustion turbine in the summer of 2023.

(1) Nuclear generation estimate for the fleet currently in operation.
(2) See section 1.4.1.1.3.1 "Flamanville 3 EPR project".
(3) See EDF's press release of 23 January 2024 "Hinkley Point C Update". Previous schedule for Unit 1: June 2027 and former cost: $_{2015}$£25-26 billion (see EDF's press release of 19 May 2022 "Hinkley Point C Update").
(4) See note 10.8 of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.
(5) SMR: Small Modular Reactor.
(6) See EDF's press release of 20 June 2023 "EDF Group opens its first floating solar power plant on the Lazer hydro power plant reservoir in the French Alps".
(7) See the press release of 27 March 2023 "EDF Renewables and Maple Power awarded the fourth offshore wind tender launched by the French State, securing a one-gigawatt project off the coast of Normandy, France".
(8) Hydropower generation excluding island activity before deduction of pumping consumption. The total cumulative hydropower generation net of pumping consumption represented 33.0TWh in 2023 (25.0TWh in 2022).
(9) See the press release of 13 December 2023 "The consortium of EDF - TotalEnergies - Sumitomo Corporation entered into joint development agreement with the Government of Mozambique for the 1,500MW Mphanda Nkuwa hydropower project".
(10) See EDF's press release of 4 December 2023 "After the conversion of the Port Est plant to liquid biomass, EDF's power generating fleet in Reunion Island reaches 100% of renewable energy".

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CUSTOMERS

- New commercial policy: in order to give its customers more price visibility and be more competitive, the Group is rolling out a new business policy involving 4 and 5 year ahead auctions on the wholesale market, and medium-term power supply contracts. The Group is also developing long-term industrial partnerships relating to the historic nuclear fleet (nuclear generation allocation contracts).
- Decarbonisation uses: the 12.4 million tonnes of CO_2 emissions avoided by its customers in 2023 reflect the work done by EDF to encourage greater energy sufficency and electrification of uses. The number of heat pumps installed was up by 30%, and installations of solar panels on rooftops and car park canopies were up by 60%. In electric mobility, the number of charging stations rolled out or managed by EDF rose by 21%.
- 1.5% growth in the customer portfolio in the G4[1] countries, comprising France, Italy, Belgium and the United Kingdom, by end-2023.
- Strategic partnership to reduce the CO_2 emissions of La Poste's real estate assets by 35% by 2030 (Dalkia, EDF ENR, IZIVIA and Urbanomy)[2].
- Dalkia: inauguration of a low-carbon geothermal heat network in the Paris region, powered 77% by renewable energies, *avoiding 11,000 tonnes of CO_2 emissions per year.*

NETWORKS

Developing networks to meet the challenges of the energy *transition:*

- Connections of renewable energy facilities by Enedis increased by around 120% and the number of electric vehicle charging points rose by 80%.
- Investments by Enedis, EDF SEI[3] and Électricité de Strasbourg were up by 11%, essentially due to the higher number of connections related to the energy transition.
- Electricity supply was restored in 5 days for 95% of customers after the storm Ciarán.
- EDF SEI has crossed the milestone of one million digital meters installed at end-2023.
- Enedis recognised first major company of the energy sector to become an "entreprise à mission" in June 2023[4].

FLEXIBILITY

Developing flexibility solutions to meet the needs of the electricity system *via*:

- pumped-storage hydropower plants (PSHP)[5], like the Hatta plant in the United Arab Emirates (250MWh to 1,500MWh of storage) under an engineering contract or the Vouglans Saut-Mortier plant in France (87MW);
- significant gross of 0.8GW in the portfolio of storage projects secured (to 1.7GW at end-2023);
- battery projects (as in the United Kingdom for 173MW and in South Africa for 257MW);
- substantial 33% increase in electric vehicule smart charging points operated, mainly by Izi Smart Charge, depending on network constraints.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE COMMITMENTS

- The world's number one investor and producer of low-carbon electricity[6], available on demand and at any time, which accounted for 434TWh in 2023, *i.e.* 93% of its power output. EDF has one of the lowest carbon intensities in the world, at 37gCO_2/kWh, down by 26% from 2022.
- Definition of new objectives to reduce CO_2 emissions, aiming to reach net zero emissions by 2050:
  - > a reduction in its Scope 1 emissions compared to 2017 of 60% in 2025, 70% by 2030 and 80% by 2035;
  - > a carbon intensity of 30gCO_2/kWh by 2030 and 22gCO_2/kWh by 2035.
- Based on Moody's assessment[7] the Group's CO_2 emissions reduction trajectory is in line with a warming scenario of +1.5°C.

FINANCING

- Implementation of the 2023 financing programme: issues of approximately €8 billion of senior bonds on various markets and $1.5 billion of hybrid bonds.
- Conversion, by the French State, in equity of all OCEANEs maturing in 2024, amounting to €2.4 billion, contributing to the strengthening of equity securities.
- Confirmation of the credit ratings with stable outlook by the three agencies S&P, Moody's and Fitch[8].
- EDF successfully launched its first green bond issue dedicated to the financing of investments in the existing nuclear fleet for an amount of €1 billion[9].

(1) 40.9 million customers per delivery point in France, Italy, Belgium and the United Kingdom. One customer may have two points of delivery.
(2) See the press release of 12 December 2023 "La Poste and EDF groups join forces to accelerate the energy transition of La Poste's real estate assets".
(3) SEI: Systèmes Énergétiques Insulaires (Island Energy Systems).
(4) See Enedis' press release of 26 June 2023 "Enedis becomes the first major company with a mission in the energy sector".
(5) PSHP: Pumped-storage hydropower plants (*Station de transfert d'énergie par pompage* – STEP).
(6) Source: Enerdata, Power Plant Tracker in 2022.
(7) See "Net Zero Assessment" assessment report.
(8) Stability of the financial rating after the addition of an additional notch linked to government support and the downgrade by one notch of the standalone rating.
(9) See EDF's press release of 28 November 2023 "EDF announces the success of its first senior green bond issue dedicated to the financing of the existing nuclear fleet, for a nominal of 1 billion euros".

1.3 Group strategy and objectives

1.3.1 Environment and strategic challenges

Energy efficiency and low-carbon electricity are at the core of the energy transition

The fight against climate change is the challenge of our generation. While current policies' projections would lead to a warming of +2.4°C in 2100[1], it is now recognised that to limit this warming to 1.5°C and uphold the Paris Agreements, it is essential to achieve global carbon neutrality by 2050.

In Europe, the "Green Deal" developed in 2020 and the "Fit for 55" climate package proposed by the European Commission provide the framework of measures enabling the European Union to achieve carbon neutrality by 2050. Recovery programmes in the wake of the Covid-19 health crisis have made climate issues an even higher priority. Similarly, the "REPowerEU" programme announced in 2022 by the European Commission to address disruptions in the global energy market caused by the war in Ukraine adds the challenges of resilience, sovereignty and maintaining the competitiveness of this energy transition. The related national programmes focus on reducing CO_2 emissions as a priority, and as competitively as possible, drawing on a locally-rooted industrial vision.

In France, electricity accounts for just over 12% of CO_2 emissions[2] (39%[2] at a global level). France's Climate and Energy Law of 8 November 2019 places the reduction of greenhouse gas emissions at the heart of French energy policy. The goal is now "to become carbon-neutral by 2050 by cutting greenhouse gas emissions more than sixfold".

France's multi-year energy programme (*Programmation pluriannuelle de l'énergie*, PPE), which lists the broad outlines of French energy policy, sets out a 10-year vision, which is vital for major industrial players.

To achieve these objectives, the major levers of action are:

- lowering energy consumption by developing energy efficiency solutions and incentivising energy sobriety; and
- shifting from fossil fuels to low-carbon energies, prioritising low-carbon electricity and renewable heat.

The transition to a carbon-free economy should also preserve households' purchasing power and the competitiveness of companies, whilst ensuring secure energy supplies and energy sovereignty.

Innovation, both upstream and downstream, will be an essential factor for successfully achieving these goals.

1.3.2 Strategic priorities

EDF's *raison d'être* is "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development". It was included in the Company's articles of association at the end of the General Shareholders' Meeting of 7 May 2020 and is part of the Group's strategy.

Today, EDF is the world's leading producer of low-carbon electricity[3]. For each kWh produced, EDF emits six times less CO_2 than the average amount for European utilities (251 gCO_2/kWh[4]) and has set itself even more ambitious emission reduction targets: in 2030, EDF will have reduced its direct emissions by 70% compared to 2017; in 2035, the reduction in its direct emissions will be 80%. The carbon intensity of the electricity produced by the Group will be 30 gCO_2/kWh in 2030 and will drop to 22 gCO_2/kWh in 2035. EDF is also committed to reducing its indirect emissions by 28% in 2030 compared to 2019.

The global context validates the role of low-carbon electricity and supports EDF's strategy

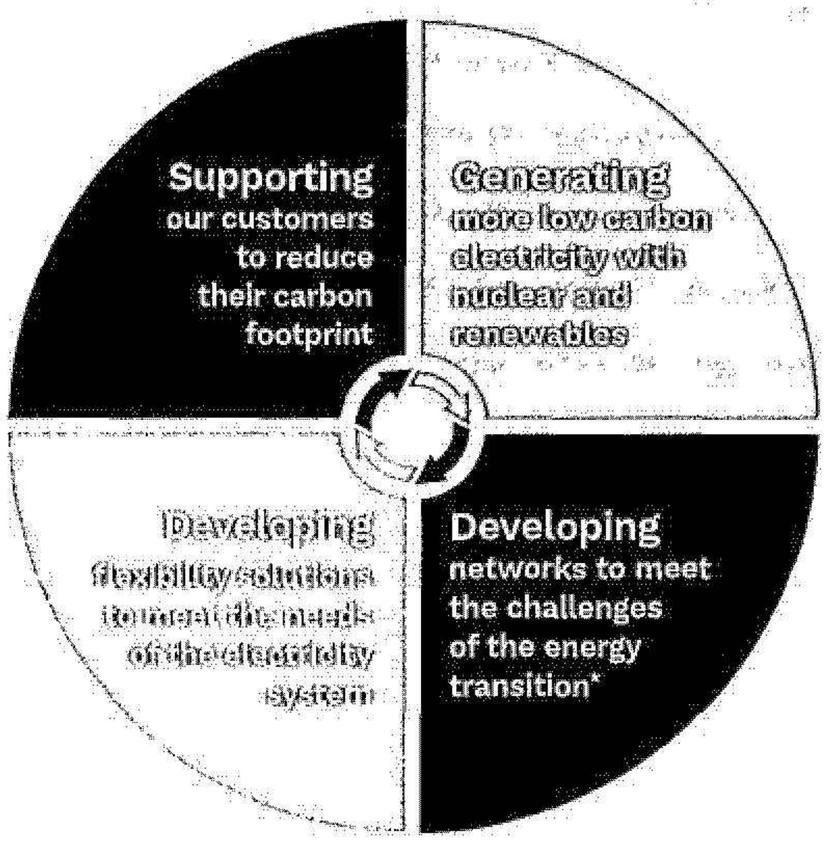
The EDF group, as a responsible operator and supplier, is assuming its role as a major player in the ecological transition and energy sovereignty. From the construction and operation of nuclear, hydro, solar, wind and thermal power plants, to the development and operation of electrical networks, to the marketing and support of customers to achieve energy savings, **the Group is present in every link of the value chain in France and abroad. EDF stands alongside its customers** to promote decarbonisation through energy efficiency and the electrification of uses, from industrial processes to mobility, as well as in tertiary and residential buildings.

To supply its customers, EDF is responding to the growing demand for low-carbon electricity by accelerating the development of its low-carbon means of generation. In France, EDF is continuing to operate the existing nuclear fleet under the best possible conditions of safety and performance and working on the conditions for launching the construction programme of 6 EPR2, with a potential expansion to 14 EPR2. Recognised for this know-how, EDF is committed to the development of nuclear projects beyond France (Hinkley Point C construction and Sizewell C project in the United Kingdom, submission of a bid for the Dukovany site in the Czech Republic, the Jaitapur site in India, etc.). EDF is pursuing developments in hydropower and accelerating the development of renewable energies.

In combination with increasing customer connections and new uses, the development of renewables is a major challenge for electricity networks: as a responsible operator, **EDF group develops and strengthens distribution networks to guarantee their long-term resilience and performance.** As it continues to become increasingly unstable and volatile, **the electricity system will need to be more flexible: EDF is committed to mobilising a range of solutions** to meet these needs, in order to adapt consumption and production in a more dynamic and responsive manner.

(1) Source: International Energy Agency - World Energy Outlook (Global Energy Outlook) 2023.
(2) Source: Ministry of the Energy Transition, Key climate figures, 2023 edition, page 35.
(3) Source: Enerdata, World ranking of zero direct CO_2 emissions power producers (2022, TWh), https://power-producers-ranking.enerdata.net/
(4) 2022 data, EU-27, European Environment Agency, Greenhouse gas emission intensity of electricity generation in Europe, October 2023.

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The Group's international impact creates value and contributes to France's success

The Group's core development scope in Europe is the "G4", comprising France, Italy, Belgium and the United Kingdom. In these countries, EDF is present as a key player in electricity generation, as well as having a significant customer portfolio in each country. Building on its strong local roots, EDF is developing a range of supply offers and solutions and services to achieve the decarbonisation of its customers in a manner best suited to local energy policy choices.

In the rest of the world, outside of the "G4", the Group mainly develops through business models without exclusive control of the asset, with an industrial role enabling it to capitalise on the Group's experience. EDF will look for growth drivers by engaging in profitable projects in growing markets, exporting its recognised expertise to countries seeking practical solutions for a successful energy transition. EDF can thus compare best practices with leading partners in competitive markets, while also developing new industrial skills and accelerating its ability to innovate, from both a technological and contractual standpoint. At the Group level, project risks are thus diversified.

A new (post-ARENH) market model

At a press conference held on 14 November 2023, Bruno Le Maire, Agnès Pannier-Runacher and Luc Rémont announced that they had reached an agreement between the French State and EDF, laying the foundations for the new organisation of the French market that will succeed the Regulated Access to Nuclear Electricity (*Accès régulé à l'électricité nucléaire historique* – ARENH) system as of 1 January 2026.

These guidelines would be intended to be included in a bill to be presented in 2024.

The new market organisation aims to develop medium and long-term products in order to offer consumers a wider choice of contracts allowing them to protect themselves from short-term price volatility and to encourage investments in low-carbon production.

As part of its new commercial policy, EDF sells annual "ribbons" with maturities of 4 to 5 years at auction, enabling EDF and all electricity suppliers to offer contracts that provide visibility and stability to customers over these time horizons. In this context, EDF now offers its customers medium-term retail supply offers of up to five years.

In addition, EDF offers certain electricity-intensive customers long-term industrial partnership contracts, with a minimum period of 10 years, backed by the historical nuclear fleet (nuclear generation allocation contracts).

In order to provide additional protection to customers in the event of high prices, the public consultation document on the draft protection system for electricity consumers, dated 23 November 2023, provides in particular for the payment by EDF of a contribution comprising a share of the net annual energy revenues of nuclear power plants when they exceed a certain level. More specifically, the proposed system would be based on two thresholds from which contributions on the revenues of the nuclear fleet are to be made: a first activation threshold assessed at the date of the consultation at $_{2022}$€78/MWh, and a second threshold set at $_{2022}$€110/MWh, giving rise to two contribution rates of 50% and 90%[1] respectively.

Supporting our customers to reduce their carbon footprint

Individuals, companies and local authorities are increasingly striving to change the way they light, heat, produce, consume, travel, etc. Everyone wants to be an actor in their own energy transition. This momentum, which is an aggregate of individual initiatives and public decisions, is gradually increasing everywhere.

In response, EDF is providing accessible and innovative solutions that enable customers to consume less and better:

- **by reducing their carbon footprint through the electrification of uses in the sectors that produce the most CO_2:**

  > in transport:

To support the widespread deployment of electrification in mobility, EDF launched the electric mobility plan in 2018 in the "G4" countries, aiming to be the leading electricity supplier to the electric vehicle owners segment, having deployed 340,000 charging stations at the end of 2023 to remove technological barriers by enhancing the storage capacities of electric vehicles (smart charging). In the heavy mobility sector, EDF is committed to the production and marketing of electrolytic hydrogen and its derivatives. EDF holds leading positions in the electric mobility sector (France and the United Kingdom).

> in buildings:

The Group is very involved alongside professionals in the sector, landlords and local authorities. The aim is to help them in improving the energy efficiency of buildings and move towards the decarbonisation of their uses. It offers a range of services, from monitoring and managing consumption to direct support for decarbonisation operations, such as the electrification of heating with heat pumps, which enable both energy savings and decarbonisation, or home renovation offers. EDF also directly supports households[2] with IZI by EDF and its subsidiary IZI Confort. Lastly, through its subsidiary Dalkia, the Group is actively developing heating and cooling networks to promote decarbonisation (with the use of renewable energy sources and energy recovery), while also developing Energy Performance Contracts (*Contrats de performance énergétique* - CPE) for public buildings, companies, and residential complexes.

(1) In accordance with the public consultation document on the draft protection mechanism for electricity consumers dated 23 November 2023.
(2) They can choose a heat pump to replace their highly CO_2 emitting boiler, whether oil or gas-fired.

> in industry:

The EDF group develops solutions to electrify industrial processes, recover waste heat and produce renewable heating through its subsidiary Dalkia, and produce decarbonised electrolytic hydrogen. It leverages the expertise of its R&D for its industrial customers to support them in the evolution of their production facilities (electric furnaces and boilers, *etc.*). It also offers (*via* its subsidiary Agregio Solutions) the valorisation of flexibilities in the electricity system and green supply offers.

The aim of these solutions is for EDF to avoid the emission of over 30 million tonnes of CO_2 by 2030[1] among its customers:

- **by helping its residential customers, businesses, and local authorities to play a more substantial role in their energy consumption** (through self-consumption, digital consumption management solutions);
- **by encouraging, in addition, its customers to consume with more sobriety** by sharing advice on virtuous daily habits (the "eco-gestures"), such as lowering the heating to 19°C, by inviting customers who are able to do so to shift consumptions away from peak hours for the electricity system or by providing them with tools to understand their consumption ("EDF & Moi" app). These messages were highlighted in a widespread advertising campaign launched in October 2022 by EDF called "I lower, I turn off, I shift".

EDF is enhancing the value of its customer portfolio in "G4" countries (France, the United Kingdom, Belgium and Italy). To do so it relies on its top-notch customer relations and a broad range of service offers and solutions, particularly in sustainable energy performance for the residential or business markets.

Innovation is an essential component of the road ahead to help customers in their transition, given the speed at which technologies are advancing today, from renewables to storage, including electric vehicles, hydrogen and digital development.

Building on its own R&D efforts and its innovation ecosystem developed with its partners, the EDF group selects those innovations that have the potential to accelerate the energy transition, while supporting the French industrial fabric as much as possible.

Lastly, the energy transition will only be achieved if it is fair, inclusive and profitable. The EDF group supports its customers by helping them to use energy more efficiently. EDF pays particular attention to the most vulnerable customers and implements actions to fight against energy poverty (see section 3.3.4 "Energy poverty and social innovation").

Generating more low-carbon electricity with nuclear and renewables

Because in France 96% of electricity generated by EDF is decarbonised thanks to nuclear and renewable energies, EDF plays a leading role in achieving a carbon neutrality goal by 2050. Its actions aim to accelerate the development of renewable energies in addition to its nuclear fleet, for which it guarantees safety, performance and competitiveness.

There will be no single solution to guarantee low-carbon electricity, but a set of technologies: nuclear, hydropower, solar, onshore and offshore wind power, low-carbon thermal means of generation.

- **This very low-carbon production ambition is partly based on the performance of the nuclear sector**, by guaranteeing industrial control, safety, competitiveness, environmental protection and optimisation of the operation of nuclear fleets in France and the United Kingdom. In addition, EDF is continuing to implement an innovative fuel cycle strategy.

EDF's nuclear generation fleet is the only one of its kind in the world. The ***Grand Carénage*** programme for the existing fleet in France is a major industrial challenge. The related investments should enable the power plants to remain in operation beyond 40 years, guaranteeing nuclear safety, performance, and environmental protection. EDF's ambition is to return to the best levels of operational generation performance for the existing fleet, and to be able to produce 360 to 400TWh of nuclear electricity in France in the long term. Studies are underway to continue operating the existing fleet beyond 60 years under the best safety conditions, while taking into account feedback from international experience with reactors of the same design as those of the French fleet. These studies will be supplemented by in-depth technical studies, which will be submitted to the French Nuclear Safety Authority (ASN) before the end of 2025.

Nuclear power operation does not emit CO_2[2]; it provides baseline production whilst offering strong leverage in terms of management and flexibility to adjust to electricity consumption. As such, it is an essential asset for a decarbonised electricity mix by 2050.

With this in mind, EDF is building the Hinkley Point C reactors in the United Kingdom and completing the Flamanville 3 reactor in France. Two EPR reactors are in operation at Taishan in China, in which EDF holds a stake, and one at Olkiluoto in Finland.

In France, following the President of the Republic's announcements in February 2022 in Belfort regarding the **launch of the construction programme for six nuclear reactors in France**, EDF, alongside the nuclear industry, is preparing for the implementation of this ambitious and essential programme and conducting studies for eight additional EPR2 reactors. The consultation and dialogue phase with stakeholders is ongoing. The public debate on the project for an initial pair of EPR2 reactors at the Penly site in Normandy was held from 27 October 2022 to 27 February 2023. This presented an opportunity to provide information about and discuss this project and gave rise to a report by the Special Commission for Public Debate (*Commission particulière du débat public*, CPDP) and a review by the Chairwoman of the National Commission for Public Debate (*Commission nationale du débat public*, CNDP), both of which were made public on 26 April 2023. In December 2023, EDF contacted the CNDP regarding its plan to build a second pair of EPR2-type nuclear power reactors on the Gravelines site. In its decision of 10 January 2024, the CNDP decided that it was necessary to organise a public debate.

The Group is developing the **Nuward project**, pioneering the first Small Modular Reactor (SMR) in France and aims to start construction in 2030.

EDF reached an agreement with the British government to continue to develop the **Sizewell C nuclear power plant** project. The British government announced on 22 January 2024 to increase its investment to around £2.5 billion and became the majority shareholder of the project since the end of 2023, alongside EDF. At the same time, a fundraising campaign was launched for the project, aiming to provide additional private capital at the time of the final investment decision[3]. EDF's final investment decision remains subject, in particular, to its ability to raise the necessary financing to complete the project and the deconsolidation of the project from the Group's balance sheet.

EDF is also preparing for site conversions related to the shutdowns of end-of-life power plants. EDF, *via* Cyclife, continues to develop its activities in the decommissioning of nuclear generation assets and is developing a circular economy through recycling and dismantling.

(1) Calculation of emissions avoided by the following products/services, sold by EDF, Dalkia, Luminus, EDF UK and Edison: development of renewable energy in heating networks; energy efficiency; solar power production (installations sold to customers and self-consumption, excluding EDF installations injecting their production into the network); electric mobility; residential heat pumps. This indicator corresponds to the difference between the emissions of the product/service sold and the emissions of a reference scenario set for each product/service. The figures should increase in the coming years, subject to possible changes in methodology in order to remain in line with third-party practices. Regarding the methodology associated with this indicator, see section 3.6 "Methodology".
(2) No direct emissions and LCA (life cycle analysis) emissions which can be estimated at 4 gCO_2/kWh.
(3) Sizewell C equity raise process – GOV.UK (www.gov.uk); Further steps to prepare Sizewell C for construction – GOV.UK (www.gov.uk).

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- **The EDF group's aim of achieving very low-carbon production is also embodied in the accelerated profitable development of renewable energies in France and abroad.**

The EDF group is developing renewable electric energies in all technologies (hydropower, solar, onshore wind power, offshore wind power, *etc.*). They already represent more than a quarter of the Group's total capacity[1]. Today, the EDF group is a major player in renewable energies and aims to continue its development, with the objective of achieving 100GW of installed gross renewable energy capacity (including hydropower) by 2030.

The EDF group is seeking to diversify the different technologies (onshore and offshore wind power, solar power, and hydropower), as well as their geographical distribution. EDF regularly invests in hydropower facilities in order to combine economic, energy and environmental performance, and offers solutions to strengthen hydropower generation.

Developing networks to meet the challenges of the energy transition

The role of networks in the energy transition is key. Due to the sustained increase in electricity demand and the growing share of renewable energies in the electricity system, network operators must achieve their ambitious targets for developing the connections driven by the Multi-Year Energy Programme (PPE) in France. Networks must adapt to the increasing variability of electricity systems and therefore be able to absorb massive injections of intermittent energies (solar, wind), which requires managing the networks differently in terms of both injection and withdrawal.

Within the EDF group, the distribution network activities in France are carried out through Enedis and Strasbourg Électricité Réseaux, two bodies that operate the electricity distribution network independently from EDF, and through SEI. Internationally, its subsidiary EDF International Network exports the Group's know-how and skills in the field of networks.

To succeed in the energy transition in their respective regions, these network operators must transform the networks they operate in order to (i) achieve the exponential trajectory of connections proposed by the PPE to meet the demand of producers (wind farms, solar power plants, solar panels on roofs, stationary storage or the equivalent) and consumers (IRVE – Electric vehicule charging infrastructure, self-consumption); (ii) accelerate their digital transition in network operation to strengthen predictive maintenance and rapid repair; and (iii) renew and strengthen existing networks to meet growing electricity needs.

As the share of electricity in the French energy mix becomes majority by 2050, the networks must be even more resilient to hazards in order to guarantee access to electricity. In addition, smart meters rolled out by network operators enable electricity managers to support their customers in better understanding their needs and responding to suppliers' requests relating to their actions to promote greater energy sobriety.

In France, Enedis[2] puts at the heart of its concerns the issue of network reliability and ensures that electricity is 99.9% available in France[3]. Maintaining this level of availability by 2035/2040 is a considerable challenge, both on an industrial and on a human level.

Developing flexibility solutions to meet the needs of the electricity system

The management of the electricity system requires increased flexibility in order to cope with the variations caused by intermittent energies over all time horizons.

In response to these growing needs for balance, EDF is developing a range of solutions to meet these requirements over different time horizons. These flexibilities will take multiple forms, both upstream – for example, with the continued development of hydropower (lakes and pumped storage hydropower plants), the ability to modulate future nuclear reactors (EPR), batteries, low-carbon thermal power plants (thanks to bioenergy, and potentially carbon capture and storage) – and downstream, with the development of demand response or the mobilisation of smart charging of electric vehicles (V1G, V2G). Thus, the Storage plan, launched in 2018, aims to develop over 10GW of gross storage capacity within the Group by 2035.

A wholly-owned EDF subsidiary, Agregio Solutions is one of the French leaders in the aggregation of decentralised energy resources. To compensate for variability in renewable energy production, Agregio Solutions is developing a range of electrical flexibility products to manage certain types of consumption or to store electricity in batteries. In 2026, Agregio Solutions aims to have a contractual portfolio of more than 12GW.

By 2035, the Group aims to reach 2GW in decarbonised thermal capacity in its regions, and to operate at least one combined cycle gas turbine power plant (CCGT) equipped with CO_2 capture and storage (CCS) technology.

In France, EDF stands out through its ability to offer 24/7 decarbonised electricity and provides its customers with 96% decarbonised electricity in mainland France.

The EDF group invest massively in the energy transition

In 2023, nearly 95% of the Group's investments are made in line with its carbon neutrality trajectory (94% in 2022)[4].

The Group continues to regularly review its asset portfolio to proceed with disposal of non-strategic assets, where appropriate and if conditions are favourable. Considering the reduction in net financial debt observed for the fiscal year ended December 31, 2023, the Group no longer provides a quantified objective for its disposal plan.

(1) 33.9GW at the end of 2023 out of a total of 117.3GW in consolidated data.
(2) Operator of the electricity distribution network, managed independently of EDF.
(3) https://www.enedis.fr/nouvelle-france-electrique-horizon-2027-et-2032-enedis-publie-le-document-preliminaire-un-futur.
(4) See section 6.1, note 20.4 "Carbon-free investments" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023 and also see section 3.7.4 "European taxonomy".

1.3.2.1 Strategic priorities backed by 5 plans

The Group's priorities are backed by the following 5 plans and a strategic work programme[1], in line with EDF's *raison d'être* and business model:

LE PLAN SOLAIRE	Through **the Solar Plan**, which was launched in 2017, the EDF group aims to become the leader in photovoltaic solar power in France with 30% of new capacity built[2] between 2020 and 2035.
LE PLAN stockage électrique	Through **the Storage Plan,** launched in 2018, the EDF group plans to develop 10GW of new storage facilities worldwide by 2035, increasing the Group's storage capacity to 15GW by that time. The EDF group is aiming to develop a portfolio of 1 million off-grid kits by 2030. Storage is a key factor in stabilising network frequency, encouraging the inclusion of renewable energies, and managing microgrids in non-interconnected areas. It will be developed by using hydro pumped energy transfer stations and batteries.
LE PLAN MOBILITÉ ÉLECTRIQUE	With **the Electric Mobility Plan,** launched in October 2018, the EDF group aims to be a leader in the supply of electricity for electric vehicles in its four largest European markets (France, the United Kingdom, Italy and Belgium). At the end of 2023, nearly 340,000 charging points had been deployed. Lastly, for its own fleet of light vehicles, EDF is rolling out the EV100[3] programme and gradually converting its thermal vehicles to electric vehicles with a target of 100% by 2030.
LE PLAN excell	2023 was the year of the consolidation of **the excell plan** launched in spring 2020 to enable the French nuclear industry to restore the most stringent standards and the highest levels of quality and excellence to be at the forefront of major nuclear projects. In the new context of nuclear recovery, the challenge of this plan is to enable nuclear power, a low-carbon energy, to continue to fully play its role in the fight against global warming. In 2023, the 30 commitments of the excell plan were finalised and anchored in operational practices, thanks to the commitment of EDF and all companies in the French nuclear sector[4]. See also section 1.4.1.1.1 "The excell plan".
LE PLAN HYDROGÈNE	Through **the Hydrogen Plan**, launched in April 2022[5], EDF aims to secure a leading position in Europe in the generation of 100% low-carbon hydrogen, using low-carbon electricity from the grid, nuclear or renewable sources. EDF's ambition is to contribute to the decarbonisation of industry and heavy transport (including the maritime and aviation sectors *via* e-fuels).

1.3.2.2 Group transformation

Since its creation, the EDF group has consistently overcome the challenges it has faced. The climate emergency and the need to develop electricity for the decarbonisation of uses are a new key challenge for society and the Group. EDF plays a leading role in achieving a carbon neutrality objective by 2050. It must both implement a sustainable business model to finance its investments, attract necessary skills for the energy transition and both amplify and accelerate the transformation of its operating methods.

The Group can rely on solid assets: the robust and continuous commitment of its teams, serving the EDF's *raison d'être* and the general interest, recognised expertise in all business lines, and shared values of mutual aid and support for employees. The transformation initiatives undertaken in recent years have also generated real progress, particularly in terms of empowering teams and encouraging innovation.

To to go faster, and further, the Group is amplifying the transformation of its operating methods in several areas:

- collective efficiency to respond to the multiplication and acceleration of projects;
- cross-functionality between the Businesses to act together on the electricity system with a uniform vision;
- increased development of a customer-centric performance culture to respond to the new business model in which the Group will operate;
- adopting the most effective practices and standards to meet the challenge of recruiting people with key skills.

A co-construction process has begun within the Group, aiming to define the "mindset" that unites the teams to meet the challenges of tomorrow and be the generation that drives the transition. This mindset is based on three priorities, upon which all teams will be called to mobilise:

- EDF is a single team, collaborating enthusiastically in service of its customers;
- EDF is reinventing itself, leveraging diversity and learning from others;
- EDF meets the expected results, as it knows how to simplify, prioritise and make decisions at the appropriate level.

Without delay, several transformation projects have been launched as part of the development of a new company project, in line with this "mindset".

1. Operational excellence projects

Four operational excellence projects were launched in January 2023 to "build success for EDF" to further the industrial and human project. They support and integrate the plans already launched (excell, START 2025, *etc.*).

"Industrialise and accelerate digital technology" project: this project aims to propel the Group into a smooth and integrated operation, creating value, with a common language and tools, and more accessible and shared data.

"Metal time" project: this project aims to enhance operational performance, increase the attractiveness of business lines for better service to its customers, and to restore the Group's financial leeway to allow it to carry out the necessary investments.

"Skills" project: the objective of this project is to meet the considerable skills required by the energy transition and the Group's projects.

(1) The strategic work programme is broken down into around 20 projects, steered at the level of the Executive Committee.
(2) Market shares expressed in gross installed capacity.
(3) EV100 is a global initiative born in New York during Climate Week NYC in September 2017. It aims to bring together major groups committed to the development of electric mobility and its generalisation by 2030.
(4) See EDF's press release of 15 November 2022 "The excell plan presents its annual results and outlook for the sustainability of its standards".
(5) See EDF's press release of 13 April 2022 "The EDF group launches a new industrial plan to produce 100% low-carbon hydrogen".

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"Measuring and Managing Operational Performance" project: this project aims to strengthen the management and monitoring of the Group's performance by increasing operational efficiency in order to generate greater cash flow and ensure the Group's financial sustainability.

2. Changes in the organisation of the Nuclear business lines

The Group must address unprecedented challenges in nuclear projects. To meet new requirements and be at the forefront of investment projects in new reactors and the continued operation of the existing fleet, the transformation of nuclear activities would involve organising activities in a more industrial manner, in order to:

- strengthen and professionalise these business lines by pooling skills;
- increase and accelerate production rates;
- support standardisation and operational efficiency objectives;
- operate in a cross-functional manner for internal and external customers.

The project is currently being discussed as part of the Group's social dialogue process.

3. Transformation of the cross-functional sectors

Work has been undertaken with the 5 main sectors supporting business and operations (Human Resources, Communication, Digital Services, Finance and the General Secretary) by integrating more matrix-based operating principles.

1.4 Description of the Group's activities

1.4.1 Electricity generation activities

Against a backdrop in which there will be more electricity usages, the Group has one of the largest power generation fleets in the world, with some of the lowest CO_2 emissions, thanks to the share of nuclear and renewable energy in its energy mix. The Group aims to continue the development of renewable energies in France and around the world. It is also preparing for the nuclear generation of the future with the EPR and the development of SMRs (Small Modular Reactors).

467.6TWh	117.3GW	37.7GW	93%
electricity generation	worldwide consolidated installed capacity	net renewable capacity	low-carbon production*

** Direct carbon emissions related to generation, excluding life cycle analysis of means of generation and fuel.*

The assets of the generation fleet

The Group's generation fleet has significant strengths:

- a variety of means of generation, which enable adequate coverage of EDF's downstream portfolio needs (end users, sales to alternative suppliers, sales on the wholesale markets, etc.). The use of the different components of the assets is managed by placing the priority at any time on the resources offering the lowest variable costs;
- a standardised nuclear fleet of 56 reactors in France[1] and nine reactors in operation in the United Kingdom;
- the construction of EPR-type reactors worldwide;
- the control of the entire life cycle of nuclear generation resources: design, operation, and decommissioning;
- the implementation of actions aimed at improving the technical performance of power plants and extending operating lifespan;
- a fleet generating at 93% without CO_2 emissions[2] due to the predominance of nuclear and hydropower generation facilities;
- a geographical position at the junction of electricity exchanges between the continental platform and the electric peninsulas (Italy, Spain and the United Kingdom).

Composition and specifications of the EDF fleet in mainland France

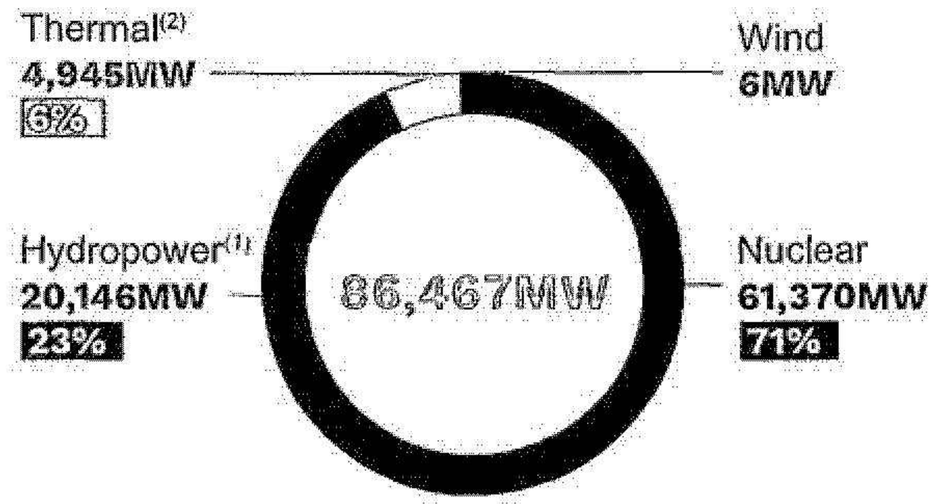
With a total installed capacity of 86.5GW in mainland France[3] at 31 December 2023, the EDF fleet produced 365.9TWh[4] in mainland France in 2023. At 31 December 2023, the capacity of EDF's generation fleet was mainly composed of:

- 56 nuclear units operating from pressurised water reactors (PWR). Their power generation capacity ranges from 900MW to 1,450MW, with an average age of 38 years. Also see section 1.4.1.1.2 "Nuclear power generation in France";
- 19 thermal units in operation. See section 1.4.1.2 "Thermal generation in mailand France";
- 425 hydropower plants, with an average age of 78 years[5]. See section 1.4.1.3.1 "Hydropower generation in France";
- other hydropower plants owned by the Group's subsidiaries: ÉS, SHEMA Group, CERGA and RKI (on the Rhine, owned 50%-50% with German energy company EnBW) and the Franco-Swiss entities of Chatelôt and Émosson.

(1) After the permanent shutdown of the two Fessenheim units.
(2) Direct carbon emissions related to generation, excluding life cycle analysis of generation plants and fuel.
(3) EDF excluding Corsica and French overseas departments.
(4) Including pumped storage hydropower.
(5) Arithmetic mean.

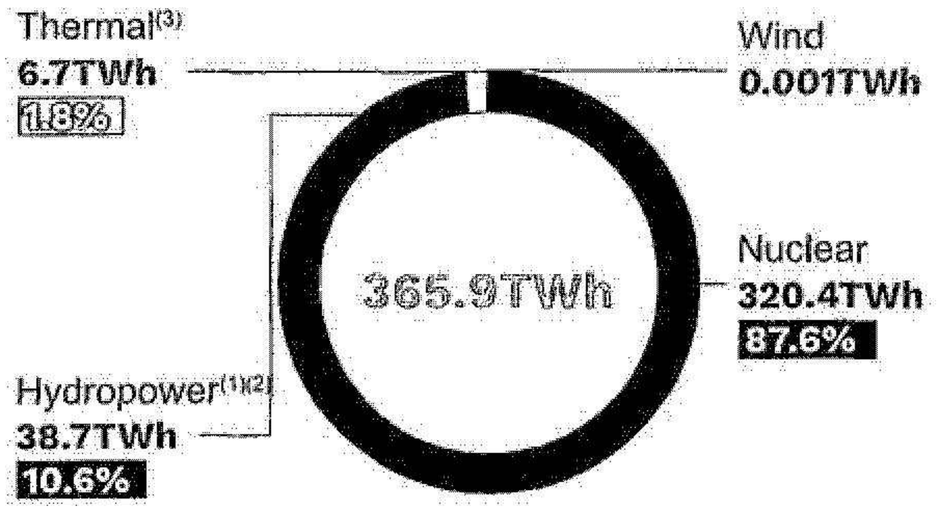
EDF installed capacity and output in mainland France – 2023

Installed capacity



Expressed in megawatts of maximum capacity linked to the network.
(1) Excluding Corsica and overseas departments, *i.e.* 439MW in 2023, including sea energy: 240MW.
(2) Excluding Corsica and overseas departments, *i.e.* 1,310MW in 2023.

Electricity output



(1) Excluding Corsica and overseas departments, *i.e.* 1.4TWh in 2023.
(2) Generation including pumped storage consumption.
(3) Excluding Corsica and overseas departments, *i.e.* 4.9TWh in 2023.
NB: figures are rounded.

1.4.1.1 Nuclear power generation

1.4.1.1.1 The excell plan

The "excell" plan, launched in the spring of 2020, aims at enabling the French nuclear industry to restore to a high standards of rigour, quality and excellence, so as to take on existing and future major projects in France, the United Kingdom, and elsewhere in the world. The excell plan also benefits the operating nuclear fleet programmes, especially *Grand Carénage* and related maintenance operations.

The commitments that were not fully finalised at the end of 2022 were finalised in 2023, which put an end to the deployment of actions under the excell plan. Committed momentum is now the rule for all nuclear players within EDF and the nuclear industry; this continues to bear fruit. Its impact on the results of nuclear projects is monitored in a quarterly dashboard which ambitious targets are all levers towards excellence. This dashboard also mentions the results achieved in the field of skills together with the annual analysis conducted by the GIFEN(1) as part of the MATCH(2) project and the partnership between EDF and its suppliers monitored by the nuclear sector barometer maintained by the GIFEN. All commitments are available at https://www.edf.fr/plan-excell(3).

An overview of the plan is available for 2023. The results obtained show progress in each of the five aspects of the plan reflects the results obtained:

Governance in nuclear projects

The primary milestones for nuclear projects have been identified. For each milestone, three key elements that determine whether the milestone has been achieved have been defined. The monitoring team in charge of large projects, composed of some high-level experts in the various skills, has been set up. It provides a head-up view of the project's progress and can also provide assistance to projects experiencing issues. At the same time, project management for the new EPR2 nuclear reactor programme was put in place (see also section 1.4.1.1.3.2).

Skills

The deployment of the GIFEN MATCH project now provides a comprehensive overview of recruitment and training needs in the various industrial sectors, which is updated annually, and a business-by-business analysis. This overview, which is based on activity forecasts of nuclear operators and data regarding the resources available to manufacturers in this sector, enables to determine actions to be rolled out in terms of attractiveness, training and recruitment.

The *Université des Métiers du Nucléaire*, founded in early 2021, oversees all actions intended to meet these needs in skilled, trained and experienced personnel. Bringing together national and regional players in this field, the *Université des Métiers du Nucléaire* is the real driver for skills improvement in the sector.

Manufacturing and assembly

Among the numerous actions that have been carried out, two major changes should be noted:

- a new strategy to monitor the manufacturing of products, so as to achieve convergence between, on the one hand, the smooth operation of the manufacturing cycle and, on the other hand, quality issues and associated regulatory requirements;
- a common practice in other industries: the development of qualifications for industrial processes, so as to re-secure product quality and reduce the need for monitoring.

Lastly, EDF decided to embark on ISO 19443 certification for its own entities concerned by nuclear safety issues, and for companies carrying out manufacturing or other activities involving such issues. 120 companies in the sector are ISO 19443 certified, with a further 80 companies in the process of obtaining certification.

Supplier relationships

The quality of the relationships between EDF and its suppliers is central to the success of work on the operating fleet and for new projects. In consultation with companies in the sector, the contractual provisions have been reviewed based on a strategy focused on shared success in future projects. An annual barometer gathers suppliers' perception data and makes it possible to assess progress and identify areas in which improvement is still necessary. The "suppliers platform" now makes it possible to have a cross-functional view of industrial issues and to develop a strategy that aims to streamline the suppliers' panel and implement end-to-end performance management for the main suppliers. Regular performance reviews and a supplier development approach to support manufacturers in their progress towards excellence are the main levers.

(1) GIFEN: French Nuclear Energy Industry Group.
(2) MATCH: project led by GIFEN for maintaining the load-resource balance within the nuclear sector.
(3) See also section 3.4.3.2.1 "The excell plan: being present in major nuclear power projects".

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Standardisation

Standardisation and replication are key words in the context of EDF's nuclear engineering ambitions today. The technical guidelines have been simplified and digitised so they can be directly integrated into the design tools. This continues today by making sure technical requirements are strictly based on needs. Mandatory use catalogues (*catalogues d'usage obligatoire*, defined as *CADO*) have been established to alleviate the heterogeneity of both equipment and suppliers. This major change increases the size of the series to be manufactured and promotes investment in process automation and skills, guaranteeing continuous quality improvement. Replication ensures both the use of tried and tested equipment and the reduction of risks.

In the field of welding, the *Haute École de formation soudage*, a recently created welding school based in Cherbourg (Hefaïs), keeps growing and will achieve its definitive structure in the first half of 2024. Accreditation of welders and the improved quality of controls and the planning of welding works were developed jointly by EDF and its industry contractors with a view to "welding right the first time". These practices have shown their effectiveness in "stress-corrosion cracking" correcting operations.

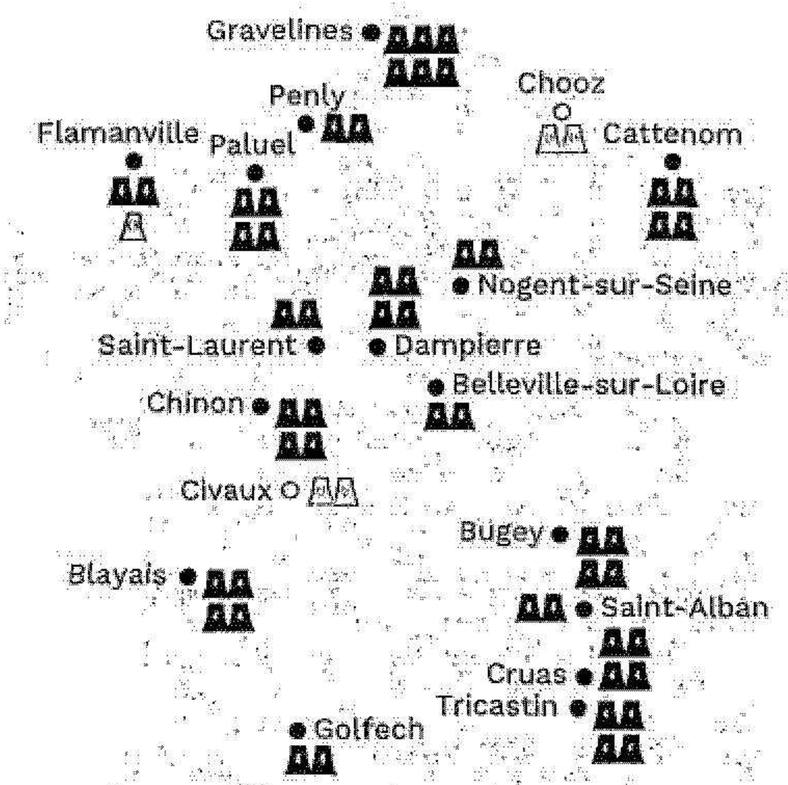
1.4.1.1.2 Nuclear power generation in France

The electricity generated by EDF in France from its fleet of nuclear power plants represented 87.6% of its total electricity generation in 2023[1].

1.4.1.1.2.1 EDF's nuclear fleet in France and its operation

EDF's PWR fleet in operation is divided into three series of available power generation capacity. The French nuclear fleet consists of 56 units in operation, located on 18 sites[2] owned by EDF. It represented a total authorised power of 61,370MW at 31 December 2023. With an average age of around 38 years old, it is within the average range of nuclear fleets installed worldwide.

Series	Number of units in operation	Total capacity	Average age
900MW	32	29,010MW	41
1,300MW	20	26,370MW	35
N4 – 1,450MW	4	5,990MW	23
TOTAL	**56**	**61,370MW**	**38**



(1) *Including pumped storage hydropower.*
(2) After the permanent shutdown in 2020 of the two 900MW Fessenheim units.

The commissioning and most recent 10-year inspection (VD) dates for these units **as of end-2023** *are as follows:*

Units	Year of industrial commissioning	Most recent 10-year inspection	Next 10-year inspection
Bugey 2	1979	2021	VD5
Bugey 3	1979	2013	VD4 in progress
Bugey 4	1979	2021	VD5
Bugey 5	1980	2021	VD5
Dampierre 1	1980	2021	VD5
Gravelines 1	1980	2021	VD5
Gravelines 2	1980	2013	VD4 in progress
Tricastin 1	1980	2019	VD5
Tricastin 2	1980	2021	VD5
Dampierre 2	1981	2022	VD5
Dampierre 3	1981	2013	VD4 in progress
Dampierre 4	1981	2014	VD4
Tricastin 3	1981	2022	VD5
Tricastin 4	1981	2014	VD4
Gravelines 3	1981	2022	VD5
Gravelines 4	1981	2014	VD4
Blayais 1	1981	2022	VD5
Blayais 2	1983	2013	VD4 in progress
Blayais 3	1983	2015	VD4
Blayais 4	1983	2015	VD4
Saint-Laurent 1	1983	2015	VD4
Saint-Laurent 2	1983	2023	VD5
Chinon B1	1984	2013	VD4 in progress
Cruas 1	1984	2015	VD4
Chinon B2	1984	2016	VD4
Cruas 2	1984	2018	VD4
Cruas 3	1984	2014	VD4
Gravelines 5	1985	2017	VD4
Gravelines 6	1985	2018	VD4
Cruas 4	1985	2016	VD4
Chinon B3	1987	2020	VD4
Chinon B4	1988	2020	VD4
Paluel 1	1985	2016	VD4
Paluel 2	1985	2018	VD4
Paluel 3	1986	2017	VD4
Paluel 4	1986	2019	VD4
Saint-Alban 1	1986	2017	VD4
Flamanville 1	1986	2018	VD4
Saint-Alban 2	1987	2018	VD4
Flamanville 2	1987	2020	VD4
Cattenom 1	1987	2016	VD4
Cattenom 2	1988	2018	VD4
Nogent 1	1988	2019	VD4
Belleville 1	1988	2021	VD4
Belleville 2	1989	2019	VD4
Nogent 2	1989	2020	VD4
Penly 1	1990	2021	VD4
Cattenom 3	1991	2021	VD4
Golfech 1	1991	2012	VD3 in progress
Cattenom 4	1992	2013	VD3
Penly 2	1992	2014	VD3
Golfech 2	1994	2014	VD3
Chooz B1	2000	2020	VD3
Chooz B2	2000	2019	VD3
Civaux 1	2002	2021	VD3
Civaux 2	2002	2022	VD3

At end-2023:

- **in the 900MW series**, 12 reactors out of 32 completed their fourth 10-year inspections (including Blayais 1 and Saint-Laurent B2 in 2023). Five VD4s are under construction (Blayais 2, Bugey 3, Chinon B1, Dampierre 3, Gravelines 2);
- **in the 1,300MW series**, 16 reactors out of 20 completed their third 10-year inspection (including Penly 1 in 2023). One VD3 is under construction (Golfech 1);
- ***in series N4***, *the four reactors have completed their second* 10-year inspections (including Civaux 1 and Civaux 2 in 2023).

Regulatory notice

Regulations applicable to Basic nuclear installation (BNI)

After completion of a procedure set out in the French Environmental Code, the construction of a basic nuclear installation (*Installation nucléaire de base*, INB) is authorised by a decree issued by the French Prime Minister after consulting the French Nuclear Safety Authority (*Autorité de sûreté nucléaire*, ASN) and on the basis of a report produced by the French Minister for Nuclear Safety. The authorisation to commission a BNI is issued by the ASN, also on completion of a procedure set out in the French Environmental Code. The general regulations applicable to basic nuclear installations give priority to the protection of public safety, health and sanitation and the protection of nature and the environment (known as "protected interests"). Law No. 2023-491 of 22 June 2023 amended certain provisions of the French Environmental Code in order to accelerate procedures related to the construction of new nuclear installations near existing nuclear sites and the operation of existing facilities.

In a letter dated 26 March 2024, the ASN reminded EDF of its expectations regarding the prevention and detection of counterfeiting, falsification, and fraud in the factories manufacturing equipment for nuclear power plants. This letter follows the hearing of EDF's CEO by the ASN board on 26 February 2024, and the submission by EDF on 19 March 2024, of a detailed action plan considered as an appropriate initial step[1].

(1) https://www.asn.fr/l-asn-informe/actualites/contrefacons-falsifications-et-suspicions-de-fraude-l-asn-rappelle-ses-exigences-a-edf

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Generation allocation contracts

In the 1970-80's, EDF developed an industrial cooperation with European operators in the nuclear field, in the form of generation allocation contracts backed by units of the EDF French nuclear fleet.

The principle of generation allocation contracts involves assigning a share of the capacity of the units in question to co-contracting parties in exchange for payment of the same share of the unit's overheads (construction costs, annual operating costs, decommissioning costs, local and specific nuclear taxes, *etc.*); these parties are sold the same share of the power generated by these units at the variable cost of the fuel (including upstream and downstream fuel costs) throughout their lifetime.

As at 31 December 2023, EDF has within its fleet 10 nuclear units participating in the contracts (up to 1GW) with the following European energy companies:

- Cattenom 1-2: EnBW (5%);
- Bugey 2-3: Électricité de Laufenbourg[1] (17.5%);
- Tricastin 1 to 4: Electrabel[2] (12.5%);
- Chooz B1-B2: Luminus, EDF subsidiary in Belgium (3.3%).

EDF has also entered into a second type of generation allocation contract for a fleet of power plants (totalling some 2GW). While the contract term and the contribution to overheads remain linked to clearly identified units within the fleet, the total amount of power sold at the variable cost of the fuel is determined by the availability of a broader baseline fleet of power plants, applied to the share of capacity assigned to the co-contracting parties for the units in question. These contracts mainly concern the following power plants:

- Chooz B1-B2 (initial series unit N4): Electrabel (21.7%);
- Cattenom 3-4: Électricité de Laufenbourg (7.8%) and the Swiss electricity group CNP (21.8%).

In these two types of contracts, the contracting parties advised EDF of the industrial risks during the development of the fleet. They accept the risks relating to the current operation of the power plants. On the other hand, they have no operational role.

Operation of the nuclear fleet

Nuclear energy is a means of production with a low variable cost, which is primarily related to fuel. It represents less than 30% of operating costs[3]. The main competitive levers of the nuclear fleet in its operating phase are thus the amount of generated energy and the optimisation of fixed operating and maintenance costs. The levers relating to the fuel cycle are described in section 1.4.1.1.2.3.

Generation cycle and planned outages

EDF must reconcile the challenges linked to the strong variations in seasonal consumption in France, due to its strong temperature sensitivity, and the availability of maintenance resources together with an efficient use of reactor fuel. Therefore, EDF has adopted 12 and 18 month generation cycles for its fleet, which broke down as follows at end-2023:

Series	Number of units	Generation cycle time
900MW	28	Approx. 12 months
900MW	4	
1,300MW	20	Approx. 18 months
1,450MW (N4)	4	

Reactor shutdowns occur at the end of these production cycles, making it possible to replace a fraction of the fuel loaded in the core and to perform maintenance work. Two types of planned outages are alternated at the end of each generation cycle:

- shutdown for simple refilling (ASR) for a standard duration of approximately 40 days. The main operation performed is the unloading of the spent fuel and the reloading of the new fuel. Some maintenance operations or periodic testing may also take place during this type of outage;
- the partial inspection (VP), with a normative duration[4] of around 85 days, dedicated to refuelling and maintenance.

The power plant is shut down every 10 years for a 10-year inspection[5] (VD). This lasts around 180 days[6] on average. Its duration varies according to the works and maintenance programme, as well as the series concerned.

The programme for a 10-year inspection includes the following:

- unloading of spent fuel and reloading of fresh fuel, as at each outage;
- hydropower test of the primary circuit, a leak test of the containment, and inspection work of the reactor's pressure vessel;
- modification work, associated with 10-year safety periodic review;
- other specific maintenance operations, in particular renovation or replacement of major components.

At the end of each 10-year inspection, it is up to ASN to give its approval to restart the reactor for the next cycle and to adopt a position on continued operation for another 10 years, at which time it may also issue technical recommendations.

Regulatory notice

Nuclear safety authority

The French Nuclear Safety Authority (*Autorité de sûreté nucléaire*, ASN) is an independent administrative authority which contributes to the control of nuclear safety, radiation protection in France, and informing the public about these matters.

Its activity is organised around the following missions:

- contributing to drawing up legislation, by issuing its opinion to the French government on draft decrees and ministerial orders, and making regulatory rulings of a technical nature;
- examining all individual authorisation applications for Basic nuclear installations -BNI- (*Installations nucléaires de base*). It grants authorisations except for major BNI authorisations, such as for construction and decommissioning;
- inspecting installations, which it carries out through regulatory scheduled and unannounced on-site inspections, in particular during regular compliance checks. These are mandatory for a power plant to continue operating;
- informing the public about the status of nuclear safety and radiation protection in France;
- in the event of an emergency, the ASN oversees the operations to secure the installation carried out by the operator. It informs the public of the situation and assists the Government. In particular, it provides the competent authorities with recommendations on the measures to be taken in respect of civil security.

(1) Axpo Group.
(2) Engie Group.
(3) Operational costs are defined as follows: fuel costs (including downstream expenses in the fuel cycle), operating expenses (purchases and external services, employee expenses) and maintenance costs (expenses and investments). They do not include investments related to construction or decommissioning expenses.
(4) Standard durations represent optimised and realistic benchmark durations by outage types. They take into account the feedback from past. The planned duration of shutdowns varies around these reference periods depending on the work programme to be carried out.
(5) Pursuant to Article 593-18 of the French Environment Code.
(6) "Normal" duration excluding special and/or extreme cases.

Operation of EDF's nuclear fleet

Owing to their low variable cost, nuclear generation facilities are primarily used as base-load generation. They are used just after run-of-river hydropower and other intermittent renewable energies, as well as energy purchased under purchase obligations from decentralised electricity producers. Variations in energy consumption over one year (summer-winter, day-night) and the currently restricted fluidity of wholesale markets due to limited interconnections on the borders lead nuclear energy to be used also for mid-merit generation. High variations in seasonal consumption in France and its major variation during winter months require that planned nuclear fleet outages be concentrated between April and October.

Generation in 2023

Nuclear generation reached 320.4TWh in 2023, up 41.4TWh from 2022 (279.0TWh). This increase is due to better availability of the nuclear fleet, mainly due to better control of the treatment of phenomenom of stress corrosion, as well as an improvement in the control of shutdowns for maintenance. Following the discovery of stress corrosion phenomenom at the end of 2021, several unexpected shutdowns and extended shutdowns for maintenance were necessary in 2022 to understand the issue and implement a treatment strategy. In 2023, stress corrosion treatment entered an industrial dimension: the improvement of control processes, as well as feedback from repair work, made it possible to optimise schedules and reduce reactor downtime.

It should be noted that the impact of a nationwide social movement against the pension reform in March and April 2023 delayed reactor maintenance and restart operations.

2023 technical performance

Despite the progress made, stress corrosion cracking continues to impact nuclear generation in 2023, although this has decreased from 2022, largely due to the industrialisation of the work.

Among the completed shutdowns, the following were on schedule or shorter than forecast:

- Nogent 2 (VP), Cattenom 2 (VP), Cattenom 1 (intermediate shutdown), Belleville 2 (intermediate shutdown) and Golfech 2 (ASR). Shutdowns for series 1,300 P'4, which included the preventive replacement of RIS cold branch lines as part of the stress corrosion treatment strategy and benefited from site optimisations resulting from feedback;
- Blayais 3 (ASR), Tricastin 2 (VP), Tricastin 1 (VP), not concerned by the stress corrosion file.

Notable in particular was the performance of Tricastin 1, VP pilot power plant for Lot B post-VD4 operations, completed 29 days ahead of its estimated duration.

Launched in 2021, the START 2025 transformation programme focused on regaining industrial control of unit shutdowns, continues to bear fruit: the extension of unit shutdowns was reduced by an average of 13.7 days compared to 2022. In particular, this involves controlling reactor shutdown and restart operations. For example, while the reactor unloading operation began on schedule for only 2% of outages in 2021, compliance with the schedule increased to 40% in 2022 and to 64% in 2023.

Among the reactors that experienced significant overruns of their projected duration (>50 days) are primarily the first reactors that were affected by stress corrosion: Civaux 1 (VD), Civaux 2 (VD), Chooz 1 (VP), Chooz 2 (VP), Cattenom 1 (VP), Flamanville (ASR-RGV), Golfech 1 (VD), Penly 1 (VP) and Penly 2 (VP). Facilities not contending with the stress corrosion issue: Blayais 1 (VD), Cruas 1 (VP), Gravelines 1 (VP) and Saint-Alban 1 (VP). These are shutdowns at sites with a particularly large industrial programme (Gravelines, Cruas) or that were impacted by major technical hazards and the social movement at the beginning of the year (Blayais, Cruas, Saint-Alban).

Nuclear generation expressed in annual energy is based on a generation rate for the French nuclear fleet as a whole. This is defined as the ratio of energy generated to the maximum theoretical energy (the energy generated if the installed capacity were operated year-round). This is also known as the load factor ("Kp"). This rate is obtained by multiplying two coefficients (Kp = Kd × Ku):

- the availability factor ("Kd") (available energy[1] in comparison to maximum theoretical energy. The latter concept corresponds to year-round operation of the installed capacity). The Kd depends on outage durations, and is therefore impacted by standard durations and the work programme to be performed;
- the utilisation factor, ("Ku") (energy generated compared to energy available). The Ku factor reflects environmental, regulatory and social constraints, supply of system services and optimisation carried out by EDF (fuel and modulation).

In 2023, the Kp factor reached 59.6%, up 7.7% from 2022 (51.9%). This results from a Kd of 67.3%, up 9.2% from 2022 (58.1%) and a Ku of 88.6%, down 0.7% from 2022 (89.6%).

Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors

Upon performing the scheduled controls during the 10-year inspection of the Civaux 1 reactor in late 2021, stress corrosion cracking was identified on parts of the pipework in the reactor's main primary circuit's auxiliary circuits. EDF immediately carried out inspections and expert appraisals of the four series of reactors making up the French nuclear fleet (900MW, 1,300MW-P4, 1,300MW-P'4 and N4).

The examinations performed in 2022 made it possible to define an initial characterisation of the stress corrosion sensitivity of the 56 reactors in the nuclear fleet: 40 reactors were identified as having little or no sensitivity to stress corrosion. These included 32 reactors from the 900MW series and 8 reactors from the 1,300MW-P4 series. 16 reactors were identified as being vulnerable or highly vulnerable to the phenomenon of stress corrosion: the 12 1,300MW-P'4 series reactors and the 4 N4 series reactors. By the end of 2023, the preventive replacement of pipe sections had been completed for 15 of the reactors sensitive to stress corrosion cracking. The industrial programme for the preventive replacement of pipe sections planned for reactors sensitive to stress corrosion will be completed in the first quarter of 2024.

In 2023, more than 350 non-destructive tests were scheduled to confirm the reactors' sensitivity diagnosis, and to characterise a risk inherent to the welds that were repaired during the initial assembly[2] regardless of the reactor's sensitivity. The planned checks were carried out in full and confirmed the reactors' sensitivity classification and the specific risk related to the repaired welds. The checks carried out on these units identified a few cases of suspected stress corrosion, which led to around 10 additional replacement projects in 2023.

In 2024, the reactor inspection programme will continue with a higher volume of checks than in 2023. As in 2023, this could involve a decision to perform some additional repairs. The inspections will be carried out during scheduled maintenance shutdowns; no additional or dedicated shutdowns are planned. By the end of 2025, most of the auxiliary lines inspection programme will have been completed, in accordance with initial forecasts. It will have been supplemented by checks on other lines (pressuriser expansion lines, main primary circuit, small-diameter lines).

The risks relating to the phenomenon of stress corrosion are described in section 2.2.1 under risk 1B "Failure to comply with the objectives in terms of operation and/or of extending the operating life of nuclear power plants (France and United Kingdom)".

(1) Available energy is equal to the maximum theoretical energy less generation losses due to technical reasons inherent to power plants, such as planned outages, unplanned outages due to failure or safety requirements, and performance of regulatory tests.
(2) See EDF prospectus of 17 March 2023 "Stress Corrosion".

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Irradiation department in support of the CEA

At the request of the French State, EDF is studying the creation of an irradiation department involving the two reactors at the Civaux nuclear power plant in support of the CEA (*Commissariat à l'énergie atomique* - Atomic Energy Commission), which wants to have redundant means to support its activities[1].

1.4.1.1.2.2 Environment, nuclear safety, radiation protection

The risks related to the environment, nuclear safety and radiation protection are described in section 2.2.2 under risk 2C "Nuclear safety violations during operations resulting in nuclear civil liability".

Environmental protection

EDF's environmental process was launched on a few sites in 2002. It was then extended to all nuclear generation units. It is based on an ISO 14001-certified environmental management system (EMS). See section 3.5.4.2 "Environmental management system". For a description of radioactive waste processing downstream of the fuel cycle as well as decommissioning, see section 1.4.1.1.2.3.

A constant nuclear safety procedure

EDF, in its capacity as a nuclear operator, takes responsibility for nuclear safety and, in a rapidly-changing context (market competition, environmental issues, European connection, etc.), EDF reaffirms as its absolute priority the protection of the human and environmental health, among other things, through the prevention of accidents and the limiting of their consequences as regards nuclear safety. The implementation of the French nuclear power programme led EDF to establish a safety procedure that:

- takes into account, from the design stage, the risks that might arise during the operation of the power plants, whether relating to the actual operation of the facilities or to internal or external attacks;
- is based both on the application of strict rules of operation, and on the cautious and inquiring attitude of the technical teams thanks to the establishment of a true safety culture;
- is based on the cumulative experience of a standardised fleet;
- incorporates and promotes a continuous improvement approach. In particular, it is embodied by the constant mission to reduce the number of automatic reactor trips;
- benefits from integrated nuclear engineering and R&D within the Group in order to anticipate the occurrence of failures, maintain the facilities in good working order, develop equipment on an ongoing basis, reassess safety margins and monitor technology advances, as well as the implementation of more effective new technologies and the management of sites being decommissioned;
- relies strongly on the development of skills. With this objective in mind, each nuclear generation site is equipped with a simulator used for training to cope with any type of situation.

Regulatory notice

Nuclear transparency

Articles L. 125-10 *et seq.* of the French Environment Code includes specific provisions on the right to information regarding the nuclear industry aimed at guaranteeing the public's right to reliable, accessible information. In particular, the operator of a Basic nuclear installation (BNI) is required to declare any accidents and incidents occurring as a result of the operation of the facility that could potentially be detrimental to the interests referred to in Article L. 593-1 of the French Environment Code, namely public health and safety and/or the protection of nature and the environment, and to do so speedily to the ASN and the competent administrative authority.

Other authorities also contribute to transparency for the nuclear industry. They include the High Committee for Transparency and Information on Nuclear Safety (*Haut comité pour la transparence et l'information sur la sécurité nucléaire*, HCTISN) as well as Local Information Committees (*Commissions locales d'information*, CLI) formed for any site housing one or more BNI.

The control system

Nuclear safety is subject to numerous controls, both internal and external. For each nuclear power plant[2], EDF now carries out overall excellence evaluations jointly with WANO peer reviews every four years[3]. These take place over a period of three weeks and involve some 40 inspectors. The General Inspector for Nuclear Safety and Radiation Protection is appointed and reports directly to the Chairman and Chief Executive Officer of EDF. He holds discussions with employees in the nuclear sector. The inspections make it possible each year to issue an opinion on the overall safety of the nuclear fleet and to propose initiatives for improvement to the Company's management. The related annual report is made public, and effects CNPE.

The efforts made by EDF have made it possible to reduce the average annual number of automatic reactor trips, dividing the total by four in twenty years. In 2023, there were 15 for the entire fleet.

- **In France**, safety is controlled by the ASN by means of:
  - > scheduled or unannounced inspections carried out by ASN: 451 took place in 2023 across all of EDF's nuclear facilities;
  - > a periodic (10-year) review process: this is intended to verify the compliance of the facility with regard to the rules applicable to it. It also aims to update the assessment of the risks or drawbacks of the facility with respect to the protected interests (safety, public health and sanitation, protection of nature and the environment). To achieve this, the state of the facilities, the experience gained during their operation, new developments in nuclear science, and rules applying to similar facilities (safety standards) are taken into account.

    At the close of the 10-year inspection, the operator sends the ASN a report containing the findings of the periodic review. In this report, the operator states its position regarding the compliance of its facility, as well as the modifications made in order to correct the discrepancies identified or improve the safety of the facility. ASN shares its analysis of the report with the minister responsible for nuclear safety and adopts a position on the continued operation of the reactor for another 10 years following the 10-year inspection. It may also set additional requirements for the operator[4]. The periodic review is an essential aspect of the continued operation of the power plants.

(1) See EDF's press release of 18 March 2024 "EDF responds to request of the French government to study the creation of an irradiation department to support the CEA".

(2) I.e. nuclear power plants.

(3) World Association of Nuclear Operators.

(4) See in section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation" the regulatory notice on ASN.

- **At the international level,** regular inspections are held on a regular basis. The evaluations allow experience built up worldwide to be pooled:
  - > the OSART (Operational Safety Analysis Review Team) visits by the IAEA[1] are carried out at the request of the French State (once per year). Their purpose is to formulate recommendations and share good practices. In 2023, the OSART inspection was carried out at Penly;
  - > international peer-review visits conducted by WANO are organised at the request of EDF. They involve the assessment of safety performance in relation to best international practices. In 2023, there were three of these as well as one Corporate Peer Review.

Whistleblowing system

In the event of an accident, a crisis plan is in place to limit impacts on the environment and people, and to ensure the safety of the facility. This crisis system is based on two closely coordinated plans, designed for both local and national use. These are:

- the Internal Emergency Plan for each nuclear site, developed by EDF;
- the Special Intervention Plan, prepared by French prefectures in collaboration with the French government and EDF.

In order to provide greater effectiveness, these plans in particular take into account external risks (flooding, *etc.*) and internal risks (fire, *etc.*). The relevance of the system for warning, informing and protecting people is regularly assessed through accident simulation exercises. Each year, approximately 100 exercises are organised for the entire French nuclear fleet, *i.e.* approximately one every three days. Approximately 10 of them are national in scope under the direction of ASN. They involve EDF as well as the public authorities, including the prefectures.

From its first analyses following the Fukushima accident in March 2011, EDF has enhanced its crisis management organisation. It has set up a national system capable of providing rapid material and human assistance to a site experiencing a serious issue. This system, known as the *Force d'action rapide nucléaire* (FARN), was involved in simulation exercises from the regional bases located in Civaux, Paluel, Dampierre and Bugey. It can be rolled out to a unit on any site experiencing an issue. The FARN is capable of a simultaneous response at six units on a single site.

Significant events regarding safety

The operational safety of nuclear facilities is taken into account as early as the design phase. It is regularly monitored with a staff mobilisation policy and major investment plans.

Discrepancies that are particularly important according to the criteria defined by the ASN are referred to as "specific events". The detection of significant events by nuclear operators plays a key role in the prevention of incidents and accidents. The regulations require all nuclear operators to declare significant events to the ASN for the protection of the interests mentioned in Article L. 593-1 of the French Environment Code. Each event is analysed by the plant's teams to determine whether it is significant, and the independent safety reviewer also provides an independent assessment.

Those concerning safety are referred to as "SSE". This declaration process is part of the ongoing drive to improve nuclear safety and radiation protection and transparency. Its aim is to enable the analysis of these events, so as to facilitate subsequent assessment of an incident or the risk of an incident, and to improve the practices of an establishment and/or of a sector of activity in the field of prevention.

All significant events must be declared to the ASN by the nuclear operators or transporters within a maximum period of 48 working hours. They include a proposed classification on the INES scale[2] (international scale with seven levels – from 1 to 7, depending on their significance; those that are not important from a nuclear safety point of view are classified at INES 0). The ASN retains final authority for the classification of events. The use of the INES scale enables the ASN to select those that are sufficiently serious to warrant a communication by it.

Since the establishment of a scale of this kind in France in 1987, no INES scale level 3 event (serious incident – very low external emission, and exposure of the public representing a fraction of regulatory limits) or above has occurred in the French nuclear fleet. In 2023, EDF declared 710 significant safety events (SSE) in France, comparted to the 683 SSE declared in 2022. No level 2 SSE on the INES scale (as in 2022) was declared.

Moreover, the Group's nuclear safety policy is an integral part of the training courses that the employees of EDF and of its service providers are required to take. After an initial training course of several months – up to 24 months for key positions (safety engineer, operator, *etc.*) – each employee must undergo mandatory retraining. Their frequency is annual, biannual or triennial, depending on the business lines and fields involved.

The 2023 detailed results on nuclear safety are published in the annual report created by the General Inspector for Nuclear Safety and are available on the Internet[3].

Radiation protection

Bringing together a range of stakeholders enables the impetus for improving radiation protection and dose levels to be maintained, for instance through training and exercises for employees, cleanliness of facilities, improved materials for trainers, optimised installation of lead screens, enhanced supervision, *etc.*

Thus, over the past decade, the average annual collective dose was 0.70 man sieverts per reactor, down 2% compared to the previous decade, while the average volume of hours worked increased by 35%. In 2023, the average collective dose was 0.72 man sieverts per reactor. The average individual dose (for employees of EDF and industrial partners) remains lower than 1mSv (0.93mSv). This is well below the statutory limit of 20mSv over 12 sliding months for the entire body.

EDF is proactively pursuing its ALARA ("As Low as Reasonably Achievable") policy to manage collective dose levels by continuing to reduce exposure to radiation by means of multiyear programmes to improve installations.

Regulatory notice

Regulations on radiation protection

In France, nuclear activities that present a risk of exposing persons to ionising radiation are regulated by two separate sets of rules, depending on the category of persons to be protected.

Regulations on the basic protection of the population against such radiation, which are governed by the French Public Health Code, are primarily based on all nuclear activities being subject to a declaration, registration or authorisation. Authorisations granted to establish a Basic nuclear installation serve as the authorisation required under the French Public Health Code. Article R. 1333-11 of the French Public Health Code sets the maximum exposure level of the general public at 1mSv per year.

French regulations on the protection of workers against the dangers of ionising radiation, which are governed by the French Labour Code, lay down various obligations for employers of workers who are likely to be exposed.

(1) International Atomic Energy Agency.
(2) International Nuclear Event Scale.
(3) For example, for the 2022 report: https://www.edf.fr/sites/groupe/files/2023-02/EDF_Rapport%20IGSNR_2022_FR.pdf.

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1.4.1.1.2.3 The issues relating to the nuclear activity

A – Nuclear fuel cycle and related issues

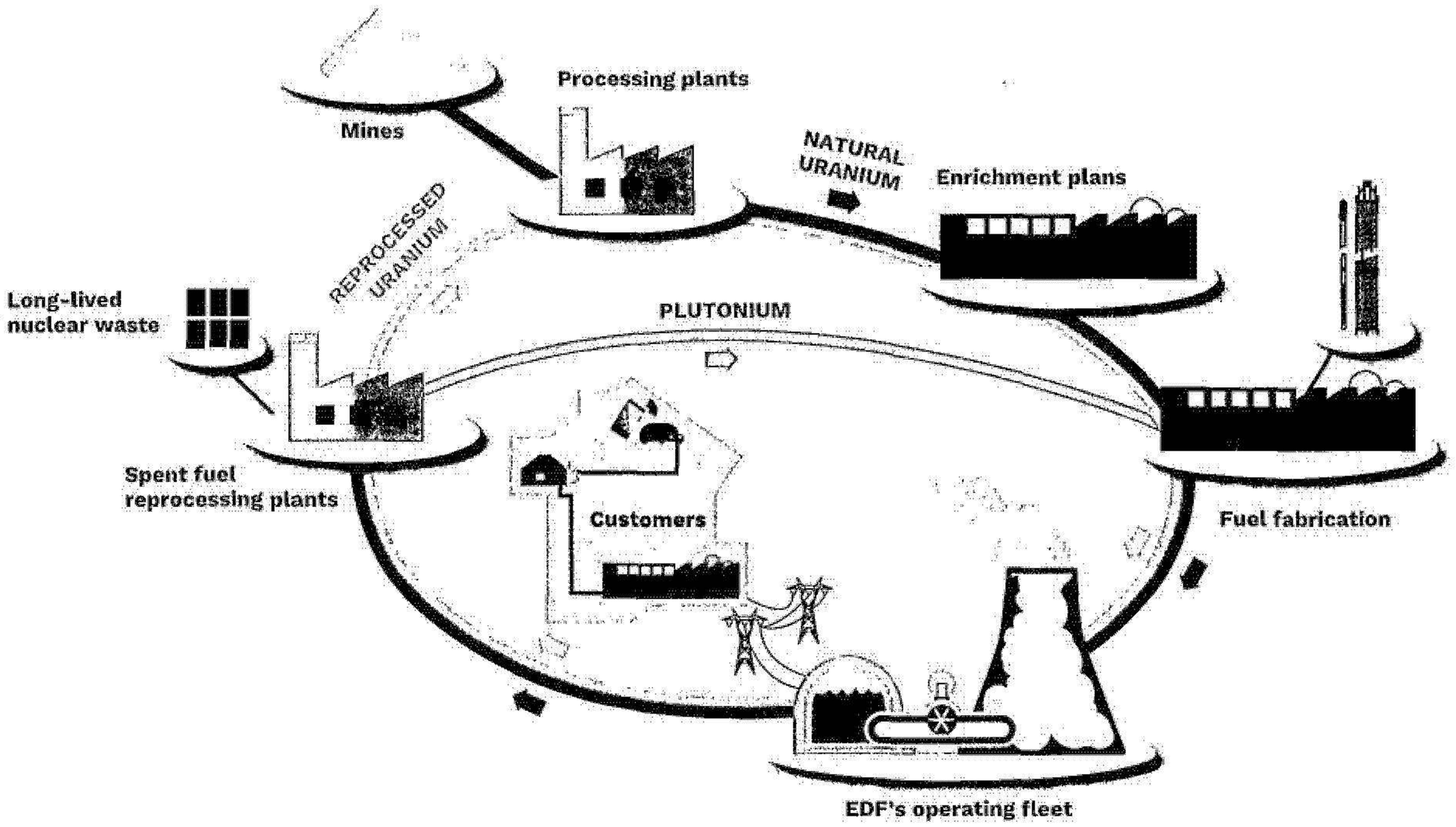
The risks related to nuclear fuel cycle are described in chapter 2 – Risk 5D "Control of the fuel cycle".

The nuclear fuel cycle encompasses all industrial operations in France and abroad which enable the supply of the fuel to generate energy in a reactor, then to unload and process it.

EDF coordinates the entirety of the operations in the cycle, which can be broken down into three stages:

- **upstream**, comprising the purchase by EDF of concentrates derived from uranium ore. Processing to make more sophisticated products, *i.e.* fluorination (or conversion), enrichment, and fuel assembly manufacturing, is entrusted to industrial players for this cycle on the basis of multiyear service contracts;
- **the core cycle** corresponds to the use of fuel in the reactor: receipt, loading, operation and unloading. The fuel stays four to five years in the reactor. EDF carries out these operations;
- **back-end (downstream)**, for the reactor fleet in France comprising interim pool storage, reprocessing of spent fuel, conditioning of radioactive waste and recycling of reusable materials, the intermediate storage of treated waste prior to storage.

EDF is the owner in most cases and is responsible for the fuel and materials it uses throughout all different stages of the cycle.



Upstream

To ensure the continuity and security of supply of its reactors in France and the United Kingdom, EDF retains overall control of all operations at each stage of the cycle, through a portfolio of contracts and by stockpiling at different stages of the front-end stage of the fuel cycle (natural uranium, fluorinated enriched or unenriched uranium, and warehousing of new assemblies). Orano is an important supplier of this stage of the cycle.

Natural uranium supply

EDF's uranium supplies are guaranteed by long-term contracts for a period of up to 20 years with a policy of diversification in terms of sources and suppliers. Indexation formulas for supply contracts include fixed prices (baseline prices that may be inflation-adjusted) and variable prices (indexed according to market price indexes). They are generally limited by floor and ceiling prices that attenuate the effects of variations in market prices on supply costs. Where necessary, the Group implements a strategy of currency hedging.

EDF is making sure to implement best practices in mineral extraction. Since 2011, EDF has periodically carried out mine audits based on a method developed with the WNA(1). See section 3.4.2.3.4 "Responsibility in the fuel supply chain".

Fluorination (or conversion)

EDF's needs are covered by Orano in France, as well as other international producers such as CamECO in Canada and Converdyn in the United States.

Enriching natural uranium into uranium 235

EDF meets its enrichment needs through global enrichers: Orano (France), Urenco (the United Kingdom, Germany, the Netherlands, the United States) and Tenex (Russia), primarily through fixed-price contracts.

Enriched reprocessed uranium

Since the 1990s, reprocessing has made it possible to recycle within the reactors uranium from processing spent fuel, which represents approximately 95% of the spent fuel mass. Reprocessing was suspended in 2013, pending the availability of a new industrial scheme. In 2018, the Board of Directors approved the restart of a robust, competitive and efficient sector. The corresponding contracts were signed with the respective suppliers in 2018. The first assembly load took place at the end of 2023, confirming that the industrial, regulatory and economic conditions were met.

(1) World Nuclear Association.

Operating the 1,300MWe series beyond 40 years will be accompanied by industrial changes allowing the loading of enriched reprocessed uranium fuel into the 1,300MWe reactors, thus ensuring that uranium from reprocessing is recycled over the long term.

Fuel assembly manufacturing

EDF has two sources of fuel assemblies: one is internal, *via* its Framatome subsidiary, while the other is external, the external supplier being Westinghouse.

Fuel supply of the two EDF reactors at Hinkley Point C (United Kingdom)

In September 2016, EDF, Orano and Framatome entered into an agreement providing for the supply of uranium, conversion and enrichment services, and assembly manufacturing for the fuel supply of the Hinkley Point C reactors.

Downstream

Risks related to downstream fuel cycle are described in section 2.2.2 risk 2A "Control of radioactive waste treatment and decommissioning of nuclear facilities, and ability to meet related commitments" and 2B "Control of the fuel cycle".

Regulatory notice

As the producer of the waste, EDF is responsible for what happens to its spent fuel and how it is processed and for the related waste, without any possibility of transfer of responsibility or limitation in time.

Orano is responsible for processing spent fuel.

ANDRA[1] is in charge of the management of the long-term storage of final radioactive waste, in accordance with the Article L. 542-12 of the French Environment Code.

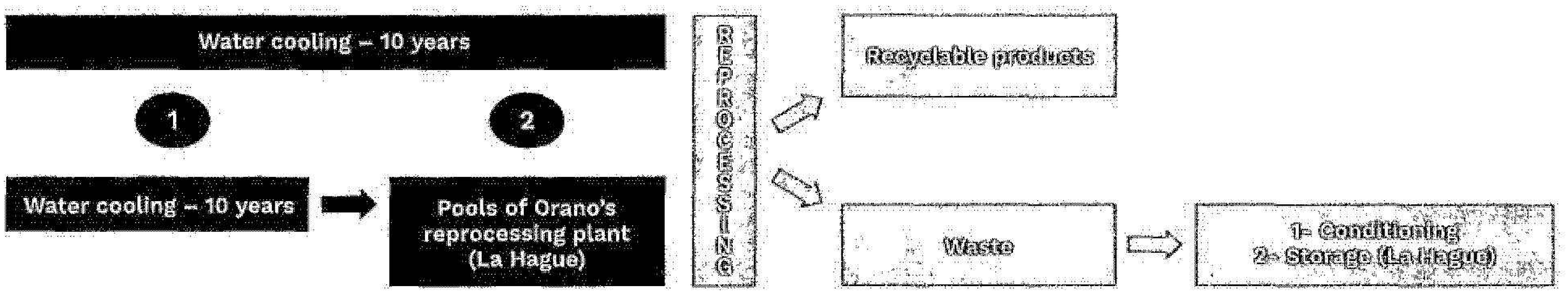
Management of radioactive and non-radioactive waste is governed by Articles L. 541.1 *et seq.* of the French Environment Code.

Processing of spent fuel from EDF's nuclear power stations

EDF's current strategy in this respect, in agreement with the French State, is to process spent fuel and wherever possible recycle substances: plutonium in the form of MOX fuel and reprocessed uranium (see "upstream").

Some 1,100 tonnes of spent fuel are processed every year. The quantities handled are determined by the amount of recycled plutonium in reactors allowed to load MOX fuel.

The spent fuel journey



EDF and Orano: a carefully managed partnership

Relations between EDF and Orano concern the shipment, processing, and recycling of spent fuel. The two companies have entered into a series of agreements:

- December 2008: a framework agreement covering the 2008-2040 period;
- February 2016: an implementation agreement covering the 2016-2023 period as well as the related supply contracts for the MOx assemblies;
- September 2023: an agreement listing the main principles (term sheet) for drafting the contract applicable to the 2024-2026 period. This contract is currently being finalized between EDF and Orano.

EDF Pool Project at La Hague

In anticipation of the storage needs of the nuclear generation fleet, EDF is working on the design of a large spent fuel storage pool. Its estimated operating duration is around one hundred years. It aims, in particular, to enable the long-term warehousing of spent MOX and ERU fuels from PWRs and the "Superphénix" fast neutron reactor assemblies stored in the APEC[2]. This storage is carried out pending multi-recycling in the third generation pressurised water reactors or recycling in "GEN IV" reactors.

The need for additional storage capacity and the relevance of an underwater storage solution were confirmed at the conclusion of the public debate organised by the CNDP[3] (from 17 April to 25 September 2019). The French Ministry for the Ecological and Solidarity Transition and the ASN published their conclusions on 21 February 2020. They focus on "*the continuation of work related to the implementation of new centralised wet storage capacities*". Following this public debate and the favourable opinion on the safety options dossier issued by the ASN on 23 July 2019, EDF now has the fundamentals required to pursue its project.

Between 18 November 2021 and 8 July 2022, EDF carried out a preliminary consultation associated with the project to set up this pool in La Hague within the scope of the Orano site. The report of the guarantors, published on 8 August 2022, noted "real, diversified and productive" citizen participation.

At the end, EDF indicated that it was continuing the project and set up a structured discussion and dialogue scheme with the region, under the aegis of guarantors appointed by the CNDP. In addition, EDF has already commenced studies of several practical measures designed to improve the way the project is integrated into the region.

The construction cost of the facility, estimated at €1.25 billion in late 2020, is included in the financial trajectory of the *Grand Carénage* programme.

Furthermore, to address the challenges in terms of storage capacity for spent fuel in the shorter term, Orano is developing a technique allowing it to increase occupancy in its existing pools at La Hague, at EDF's request. The safety options dossier for this project underwent an expert appraisal by the IRSN[4]. In an opinion issued on 28 May 2021, the IRSN deemed the chosen safety options to be appropriate.

In a further additional measure, Orano is studying the possibility of dry temporary storage of spent fuel. Specific provisions have been made for the dry storage and densification scenarios.

(1) ANDRA: National agency for radioactive waste.
(2) Spent fuel storage pool at the Creys-Malville power plant.
(3) Commission nationale du débat public, *i.e.* French national public debate committee.
(4) IRSN: Institut de radioprotection et de sûreté nucléaire (French Radiation Protection and Nuclear Safety Institute).

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Storing conditioned final radioactive waste

Radioactive waste, depending on its nature, level of radioactivity and the lifespan of its radionuclide components, has been classified into different categories: high-level waste (HLW), intermediate-level waste (ILW), low-level waste (LLW) and very low-level waste (VLLW). It is called long-lived (LL) when it remains active for more than 31 years.

High-level and long-lived intermediate-level waste

The processing of spent fuel enables the vitrification of high-level waste (HLW), ensuring very high quality conditioning in a small volume. All of the HLW waste conditioned in this way represents a volume of around 9,300m³ (the electricity usage of one million people for one year generates around 3m³ of HLW). They correspond to the operation of former power plants and to 50 years of operation for the current PWR fleet.

Long-lived intermediate-level waste (ILW-LL) waste includes:

- the structures of the assemblies (shells and nozzles, clad pieces, etc.) separated during the processing of spent fuel. They are currently compacted and conditioned in stainless steel containers;
- waste resulting from certain operating, maintenance and dismantling activities.

The total volume of ILW-LL is about 37,000m³. It includes waste from operations and from the decommissioning of shut-down power plants, including NUGG reactors and waste from the current PWR fleet. The calculation takes into account a PWR operating lifespan of 50 years and decommissioning operations.

This waste generates less heat than HLW and thus is suitable for storage sooner.

- **Cigéo: the project of the Geological Storage Industrial Centre *(Centre industriel de stockage géologique)***

Overview

The Cigéo project is the French deep geological storage facility project for ILW-LL and HLW radioactive waste produced by all French nuclear installations through to decommissioning, including waste from the processing of spent fuel used in nuclear power plants. The project is being led by France's National Agency for Radioactive Waste Management (*Agence nationale pour la gestion des déchets radioactifs*, ANDRA). The centre is to be located in the east of France at the border of the Meuse and Haute-Marne *départements*.

After 15 years of research, evaluation and public debate, the principle of deep geological storage was adopted by French Law No. 2006-739 of 28 June 2006 as amended on the sustainable management of radioactive materials and waste as a safe long-term solution to manage this type of waste without shifting the burden onto future generations. Cigéo will consist of surface facilities that will be used to receive and prepare waste packages as well as to excavate and build the necessary underground structures. The waste will be stored in underground facilities some 500 metres below ground in an impermeable argillaceous rock formation able to contain radioactivity over very long periods (several hundreds of thousands of years). Cigéo is designed to operate for at least 100 years and provides flexibility in order to give future generations a maximum number of possibilities to adapt it as needed.

Pending its storage in deep-level geological layers, HLW and ILW-LL waste from spent fuel processing is being stored on the Orano site in La Hague in dedicated specific facilities.

Key stages

ANDRA's reference schedule first calls for a pilot industrial phase. Delivery of the first waste is planned to commence between 2035 and 2040.

On 11 January 2018, the ASN considered that the Cigéo project had on the whole reached a satisfactory technological maturity at the safety options dossier stage. The detailed design review was organised at the request of the DGEC (French General Directorate for Energy & Climate) by a group of independent experts. At the end of 2020, it handed down a generally favourable opinion on the dossier presented by ANDRA. It made a certain number of recommendations for finalisation of the application for authorisation to create the centre. In particular, it called for closer involvement of EDF and Orano in the preparation of the application to be submitted.

The public enquiry regarding the declaration of public utility was held between 15 September and 23 October 2021. It resulted in a favourable opinion (along with five recommendations to the project manager) from the inquiry commissioners, made public on 20 December 2021. The findings of the commission noted that the public enquiry had "resulted in a large number of contributions from the public, most of them with extensive supporting arguments" and that Cigéo was "opportune, relevant, and robust".

Prior to the enquiry, a second expert appraisal of Cigéo's Social and Economic Evaluation by France's General Secretariat for Investment (*Secrétariat général pour l'investissement*, SGPI) had resulted in a favourable opinion "both for the overall project and its transportation aspect". It highlighted the fact that "the Cigéo project offers high prudential and insurance value with respect to environmental and health risks".

In an opinion issued on 13 January 2021, the French Environmental Authority emphasised the educational nature of the environmental evaluation. It made a series of recommendations, which ANDRA has taken into account in the public enquiry dossier.

At the same time, the "citizens' conference" on the subject of the pilot phase organised by ANDRA between May and July 2021 issued a "citizens' opinion". Two online public consultations were held on governance issues and the pilot phase from May to September.

French Decree No. 2022-993 of 7 July 2022 declared Cigéo to be in the public interest and compatible with the Pays Barrois (Meuse) area land use master plan, the Haute-Saulx (Meuse) local inter-municipality urban planning document, and the Gondrecourt-le-Château (Meuse) local urban planning document. French Decree No. 2022-992 of 7 July 2022 listed the Cigéo project as one of the major infrastructure projects in the public interest specified in Article R. 102-3 of the French Planning Code (*Code de l'urbanisme*).

The dossier requesting permission to create the project was filed on 16 December 2022 electronically and on 17 January 2023 in its official hardcopy version.

Following this filing, the examination of the DAC by the ASN and IRSN began. On 22 June 2023, the ASN declared that the application for authorisation to create Cigéo was acceptable. This step makes it possible to launch the technical examination of the file: Permanent Group 1 (PG1) is scheduled for April 2024, PG2 at the end of 2024 and PG3 in mid-2025, with an ASN opinion expected in September 2025.

Special case of the treatment of bituminous waste

During its examination of the safety options dossier, the ASN requested that solutions for bituminous waste other than storage in their existing state at Cigéo be studied. In September 2018, a group of experts was appointed by the DGEC to draw up a report on current bituminous waste management practices. In September 2019, it concluded that alternative handling options (storage or neutralisation) were in theory feasible. However, it also emphasised the importance of continuing this research in order to identify the most appropriate option. A four-party research programme between producers and ANDRA is in progress on this issue.

Cigéo taxation

As regards the tax status of Cigéo, Article 127 of France's 2021 Finance Law has made a change to the taxation regime for BNI under Article 43 of the 2000 Finance Law. In particular, it provides for a change in the method of calculation of the tax on the storage of long-lived medium- and high-level waste. However, the provisions for applying these principles and their potential impact on the level of taxation of the installation have yet to be clarified.

Costing of Cigéo

Cigéo's current reference costing is specified in the Decree of 15 January 2016. An update of this reference costing is planned for 2025.

- **ICEDA: the Activated waste packaging and interim storage facility (*Installation de conditionnement et d'entreposage de déchets activés*)**

ICEDA, located at Bugey, is a facility dedicated to the processing and intermediate storage of ILW-LL from the operation (excluding fuel handling) and decommissioning of power plants. The facility was commissioned in 2020.

In addition, the ASN decision of 18 December 2023 approved and supervised the continuation of the conditioning of long-lived intermediate-level waste (ILW-LL) in C1PG^{SP} packages at ICEDA.

Long-lived low-level waste

Long-lived low-level waste (LLW-LL) comes from the deconstruction of legacy NUGG reactors (graphite bricks that made up the core of these reactors and their fuel assemblies). In July 2015, ANDRA submitted a report on the feasibility of a storage facility on a site in the Soulaines region (Aube) in France to ASN for review. Work is ongoing, as part of the PNGMDR plan[1] to identify the waste that could be taken on.

Opinion No. 2020-AV-0357 issued by the ASN on 6 August 2020 as well as the fifth PNGMDR[2] set ANDRA the target date of 2023 for the production of a dossier presenting the safety and technical options adopted for the storage of LLW-LL at Vanendeuvre-Soulaines. This dossier is currently being finalised by ANDRA and will be sent to the ASN in early 2024.

In addition, the studies carried out by EDF to more precisely assess the radiological inventory of this waste have demonstrated significant gains which make it possible to consider storing graphite from the first decommissioned reactor (Chinon A2) in the existing surface level facility (CSA) without waiting for the construction of the new LLW-LL storage facility announced for no earlier than 2045.

The scenario currently modelled in the provisioning for the first graphite piles from Chinon A2 extracted from the reactor in around 2044 is for them to be stored at CSA. The risks inherent in the construction of an intermediate storage facility at Chinon for this graphite were however taken into account, as were the risks entailed in the scenario of direct storage of Chinon A2 graphite in an LLW-LL repository.

For other reactors, the plans envisaged cover direct storage of graphite in an LLW-LL repository.

Short-lived low- and intermediate-level waste and very-low-level waste

Short-lived low- and intermediate-level waste (LILW-SL) and very low-level waste (VLLW) come from:

- the operation of nuclear facilities: gloves, filters, resins, *etc.*;
- and their decommissioning: concrete, scrap, lagging, piping, *etc.*

They are stored above ground in the Soulaines and Morvilliers storage facilities run by ANDRA in the Aube *département*. In order to minimise volumes, some waste is treated beforehand by melting or incineration at the Centraco plant owned by Cyclife France (part of Cyclife SAS, a subsidiary of EDF).

Following the PNGMDR public debate and in line with the joint ruling by the Ministry of Ecological Transition and the ASN (the contracting authorities for the PNGMDR) legislation allowing the reuse of metal VLLW from decommissioning in France was published on 14 February 2022. This anticipated change in legislation has allowed development of the Technocentre project, a facility dedicated to the reuse of these metals, to go ahead.

The roadmap setting out the objectives and timetable for the "Technocentre" project and requested by the National Plan for Managing Radioactive Matter and Waste was sent to the DGEC on 22 February 2023. It provides the context and guidelines for the project.

Creation and development of Cyclife

In 2016, following the acquisition of the English and Swedish assets of Studsvik, the holding company "Cyclife" was created. The goal is:

- to group together all recently acquired assets;
- to establish the development of the Group's internal and external activities in terms of waste treatment and decommissioning.

In 2018, Cyclife SAS acquired an 84.6% stake in Cyclife Digital Solutions, which specialises in tools and digital simulation used for decommissioning, and waste management. On 22 December 2021, Cyclife SAS signed a contract to acquire the Aquila engineering company in the United Kingdom. This new acquisition aims at strengthening Cyclife's position in the United Kingdom in the nuclear engineering sector.

In 2019, the subsidiaries Cyclife Engineering and Graphitech[3] were created to develop solutions for decommissioning light water reactors and designing waste treatment facilities (Cyclife Engineering), and for decommissioning graphite reactors (Graphitech).

Cyclife Germany was set up in December 2021 to provide a direct presence on one of the largest markets in Europe, in order to strengthen the positioning of Cyclife on waste processing and facilitate its development in the field of decommissioning.

In February 2022, EDF set up a new subsidiary operating in the field of nuclear waste management. The objective of this subsidiary, Waste2Glass, in which Cyclife SAS and Veolia Nuclear Solutions each hold a 50% interest, is to develop new nuclear waste management sectors using vitrification based on the Geomelt and MVS processes owned by Veolia, by conducting technical and economic feasibility studies for identified nuclear waste channels.

On 31 March 2022, Cyclife SAS pursued its expansion by buying the French company Quadrica, a specialist in the development of digital tools.

In January 2024, the companies Cyclife Digital Solutions and Quadrica merged for greater visibility and continued development of digital solutions.

In early January 2024, a new subsidiary to meet the needs of the Japanese market, Cyclife Japan, was created.

Thus, the Group continues to grow and develop. Cyclife meets the needs of EDF projects while also offering decommissioning and waste management services on the European and Japanese markets.

Innovation

EDF also conducts both its own R&D activities and R&D with a network of partners (nuclear operators, manufacturers, VSBs and SMEs, institutional and academic players), on the themes of the management of radioactive waste and decommissioning. Recognised as a major player in these areas, EDF is actively participating in four European projects, aiming to:

- improve the performance of waste management and decommissioning projects;
- develop its expertise;
- contribute to the development and implementation of the best international practices.

Consideration of future charges relating to the management of spent fuel and long-term management of radioactive waste

Each year, EDF makes provisions for the downstream side of the nuclear fuel cycle in France[4].

(1) *Plan national de gestion des matières et des déchets radioactifs* (National plan for the management of radioactive materials and radioactive waste).
(2) Publication of French Decree No. 2022-1547 and the implementation order in the Official Journal of the French Republic dated 10 December 2022.
(3) Owned jointly by EDF and Veolia.
(4) See section 6.1, note 15 "Provisions related to nuclear generation and dedicated assets" in the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.

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B – The issues at stake in preparing for the future of the nuclear fleet in France

The French Environmental Code does not specify any maximum duration of operation. However, it requires the status of facilities to be assessed every 10 years in view of applicable regulations, and an update of the assessment of the risks and drawbacks of the facility with respect to protected interests. To achieve this, the state of the facilities, the experience gained during their operation, new developments in nuclear science, and safety rules applying to similar facilities are taken into account.

EDF's industrial strategy is to continue operation of the fleet for beyond 40 years, in optimum conditions as regards safety and efficiency, given the significant investment made during the fourth 10-year inspections, as well as for post-Fukushima improvements and French energy needs. The President of the Republic also announced, during his speech on 10 February 2022 in Belfort, that he wanted *"to extend all reactors that can be extended"* and *"no nuclear reactor in a state of production to be closed in the future (...), except for reasons of safety."* He specified that he had asked EDF to *"study the conditions for extension beyond 50 years"*, paving the way for the continued operation of nuclear reactors beyond 50 years.

EDF's industrial goal for the preparation for the future of the nuclear fleet rests primarily on the three time horizons: up to 50 years, from 50 to 60 years and beyond 60 years.

Up to 50 years old

Implementation of the fourth periodic review of the 900 and 1,300MW series, including large-scale modifications to the facilities and bringing major improvements in terms of safety. For the 1,450MW series, the procedures for the 30-year milestone are based on the same improvement objectives as the 40-year milestone for the other two series.

900MWe series

In the first half of 2016, all the technical, economic and governance conditions necessary to match the amortisation period of the 900MWe power plants in the French nuclear fleet with the Group's industrial strategy were met. On 28 July 2016, the EDF Board of Directors approved the extension of the accounting amortisation periods of 900MWe series power plants in France (excluding Fessenheim) from 40 to 50 years old from 1 January 2016 onwards, without prejudice to the ASN's position on the measures suggested by EDF for each of the nuclear units in question.

On 23 February 2021, the ASN ruled on the terms for continuing to operate 900MW reactors beyond their fourth scheduled inspection and established the associated recommendations. The ASN *"deems that the measures put forward by EDF, coupled with its own recommendations, open up the way for the continued operation of 900MW reactors for 10 years after their fourth regular re-examination"*.

On 10 August 2023, the ASN adopted a position on the extension of the operation of Tricastin 1 beyond 40 years old at the end of its fourth safety review (until the fifth 10-year inspection [VD5] scheduled for 2029).

In addition, following a request from EDF to postpone the deadlines for some of the requirements defined in the aforementioned decision of 23 February 2021, ASN took a new decision on 19 December 2023 amending the requirements that it had previously adopted.

The rollout of changes to the first phase of works during the fourth 10-year inspections (VD4) is continuing on schedule, thanks to the lessons learned from the first VD4 inspections (as of the end of 2023, VD4 inspections had been completed on 12 reactors, with five more underway). The changes to the second phase of works were successfully settled during the initial series unit in the partial inspection of Tricastin in 2023. The results of these VD4s are satisfactory. They show a strong capacity for industrialising operations, as well as for involving the industrial fabric necessary for the success of this project.

1,300MWe series

Examination with the ASN of the generic phase of the fourth 10-year inspections of the 1,300MWe series began in 2021 and is continuing. The initial series unit (TTS) is planned for the No. 1 reactor at Paluel in 2026.

A public consultation, organised by the High Committee for Transparency and Information on Nuclear Safety, will be initiated for the generic phase of the periodic review of the 1,300MWe nuclear power reactors between 18 January and 30 June 2024.

Furthermore, on 28 July 2021, the Board of Directors approved extending the depreciation period of the 1,300MWe PWR power plants from 40 years to 50 years in the consolidated financial statements. This accounting estimate does not anticipate the French Nuclear Safety Authority's positions concerning continued operations, which will be provided reactor by reactor after each 10-year inspection, as provided for by law.

1,450MWe series

Examination with the ASN of procedures for the 30-year milestone of the 1,450MWe series, and inspection of the first reactor is expected for 2029. The accounting period for the 1,450MW series currently remains at 40 years. Nevertheless, the subsequent extension of the depreciation period of these series remains an industrial objective for the Group.

50-60 years old

Launch at the end of 2022 of the studies from the fifth periodic review of the 900MWe series (TTS in 2029) including:

- the major challenge of adapting to climate change;
- an in-depth review of the compliance of the facilities and the potential impacts of aging.

On 13 June 2023, the ASN issued its opinion on the prospects for the continued operation of EDF's electronuclear reactors for up to 60 years.

Over 60 years old

A "long-term" review of operations beyond 60 years was initiated in 2023. It is part of the timetable set by the ASN, which will take a position at the end of 2026 after an expertise and instruction phase in 2025 and 2026, respectively.

The work is focused on aging issues. It also covers the identification of R&D and scientific and methodological development needs. It is also fuelled by intense international discussions with EDF's counterparts, as well as with centres of expertise making recommendations.

Investment programme for the existing nuclear fleet in France: *Grand Carénage* programme

On 22 January 2015, EDF's Board of Directors approved in principle a major overhaul programme (the *Grand Carénage* programme) aimed at refurbishing large equipment, enhancing reactor safety and, if conditions allow, continuing their operation beyond a 40-year lifespan. This programme incorporates additional safety improvements identified following the Fukushima accident.

This industrial programme is being gradually implemented in compliance with:

- the objectives of the French Energy transition for green growth Act;
- the multi-year energy programmes (PPE);
- the opinions and orders of the ASN; and
- specific procedures for reactors to run for more than 40 years.

On 31 March 2022, the EDF Board of Directors duly recorded the completion, on 31 December 2021, of the first phase of the *Grand Carénage* programme and approved the principle of its continuation, with a new roadmap for 2022-2028 incorporating feedback from the examinations underway with the ASN, in particular for VD4 900 and 1,300 inspections and the launch of the Studies phase for the VD5 900 inspections.

Cost of the programme

At the launch of Phase 2 of the *Grand Carénage* programme, investments for 2022-2028 were valued at €33 billion in current euros, *i.e.* €31.2 billion in 2021 euros. In 2023, the total amount of investments came to €4.4 billion.

In addition, works relating to stress corrosion have entailed investment expenditure of an estimated €1.2 billion in current euros (€1.1 billion euros in 2021 euros) between 2022 and 2025.

Industrial work will continue beyond 2028. Capital expenditure will remain high beyond this date.

C - Issues related to decommissioning of nuclear power plants

In its capacity as operator, EDF takes full regulatory, financial, and technical responsibility for the decommissioning of its plants and the other nuclear installations it operates[1]. EDF therefore ensures that it controls the entire life cycle of nuclear power generation resources.

Regulatory notice

Regulations applicable to the decommissioning of nuclear installations

The decommissioning of a BNI is ordered by a decree, issued after an opinion by the ASN and completion of a public enquiry. This decree determines the characteristics of the decommissioning, the timeframe for its completion, and where applicable, the operations incumbent upon the operator after decommissioning.

The reference scenario adopted by EDF since 2001 is for decommissioning without a waiting period, consistent with French regulations, which provide for decommissioning "in as short a time as possible" after final shutdown on acceptable economic terms and in line with the principles set out in accordance with the legal provisions in force.

The regulatory process for decommissioning involves the following:

- a final shutdown declaration at least two years before the planned shutdown date, which describes the preparatory decommissioning operations planned;
- a decommissioning request filed within two years from the final shutdown declaration, which after investigation by the authorities and a public inquiry, will result in a decree ordering the decommissioning of the facility;
- key progress reviews with the ASN, included in safety standards relative to decommissioning;
- finally, once the work and final shutdown have been completed, the declassification of the facility to remove it from the legal regime governing basic nuclear facilities.

To date, 11 reactors using four different technologies have been permanently shut down:

- three pressurised water reactors (PWR): one at Chooz A and two at Fessenheim;
- the heavy water reactor (HWR) at Brennilis;
- the Superphénix fast neutron reactor (FNR);
- the six Natural Uranium Graphite Gas (NUGG) reactors at Bugey, Saint-Laurent and Chinon.

The sites remain the property of EDF, and they will remain under its responsibility and monitoring. Given its role as responsible operator, EDF will act as the contracting authority for the decommissioning.

EDF plans a period of approximately 15 years for the decommissioning of Pressurised Water Reactors.

The decommissioning of EDF's historic nine first-generation reactors in final shutdown will produce approximately one million tonnes of primary waste materials, of which 80% is standard waste material and none is High-Level Waste. The remaining 20% corresponds to ILW or VLLW. 8% of this is long-life waste.

The decommissioning of the two Fessenheim reactors will produce 380,000 tonnes of waste, 95% of which will be non-radioactive waste.

The existing means of removal of short-lived VLLW and LILW have been supplemented by the Activated waste packaging and interim storage facility (ICEDA) for the conditioning and storage of activated waste from operations and decommissioning (ILW-LL)[2].

The system for handling waste from decommissioning has yet to be completed through the installation of the LLW-LL waste storage facility. See section 1.4.1.1.2.3 - A "Nuclear fuel cycle and related issues" for the paragraph on LLW-LL waste. Moreover, the new dismantling schedule of the NUGG power plants provides for the construction of a storage facility for the LLW-LL liners[3] of the silos at Saint-Laurent, pending the availability of a definitive disposal route (first removal of graphite in 2044).

Chooz A

Chooz A is a pressurised water reactor using a technology similar to the 56 units in operation. It was commissioned in 1967 and operated until 1991. The reactor location, in a rocky cave in a hillside, means that access conditions and entry and exit of materials and effluent management are more difficult than those of the rest of the existing PWR fleet.

The work begun in 2017 to complete the underwater decommissioning of the Chooz A reactor vessel and its internal components experienced difficulties until 2022. The health crisis had a serious impact on the work site, in particular due to the halting of filtration resulting in the formation of organic matter, leading to high turbidity levels in the water. In addition, the frequent unavailability of the handling bridge, which will be necessary to lift the reactor vessel and remove it from its concrete well, had led to the decision to completely renovate this bridge to address obsolescence issues and ensure that its quality would be suitable to the mass of the reactor vessel.

Significant progress on the project took place in 2023:

- the emptying of the pool after cutting the internal structures was completed at the end of June, paving the way for cutting the primary pipes before lifting the tank, the preparatory work for which is underway;
- the contract for the renovation of the reactor cave maintenance platform (renovation to be carried out upstream of the lifting of the reactor vessel) was signed and work began in the fourth quarter of 2023.

Nevertheless, due to the various hazards (slower-than-expected cutting rates, presence of organic material and radioactive hot spots after emptying, *etc.*) that the project has suffered, decommissioning of the reactor vessel is set to be completed in 2026. There is still a risk of a further deferral of one year.

Furthermore, a partnership agreement between EDF and CNRS on a project to reuse the caverns for research on neutrinos once the installations have been decommissioned was signed on 7 September 2022, in order to make the most of the particular configuration of the facility.

Fessenheim

Reactors 1 and 2 at the power plant were permanently shut down on 22 February 2020 and 30 June 2020, respectively. At the end of 2020, the "PREDEM Fessenheim" project was rolled out to coordinate all the end-of-operation procedures (draining of circuits, evacuation of bore, permanent locking-out and removal of certain equipment and support functions, removal of fuel, decontamination of primary circuits, *etc.*).

(1) BCOT (*Base chaude opérationnelle du Tricastin*), Saint-Laurent silos, ICEDA, etc.
(2) See "ICEDA" paragraph in section 1.4.1.1.2.3.
(3) The "graphite liners" come from the operation of the former French natural uranium graphite gas (NUGG) reactors. These are hollow cylindrical graphite envelopes that surround the fuel.

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On 1 September 2023, the operation of the Fessenheim site was transferred from the DPN - *Division Production Nucléaire* (Nuclear Generation Division) to the DP2D - *Direction Projets Déconstruction et Déchets* (Waste Deconstruction Projects Department).

The entire spent fuel was removed from the site and sent to La Hague in the space of just over two years, a highly satisfactory performance. As a result, 99.9% of the radioactivity has been removed from the site and the first industrial evacuation of activated operating waste to ICEDA took place. Work to carry out Full System Decontamination (FSD) was performed on two reactors. It was completed in June 2023.

Treatment of the upper parts of the used steam generators (SG) resulting from their replacement during the operation of units 1 & 2 in Sweden has been completed and a multilateral agreement has been signed with the safety authorities in the countries that the lower component transport will be crossing in its journey to Sweden (France, Belgium, Germany, the Netherlands and Sweden). The electromechanical dismantling of part of the engine room, with a view to reconfiguring it into a radioactive waste decoupling and transit facility, is underway and will continue until the end of the first quarter of 2024.

As of the end of 2023, the trajectory for decommissioning preparation activities was in line with the provisional schedule.

The decommissioning dossier was filed with the Minister of Ecological and Solidarity Transition and the ASN in December 2020. Obtaining the decree will mark the start of the decommissioning phase.

IRSN issued its opinion on 31 May 2023. Its report does not highlight any differences in technique or approach in the safety demonstration or in the impact study. On the basis of EDF's commitments and the IRSN report, the Permanent Group (PG) which met on 22 June noted only one recommendation: "the PG recommends that EDF present, upstream of operations to decommission reactor vessels and their internal components, a file justifying the technical and organisational design and operating measures adopted to control the risks of release of radioactive substances and exposure of workers to ionising radiation associated with these operations". The Environmental Authority issued its opinion on 21 December 2023, highlighting that the file was "*very well constructed and proportionate to the challenges*".

The current schedule foresees the Decree allowing Fessenheim facility decommissioning to be issued in mid-2025, with operations beginning in early 2026 following agreement from the ASN regarding the general rules of operation applicable to decommissioning.

In addition, Decree No. 2021-1785 of 24 December 2021 authorised the collection of water from and discharge into the Grand Canal in Alsace for the cooling of various auxiliary circuits at Fessenheim.

Brennilis

Since 2000, EDF has been fully responsible for the decommissioning of this facility in place of the CEA[1]. The completion of the decommissioning included within the Decree authorising partial dismantling[2] was finalised by mid-2018. This includes the safety concrete for the effluent processing station demolished, and the spoil removed in accordance with the Land Management Plan. Following the final checks, the ASN confirmed in June 2022 that the soil remediation targets in this area had been achieved. In April 2023, the ASN also authorised the stop of the drawdown of the water table, which made it possible to start the operations related to the filling of the area.

On 26 September 2023, the Brennilis plant obtained its "complete decommissioning"[3] decree. EDF is now preparing to implement the new general operating rules associated with this decree in order to start the decommissioning of the reactor, scheduled to begin in the second quarter of 2024.

Creys-Malville

In 2022, the plugs ensuring the containment of the reactor vessel were removed (they have since been cut in a dedicated workshop) and replaced by the "rotating confinement structure" (*structure de confinement tournante*, SCOT) from which the in-water cutting of the internal components of the reactor vessel will be carried out from 2024 to 2027.

Commissioning of the robotic workshop is scheduled for early 2024 and will follow the completion of the internal cutting tool tests carried out in 2023. The development of the devices and PLCs encountered some difficulties during the tests.

Outside the reactor building and at the same time as the removal of thermal protections from the equipment of the four "steam generator" buildings was taking place, contracts for dismantling the tanks and piping of these buildings were awarded, which will generate approximately 5,000 tonnes of waste (including 90% conventional waste) during works scheduled from 2024 to 2027.

The end of the decommissioning of the Superphénix reactor remains scheduled for 2034.

NUGG

The industrial scenario for dismantling of the NUGG reactors was reviewed in depth in late 2015, leading in particular to a switch from "underwater" to "in-air" dismantling, which involves:

- decommissioning mainly remote controlled;
- qualifying tools and the remote control platform on a "graphite industrial demonstrator";
- dismantling the initial first-of-a-kind reactor (Chinon A2), and putting the five other reactors into a safe storage configuration in order to take feedback from the first worksite in to account prior to the wider rollout.

Under this new strategy, dismantling operations for the reactor caissons should be completed between 2063 and 2093, depending on the reactors.

Updating the industrial decommissioning scenario for first-generation power plants, particularly NUGG plants, led to a €590 million increase in the provision at 31 December 2015.

In a cover letter accompanying the decisions of 17 March 2020 supporting the technical options chosen, the ASN took the view that EDF should aim to shorten the schedule for completing this work *"in view of the legal obligation for the decommissioning of each reactor to take place as quickly as possible"*. EDF confirmed the implementation of a regular review of the schedule based on the results obtained on the industrial demonstrator and the first reactor. At this stage, the lack of any new elements has not allowed the optimisation of the schedule.

Construction work on the Graphite Industrial Demonstrator (*Démonstrateur Industriel Graphite*, DIG) was completed in late 2021. The first tests, carried out in September 2022, concerned the development of tools allowing "the recovery of graphite bricks" from reactors and the progressive design of the robotic arms required to decommission NUGG reactors.

The schedule of tests is progressing as planned and an initial assessment was presented to the ASN in mid-2023.

Following the inspection of "the maturity of coordination of complex projects" completed in November 2020 (an exploratory approach by a team bringing together the ASN, the French Radiation protection and Nuclear Safety Institute (Institut de radioprotection protection et de sûreté nucléaire, IRSN) and the French General Directorate for Energy & Climate (Direction générale de l'énergie et du climat, DGEC), EDF's answers and commitments were provided to the ASN in May 2022.

From a regulatory point of view, the dossier for the decommissioning of the Saint-Laurent silos was submitted to the ASN in electronic format on 30 September. The decommissioning dossiers for Chinon A2 and A1 and the dossiers for substantial changes to the decrees for Chinon A3, Saint-Laurent A, and Bugey 1 were filed on 15 December 2022, in line with the rulings by the ASN in March 2020.

Meanwhile decommissioning works excluding the caisson are ongoing on all three sites.

(1) Decree No. 2000-933 of 19 September 2000.
(2) Decree No. 2011-886 of 27 July 2011.
(3) Decree No. 2023-898 of 26 September 2023.

On the Bugey 1 site, the electrical buildings were demolished, making it possible to achieve 27% demolition of the surfaces compared to the objective of the safety configuration (*i.e.* deconstructing all the surfaces excluding the reactor building and premises required for dismantling the reactor building). Asbestos was removed from the engine room in 2023 through the removal of several hundred asbestos-containing tubes integrated in the civil engineering portion. At Chinon A2, the ferrules (section of the primary circuit) of the second room (out of four) were evacuated to Cyclife-France for merger; work to evacuate the shells at the third location have started.

The decommissioning of the Chinon A3 interchanges has been completed: 5,200 tonnes of metal circuits have been dismantled after 12 years of work.

On Saint-Laurent A2, the first half of 2023 saw good progress with the decommissioning project excluding the caisson, with optimisation of methods to speed up the work, but the project has been on hold since June due to the lead risk. Additional risk control actions are being rolled out for work to be resumed in early 2024.

Decommissioning costs and assets constituted to cover long-term nuclear commitments

Since the beginning of operations at its power plants, EDF has made provisions to cover decommissioning operations, engineering, monitoring and maintenance of facilities, and site security[1]. The aim of decommissioning operations is to restore the condition of sites and enable the land to be reused for industrial purposes.

Article L. 594-2 of the French Environment Code and its implementing regulation specified which liabilities are not associated with the operating cycle and must therefore be covered by dedicated assets[2]. In addition, dedicated assets have been gradually established since 1999[3].

The external audit mandated by the DGEC on "responsibilities in respect of decommissioning facilities currently permanently shut down and the management of radioactive waste from these facilities" was held from December 2020 to May 2021, pursuant to the letter of instruction received on 5 June 2020 from the General Directorate of the French Treasury (DG Trésor) and the DGEC. This audit covers historic shut down facilities excluding PWR technology, *i.e.* Superphénix, Brennilis, and the six NUGG reactors. The final audit report was delivered to the audited party on 9 July 2021. The DGEC's follow-up letter was issued on 22 November 2021 and the audit report was posted on the Ministry's website.

The report notes *"an organisation structurally oriented toward completing decommissioning projects,"* a *"costing and annual review process [that] is robust, and provides proper traceability of assumptions used and original data"* and *"a long-term industrial approach to overcoming the few remaining technological challenges"*. Finally, the report confirms that *"provisions are consistent with the basic scenarios of the projects and cover the full range of expenses of the audited scope"* and determines they *"are adequately sized"* after testing the size of EDF's expenses and provisions.

Beyond the current control of processes and organisations, two minor deviations of low materiality were reported (and corrected during the revision of the estimates at year-end 2021). Areas for improvement were identified in connection with project planning, measuring the level of project maturity and the risks and uncertainties quantification process. They do not call into question the conservative assessment of the associated decommissioning and waste management costs. The audit report also highlights a set of good practices that are rarely implemented in decommissioning projects.

The written response to this follow-up letter was sent on 21 February 2022, resulting in the implementation of an action plan relating to the aforementioned areas of progress. All actions were carried out at the end of 2023, except for one action related to quantifying uncertainties, which is currently being implemented.

1.4.1.1.3 New Nuclear projects

For the risks associated with these projects, see section 2.2.1, "Risks related to operational performance", "Risk 1A – Management of large and complex industrial projects, including EPR projects".

1.4.1.1.3.1 Flamanville 3 EPR project

EDF is the owner and manager of the Flamanville 3 EPR[4] project, with capacity of circa 1,600MW.

Interfaces with the French Nuclear Safety Authority (ASN) and administrative authorisations

Since its filing with the ASN in March 2015, the commissioning request file (DMES) has been updated several times in 2017, 2021, 2022 and 2023. As part of this process, the project underwent an environmental assessment and the Environmental Authority , to which the ASN referred the project in early September 2021, issued its opinion on 22 December 2021. It recommends that the application, prepared on the basis of an environmental impact study carried out by EDF be completed on several points and, in particular, that it addresses the impacts of the prior construction phases of the Flamanville EPR and the Cotentin Maine very high voltage power line. These recommendations were discussed with the ASN in 2022. A memorandum in response was prepared by EDF and sent to the ASN in March 2022. It was supplemented, at the request of ASN, in November 2022.

The commissioning request file was subject to an initial public consultation from 5 June to 15 September 2023, and was subject to a new consultation from 15 January to 15 February 2024.

At the conclusion of its investigation, the ASN holds a public consultation from 27 March to 17 April 2024, on its draft decision. Following this public consultation, the board of commissioners of the ASN will make its decision regarding the commissioning, which could allow the fuel loading into the reactor vessel[5].

Furthermore, on 8 October 2020, pursuant to the French Environment Code, the ASN had authorised the arrival of nuclear fuel at the Flamanville site, after an on-site inspection on 18 and 19 August 2020 and after public consultation on the draft authorisation from 31 August to 21 September 2020. The 245 fuel assemblies necessary for loading (241 assemblies for the first core, four assemblies for the reserve) were received at the end of the first half of 2021. The first regulatory fuel inspection (Euratom) was performed at the end of August 2021. See below "Lessons learned from Taishan".

The commissioning deadline specified in the authorisation decree was set at 11 April 2024[6]. However, exceeding this deadline has no impact on the validity or regularity of the authorisation decree.

EDF received this operating authorisation on 30 August 2021, pursuant to the Energy Code, in an order issued by the Minister for the Ecological Transition.

In a letter dated 26 March 2024, the ASN reminded EDF of its expectations regarding the prevention and detection of counterfeiting, falsification, and fraud in the factories manufacturing equipment for nuclear power plants. This letter follows the hearing of EDF's CEO by the ASN board on 26 February 2024, and the submission by EDF on 19 March 2024, of a detailed action plan considered as an appropriate initial step[7].

(1) See section 6.1, note 15 "Provisions related to nuclear generation and dedicated assets" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.
(2) See section 6.1, note 15.1.3 "Coverage of EDF's long-term nuclear commitments" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.
(3) See section 6.1, note 15.1.2.2 "Strategic allocation and composition of dedicated assets" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.
(4) European Pressurised Water Reactor.
(5) See EDF's press release of 27 March 2024 "Update on the Flamanville EPR".
(6) In a Decree dated 25 March 2020.
(7) https://www.asn.fr/l-asn-informe/actualites/contrefacons-falsifications-et-suspicions-de-fraude-l-asn-rappelle-ses-exigences-a-edf

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Progress of on-site implementation

The year 2023 was marked by the following achievements:

- finalisation of the technical examination by the ASN and the IRSN of the remaining main technical issues (RIS filtration, pressuriser valves, TXS control command, *etc.*);
- ASN carried out several inspections to check the completion status of the installation and to verify the readiness for the future operation;
- the *finalising* in the first half year of upgrades to the Main Secondary Circuit, with over 120 welds upgraded and over 200 Stress-relieving Heat Treatments (TTD) performed (details below);
- continued completion of the installation and the clearance of the remaining work "on-site" before loading (reduction to below 6,000 outstanding items);
- satisfactory completion of all facility requalification tests at the end of 2023, enabling the validation of more than 4,000 safety criteria.

Manufacture and quality equipment

Reactor vessel

In the first half of 2017 the ASN examined "higher-than expected" carbon levels in the vessel head and bottom on the basis of documentation submitted by Framatome under EDF's supervision. Based on the opinion of a group of ASN-appointed experts, the ASN concluded that the mechanical properties of the vessel head and bottom were adequate for their uses, including in the event of an accident[1]. On 9 October 2018, the ASN authorised the commissioning of the vessel bottom, subject to functional checks and the commissioning of the vessel head, by limiting the lifespan to end 2024.

The project prepares for the planned replacement of the reactor vessel head after the commissioning of the facility. The manufacture of a new head is underway in Framatome's plants, with delivery to the site scheduled for 2024. Consequently, the costs incurred for the manufacture of this replacement cover are not included in the construction cost target.

In December 2022, Framatome submitted a request to postpone the date for replacement of the vessel head until the end of the first operating cycle (in the second half of 2025).

In response to the request submitted by Framatome at the end of 2022, and following the public consultation which took place from 11 to 31 March 2023, the ASN published a decision on 16 May 2023 authorising the use of the current head until "the shutdown of the reactor during which the first complete requalification of the primary circuit is carried out".

The company's reference scenario is the replacement of the reactor vessel current head during the Full Inspection 1 shutdown, which should begin at the end of 2025 following the unit's first operating cycle.

The ASN's decision also states that: "in the event that the project experiences another significant delay, the operator will have to re-examine the possibility of replacing the current head before the *commissioning of the reactor.*"

Break preclusion and quality deviations in the welds of the main secondary circuit

On 30 November 2017, EDF declared a significant event to the Nuclear Safety Authority regarding the detection of a quality deviation in the welding in the main secondary circuit that transfer the steam from steam generators to the turbine (primary VVP pipework circuit).

This circuit was designed and manufactured according to the "break exclusion" concept. This approach consists in strengthening design, manufacture and in-service monitoring requirements. These enhancements, requested by EDF, also involve a "high quality" requirement in the building of these circuits[2]. Although these requirements were applied during the design phase, they were not properly incorporated into the welding process. Failure to meet these requirements does not necessarily entail non-compliance with the nuclear pressure equipment regulations.

On 10 April 2018, EDF reported the ASN of a significant event relating to the detection, during the initial full inspection, of deviations in the inspection of the welding of the pipes of the main secondary circuit[3]. In accordance with industrial procedures, the welds had *been checked by the consortium of contractors in charge of* manufacturing the circuit, which declared them compliant as they were completed. EDF initiated a new inspection during the second quarter of 2018 of all welds concerned in the main secondary circuit.

Penetration welds

In a letter dated 19 June 2019, the ASN requested EDF to rework 8 welds on VVP main steam circuit pipework (known as crossing the containment building of the reactor), prior to commissioning..

EDF's proposal for reworking the penetration welds is the use of remotely-operated robots designed to perform high-precision operations within the pipework in question. The ASN approved this process on 19 March 2021. All 8 of these penetration welds were upgraded in 2021. In late 2022, Stress-Relieving Heat Treatment (SRHT) and final inspection of the eight welds were completed.

4 penetration welds (on the steam generator water supply lines, "ARE") were also the subject of upgrades. As of the end of 2022, these 4 welds had been repaired using remotely-operated robots[4]; SRHT and final inspections had also been completed.

The analysis of these final inspections as well as works to reclose the ARE and VVP lines were completed in the first half of 2023.

The reworking of welds located on the main secondary circuit with quality shortfalls or not complying with the requirements of the break preclusion reference (45 VVP welds and 41 ARE welds) began in summer 2020 and was completed in late 2022. The non-destructive tests as well as the SRHT of the upgraded welds were completed in the first half of 2023.

The ASN will provide a final opinion on the compliance of the main secondary circuit in its report on the certificate of compliance for the nuclear boiler, prior to issuing the decision authorising the commissioning of the basic nuclear installation.

Other technical problems (other than the main secondary circuit)

Main primary circuit

On 2 March 2021 EDF declared a significant event to the ASN. This concerned the incomplete consideration of the 2006 study referential in respect of the implantation of 3 nozzles[5] on the main primary circuit.

On 21 June 2021, EDF submitted a dossier to the ASN stating that it had chosen the solution consisting of installing a "retaining collar" on each of the nozzles concerned. In a letter of 8 October 2021 the ASN indicated that it had no objections to this solution in principle. The design of the retaining collars was also examined by IRSN, which handed down a positive opinion on 30 November 2022. The retaining collars were manufactured between mid-2021 and mid-2022 and installed around the nozzles in 2023.

(1) ASN Opinion No. 2017-AV-0298 of 10 October 2017.
(2) Given that these requirements were stated, the potential for pipes rupturing did not have to be considered during the safety demonstration. This proves, with a high degree of confidence, that accidents are physically impossible or extremely unlikely and that their consequences are limited to acceptable economic conditions.
(3) The initial full inspection is a regulatory requirement prior to the plant commissioning, which consists, in particular, in examining the welds of the primary and secondary circuits. It gives rise to an initial benchmark report on the state of plant before it begins operation.
(4) This process is an adaptation of the one used for VVP penetration repairs.
(5) A nozzle allows to connect auxiliary circuits to the primary circuit.

The ASN also stressed the need to demonstrate the quality of welds with respect to the requirements applicable to pressurised nuclear equipment. The X-ray inspections carried out between August and October 2021 confirmed that these welds are of good quality. They were supplemented by ultrasound inspections in the first half of 2022; these also proved to be satisfactory. In the first half of 2023, the IRSN finalised its review of these controls. The ASN will provide a final opinion on the compliance of the main primary circuit in its report on the certificate of compliance for the nuclear boiler, prior to issuing the decision authorizing the commissioning of the basic nuclear installation.

Filtration sump SIS/CHR[1]

The Flamanville EPR is equipped with a recirculation system for the water in the main primary circuit in the event of a pipe breach. In the event of an accident, this system recovers water from the bottom of the reactor building and recirculates it into the tank in order to cool the fuel assemblies.

A problem was detected during a "full-loop" test in the summer of 2021. The debris contained in the recirculated water were not effectively filtered by the filters located at the bottom of the reactor building.

Following these tests, EDF replaced these filters in September 2022 and fitted them with a finer filter mesh. EDF also decided to reduce the quantities of potential debris that is known to clog up filters. This work to reduce potential debris was completed in 2023.

At the end of January 2023 the full dossier, taking into account the results of the most recent tests in late 2022, has been supplied to the ASN with a view to completion of the final examination of this technical dossier.

The IRSN's final report was received at the end of June with a positive opinion on the commissioning authorisation with no critical recommendations. The ASN has no further questions on the matter and will provide its final opinion in its report in support of the Commissioning Decision.

Pressuriser valves

Following the discovery of corrosion on the pressuriser valves (PSRV valves) of the Olkiluoto EPR (Finland), EDF and Framatome carried out inspections on these equipments, which also revealed traces of corrosion on the valves of the Flamanville 3 EPR. EDF and Framatome have decided to take it into account and to modify the material used for certain components of the pilot control valves. Several corrosion stress tests were conducted to select the best material. These components have been fabricated and are now installed in the reactor building. In addition to dealing with this difficulty, the ASN is continuing to investigate the operation and reliability of the pressuriser valves.

The last IRSN opinion before start-up was received at the beginning of July 2023 with 2 recommendations (cleanliness of the premises during maintenance and inspections in Full Inspection 1 following feedback from OL3 concerning the malfunction of an electric pilot plant) that do not prevent the start-up from going forward. The ASN confirmed the end of its examination of this subject in a letter received by EDF on 29 September 2023.

Following the detection of irregularities in its supply chain of materials, EDF justified that these irregularities do not compromise the safety demonstration. EDF has committed to replacing the bodies of two protection valves for the main secondary circuits.

Lessons learned from Taishan

EDF has analysed the potential impact of the technical issues encountered on reactor 1 of the Taishan plant (see section 1.4.5.3.6.1 "Activities in China"[2]) on the commissioning of the Flamanville EPR. Inspections carried out on the relevant fuel assemblies showed mechanical wear of certain assembly components.

EDF replaced the potentially affected fuel assemblies at the edge of the core with 64 new fuel assemblies that have undergone heat treatment to mitigate the risk of wear to a significant degree, before start-up. In January 2023, the IRSN issued a favourable opinion of EDF's proposed strategy with no reservations, and the ASN will finalise its examination by the end of the first quarter of 2023.

Commissioning schedule and costs to completion

In its press release dated 16 December 2022[3], EDF adjusted the project schedule and completion cost. Fuel loading was scheduled for the first quarter of 2024.

In its press release dated 27 March 2024, EDF stated that, thanks to the mobilisation of teams to carry out the final tests and technical instructions to ensure that the facility is fully operational and compliant with the highest safety standards, the Flamanville 3 EPR is technically ready to begin its commissioning. EDF further indicated in this press release that following in-depth discussions with EDF, the Nuclear Safety Authority (ASN) has decided to launch a public consultation from 27 March to 17 April 2024, on its draft decision authorizing the commissioning of the Flamanville 3 EPR reactor. This new stage of the procedure will allow for the consideration, within a few weeks from the date of this press release, of the first loading of nuclear fuel into the reactor.

For details on the investments for the Flamanville 3 EPR, see section 6.1, note 10.6 "Assets in progress" in the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.

The risk relating to the schedule is now primarily related to the schedule for the ASN's issuance of the certificate of compliance for the boiler and the decision authorising the commissioning of the basic nuclear installation. See section 2.2.1 "Risks related to operational performance" – "1A – Management of large and complex industrial projects, including EPR projects".

1.4.1.1.3.2 Other "New Nuclear" projects

A – Preparation of a programme to build new nuclear EPR2 reactors in France

The work undertaken by EDF and Framatome on the New Model EPR project led to the finalising in 2017 of the technical configuration of a model named EPR2 which could ultimately expand the offering of the French nuclear industry in France and for the export market. EPR2 is an optimised version of the EPR, following on from the EPR in industrial terms, whilst integrating feedback from EPR work sites and power plants currently in operation.

Following the French government's request that EDF should, together with the nuclear industry, prepare a full dossier on a renewal programme for nuclear facilities in France by mid-2021, in May 2021 EDF supplied it with a "Proposal by EDF and the nuclear industry for a programme of new reactors in France". The programme calls for building three pairs of EPR2 successively at Penly, Gravelines and a riverside site in the Auvergne Rhône Alpes region (Bugey), while continuing the feasibility analysis at other nuclear sites.

In his speech about France's strategy for achieving carbon-free power by 2050 in Belfort on 10 February 2022, the President of the French Republic expressed his wish to see the launch of a programme to build new nuclear reactor series. The programme aims to build three pairs of EPR2 reactors and feasibility studies for the construction of eight additional EPR2 reactors. He also observed that it was necessary to aim to have the first new reactor commissioned by 2035, and said that these new EPR2 units will be built and operated by EDF.

The Nuclear Policy Council, chaired by Emmanuel Macron, decided on 19 July 2023 to install two third-generation reactors (EPR2) on the site of the Bugey power plant.

Appropriate financing and, where applicable, regulatory plans are currently being drafted with a view to implementation of the programme. An updated costing of the project upon completion has been initiated and is scheduled to continue in 2024.

Pending a final ruling on the investments involved in the EPR2 project, the Board of Directors, at its meetings held on 16 December 2020, 31 March 2022 and 6 March 2024, authorised EDF to continue the development of the programme and to commit a cumulative budget of approximately €3 billion until the end of 2024.

(1) SIS = Safety injection circuit (used to add pressurised borated water to the reactor's primary circuit in the event of an accident that causes a major breach to this circuit). EVU = Ultimate heat removal system for the reactor building in the event of a severe accident (with core meltdown).
(2) See EDF's press release of 12 January 2022 "Update on the Flamanville EPR".
(3) See EDF's press release of 16 December 2022 "Update on the Flamanville EPR".

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Governance

Pursuant to the recommendations made by Jean-Martin Folz in 2019[1] and those of the French Court of Audit (Cour des comptes) in its summer 2020 report on the EPR sector, EDF has decided to strengthen the design & build governance for EPR2 reactors. In particular, EDF has set up a new organisation separating the Project Owner function (*maîtrise d'ouvrage*, MOA), in this case the New Nuclear (France) Engineering Programme Department, from the Project Management function (*maîtrise d'œuvre*, MOE), in this case the EPR2 Project Department, within the New Nuclear Engineering and Projects Department (*Direction Ingénierie et Projets Nouveau nucléaire*, DIPNN).

The New Nuclear France Engineering Programme Department ensures the establishment of appropriate legal, economic, and financial frameworks and suitable conditions for the project to be realised. It defines cost, lead time, and performance targets for EPR2 projects and ensures they are followed by Project Management. The Programme Department thus acts as the project's client.

The EPR2 Project Department is responsible for the design of EPR2 reactors; if a final investment decision is made, it will then oversee their completion in line with the quality, cost, lead time, and safety targets set by the Programme Department.

The two departments have been working closely together ever since the implementation of this new organisation.

Status report and outlook

At the end of 2021, the general design studies carried out since 2018 were finalised. This stage was preceded by the end of the ASN's examination of the safety options dossier in 2021 (letters dated April and September 2021) and the submission to the ASN of the Preliminary Safety Report in February 2021.

Since January 2022, a new sequence has begun, focusing on 3 priorities:

- the continuation of engineering studies to develop the first nuclear concrete at Penly in Normandy, the site chosen for the construction of a first pair of EPR2 reactors;
- a close relationship with the key partners to obtain feedback from studies by suppliers and provide them with the necessary visibility to invest in skills and industrial facilities; the main Penly civil engineering contract was signed in October 2023;
- work site preparation, in particular administrative and regulatory authorisations. On 11 February 2022, EDF approached the CNDP[2] in respect of the plan to build two EPR2 reactors at Penly. The public debate was held between the end of October 2022 and the end of February 2023, in parallel with a consultation on energy held by the French State. At the end of June 2023, the application for authorisation to build the reactors was sent and the application for environmental authorisation was submitted;
- a technical maturity review was organised in 2023 for the main buildings of the nuclear island. This review enabled EDF to benefit from the feedback on the project from a committee of experts, in order to secure the next steps in the development and construction of the EPR2;
- referral to CNDP[2] for the EPR2 project in Gravelines (Nord department, 59), on 22 November 2023. At its plenary session on 10 January 2024, the CNDP decided to hold a public debate.

B – Small Modular reactors (SMR)

Regarding low-power reactors (SMR), the development of the NUWARD SMR product, a third generation pressurised water power plant composed of 2 170MW modules, continued in 2023. It is designed for large-scale production and marketable for export, with the potential development of a NUWARD SMR series in France.

The design of the NUWARD SMR is the subject of a pre-assessment conducted by the ASN, in collaboration with the Czech (SUJB) and Finnish (STUK) safety authorities. This aim of this assessment, which will incorporate new safety authorities (Poland, Sweden and the Netherlands), is to accelerate the granting of international licences for SMRs while also giving a new impetus to regulatory harmonisation. In France, the safety options dossier was sent to the ASN on 19 July 2023.

Nuward SAS, a wholly-owned subsidiary of the Group dedicated to development of the NUWARD SMR since entering the so-called "basic design" phase in April 2023 (this phase should be completed by the end of 2026). As with the previous phase, NUWARD will continue to benefit from the support of engineering from EDF, Edvance, TechnicAtome, Framatome and Naval Group as well as CEA and Tractebel.

In December 2022, the French government awarded EDF SA an initial grant of €50 million as part of the France 2030 plan.

This political and financial support continued as Nuward's submitted a complete dossier in June 2023 and underwent review with the State services to obtain a grant of €300 million for the Basic Design phase, pending approval by the European Commission.

C – International developments

United Kingdom

In the United Kingdom, EDF Energy is involved in the construction project of 2 nuclear reactors at Hinkley Point, together with China General Nuclear Power Corporation (CGN). Nuclear New Build (NNB) is the project owner. EDF's New Nuclear Projects and Engineering Department (DIPNN) together with Edvance[3] are responsible for the design studies. Framatome supplies the components and the control system.

EDF is involved in the development of the Sizewell C project for the construction of 2 EPR reactors in partnership with the British government (see section 1.4.5.1.2.5 "Nuclear New Build business").

EDF also owns a 33.5% stake in Bradwell B in partnership with CGN (see section 1.4.5.1.2.5).

India

In March 2018, EDF signed a non-binding industrial cooperation agreement with the Indian national electricity company Nuclear Power Corp of India Ltd. (NPCIL) called the Industrial Way Forward Agreement (IWFA) for the construction of 6 EPR reactors in India at the Jaitapur site. This agreement sets out the industrial plan, the roles and responsibilities of partners, and the next steps in the project. In this regard, the EDF group and its partners will be supplying all the studies and equipment for the nuclear island, the conventional island, the auxiliary systems, and the heat sinks and galleries. EDF does not plan to invest in this project. The NPCIL client will be the general project manager, constructor and integrator in the execution phase.

In accordance with the schedule determined by the IWFA, EDF and its partners submitted a comprehensive conditional non-binding bid to NPCIL at the end of 2018, then in April 2021 a binding technical and commercial offer. Since then, EDF has continued its discussions with NPCIL in order to converge on technical and commercial issues with the short-term objective of initially signing an agreement on engineering studies (Pre-Engineering Contract).

(1) Report submitted to the French Minister for the Economy and Finance and the Chairman & Chief Executive Officer of EDF in October 2019.
(2) Commission nationale du débat public, *i.e.* French national public debate committee.
(3) In 2017, EDF and Framatome created Edvance, a joint engineering subsidiary for the construction of new nuclear power plants in France and in the world.

Saudi Arabia

EDF is participating to a competitive process initiated in Saudi Arabia by K.A. CARE[1] and has responded for the first phases of the consultation process. This process aims at submitting a bid for the supply of engineering studies, equipment, and the construction of 2 EPR reactors.

Czech Republic

EDF is taking part in the competitive call for tenders process formally launched in March 2022 in the Czech Republic by electricity supplier ČEZ, its project company Elektrárna Dukovany II and the Czech government.

This covers the construction of a 1,200MWe unit at Dukovany and the potential extension of the nuclear programme to 3 additional units. EDF received confirmation of this option to extend on 31 January 2024 through an official request from ČEZ for an addition to the tender. On 30 November 2022, EDF submitted its conditional binding bid and, on 31 October 2023, an updated binding bid covering the engineering studies, the supply of equipment, and the construction and commissioning of an EPR1200 reactor for Dukovany (unit 5) as well as the supply of the first fuel core and 5 replacements. The updated bid already included indicative proposals for a fleet of 3 additional units[2], which now needs to be supplemented.

Based on the request of the French government made in November 2022, the ASN has also issued an opinion on the safety options dossier for the EPR1200 project intended for export. The ASN's opinion on these safety options is broadly similar to the one it handed down in July 2019 for the EPR2 reactor, from which it is derived. The ASN has noted that the safety objectives and the set of standards used for the design and architecture of safety systems have been taken from the EPR2 reactor model[3].

As part of the SMR process, EDF has also taken a position for the Temelin project, proposing its NUWARD™ SMR.

Poland

In October 2021, EDF submitted a preliminary non-binding offer to the Polish government, covering a contract for the supply of engineering studies and equipment and the construction of 4 to 6 EPR reactors in Poland, representing a total target installed capacity of 6.6GWe to 9.9GWe on 2 or 3 sites. This preliminary offer covers all the key parameters of such a programme, such as the technical configuration of the future power plants, the envisaged industrial scheme, the development strategy of the local supply chain, the estimated cost of the programme and the associated execution schedule. Although the Polish government has chosen to pursue binding discussions with a competitor for the first site, EDF's bid remains valid for the other sites, and EDF is continuing its discussions with the Polish stakeholders.

EDF is also positioning itself in the SMR market in Poland with its Polish partner Respect Energy and signed an exclusive specific cooperation agreement in January 2023 to develop a NUWARD™ SMR on sites under assessment.

1.4.1.1.3.3 Digital transformation of nuclear engineering (SWITCH programme)

The DIPNN's integrated transformation programme aims to significantly and sustainably transform nuclear engineering in order to improve its industrial control and competitiveness.

Its main objectives are to:

- standardise and simplify engineering processes and methods by integrating systems engineering principles, and digitise them to evolve towards digital engineering and efficient data centric practices;
- standardise products based on proven solutions, base international offerings on these standard products and replicate them from one project to another;
- reconfigure the relationship with the supply chain by streamlining the panel of suppliers, making them accountable, and developing the operation using an extended enterprise model;
- integrate the information system around PLM-type solutions, and ensure its interoperability with the IS of external stakeholders (customers, suppliers, authorities, *etc.*) to establish a true digital ecosystem;
- capitalise more effectively on knowledge and know-how and develop internal skills, while optimising the use of outsourcing.

1.4.1.1.4 Activities related to nuclear generation: Framatome

Framatome[4] is a key player in nuclear energy, owned by EDF (80.5%)[5] and Mitsubishi Heavy Industries (19.5%).

Framatome is acclaimed for its innovative solutions and high added value technologies for the nuclear fleet worldwide. Benefiting from its global expertise, backed by sound references and a workforce of over 18,000 employees, the company designs, maintains, and installs components and fuel, as well as instrumentation & control systems for nuclear power plants.

In 2023, Framatome hired over 2,300 employees to maintain and increase skills.

Framatome has a significant industrial presence in France, Germany, the United States and China. The company also has an industrial or sales presence in over 20 countries, including South Africa, Argentina, Belgium, Brazil, Canada, South Korea, Spain, Finland, Hungary, Japan, Kazakhstan, Czech Republic, Romania, the United Kingdom, Slovakia, Bulgaria, Switzerland and Sweden.

Framatome's strategy is focused on its core business as a boiler manufacturer. It seeks to offer safe and competitive solutions, to industrialise them and to complete projects in compliance with quality/costs/deadlines.

The company has a customer base that includes leading international energy players, and works on over 300 reactors worldwide. With Framatome's experience in reactors of all types of technologies it can meet the specific needs of its customers worldwide.

1.4.1.1.4.1 Framatome's activities

With 65 years of experience in the design and construction of nuclear power plants, Framatome relies on its recognised expertise, in particular thanks to its highly qualified engineers and operators.

Engineering

Framatome's experts are specialised in the design of the principal items of equipment making up nuclear steam supply systems, metallurgy, mechanics, neutronics, scientific calculation work, fluid mechanics and risk and nuclear safety analysis. Framatome's engineering services include the heart of the power plant, referred to as the "nuclear island", and the main components of the reactor's primary circuit such as steam generators, pumps, pressurisers, as well as the nuclear reactor pressure vessel itself.

(1) King Abdullah City for Atomic and Renewable Energy.
(2) See EDF's press release of 1 December 2022, "EDF submits to the Czech operator ČEZ and its project company Elektrárna Dukovany II its Initial Bid for one EPR1200 reactor to be constructed at the Dukovany site in the Czech Republic", and that of 31 October 2023, "EDF submits to the Czech operator ČEZ and its project company Elektrárna Dukovany II its Updated Initial Bid for one EPR1200 reactor to be constructed at the Dukovany site and up to 4 units in the Czech Republic".
(3) Opinion No. 2022-AV-0413 issued by the French Nuclear Safety Authority on 10 November 2022 on the safety options for the EPR1200 reactor project, handed down in application of Article L. 592-28-1 of the French Environmental Code. This specifies that at the request of the government, the ASN may examine the compliance of safety options for nuclear facility models intended for export with the obligations applicable in France to the same type of installation.
(4) Framatome, Framatome Healthcare, Framatome Defense, Framatome Space are trademarks or registered trademarks of Framatome or its affiliates in the USA or other countries.
(5) On 25 January 2024, EDF increased its stake in Framatome from 75.5% to 80.5% by acquiring the 5% stake held by Assystem.

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Its specialists and technicians are most notably involved in major new nuclear power plant construction projects such as the new EPR-type reactors, as well as the development of SMR-type and Generation IV reactors.

Equipment manufacturing

Framatome's components equip more than 100 power plants in 11 countries. At its plants in Le Creusot, Saint-Marcel and Jeumont, in France, Framatome's manufacturing plants produce the key equipment for nuclear steam supply systems for electrical utilities all over the world to equip new-build power plants or to replace items of equipment at power plants in operation. The company manufactures advanced technology heavy equipment (reactor pressure vessels, steam generators, *etc.*) and mobile components (reactor coolant pumps and control rod drive mechanisms).

In 2023, the company continued to ramp up production at its Saint-Marcel plant, specialising in the manufacture of heavy components. It supplies the main forged components for new construction projects abroad, in particular for the EPR reactor project of Hinkley Point C in the United Kingdom, and is preparing to increase production for the EPR2 (France) and Sizewell C (United Kingdom) projects, as well as supplying parts for replacement components intended for French reactors.

At the same time, Framatome has joined the EDF group's excell plan. Its objective is to ensure the stability of the supply chain, control the manufacturing lead times of Framatome and its key suppliers, and maintain skills. In this respect, Framatome component factories are rolling out plans designed to guarantee "right the first time" compliance of manufacture and construction. All stakeholders are involved with the aim of standardising activities.

Instrumentation and control systems

Framatome designs, manufactures and installs safe nuclear instrumentation solutions and control systems for plants in operation and new builds. Its solutions include in particular safety instrumentation and control (I&C) systems, operational I&C systems, nuclear instrumentation, lifecycle solutions, global I&C engineering expertise simulators, human-machine interface design and human factors engineering. Framatome has installed over 300 complete instrumentation and instrumentation & control systems on reactors of all types worldwide.

Fuel

Framatome designs, develops and manufactures fuel assemblies for pressurised water reactors, boiling water reactors and research reactors. The company's know-how spans the entire process: from the design of the fuel assembly, to the production of zirconium and its alloys – zirconium being vitally important for fuel production – on to fuel fabrication and related services, right through to operations on the nuclear power plants.

The company performs all relevant calculations from general fuel management up to dedicated licensing for the highest performance and safety. Nearly 260,000 Framatome fuel assemblies have been loaded in more than 200 reactors in operation around the world.

Commissioning and licensing of nuclear power plants

Framatome has substantial international experience working with nuclear safety authorities on all types of reactors currently in service around the world. The company also offers support for operators through relationships with their respective safety authority and in the application of existing regulations in their country of establishment.

In France, Framatome has expertise in the application of the Decree relating to nuclear pressure equipment (*Arrêté relatif aux Équipements Sous Pression Nucléaire* – ESPN).

The company also provides its international customers with technical centres where numerous tests are carried out each year to qualify their equipment. It assists them in the preparation of qualification studies and associated documentation.

Maintaining, modernising and extending operating lifetime of existing nuclear power plants

Framatome offers innovative solutions and services to maintain and modernise existing nuclear power plants, and extend the lifetime of existing installations, while guaranteeing the safety, performance and availability of operations. Framatome has over 65 years' international experience of all types of technologies and maintenance of more than 300 reactors worldwide. Its teams have expertise and knowledge in maintenance, component replacement, inspections and checks, refuelling operations, and optimised management of reactor shutdowns for maintenance. More specifically, its activities cover the management of equipment and spare parts, modernisation of I&C, and chemistry and radiochemistry services.

Management of large projects

Framatome's participation in the construction of new-build nuclear reactor projects spans across design, through procurement and supply, and on to commissioning. With recognised expertise in the management of complex projects, its teams are tasked with delivering to the most stringent security standards and fulfil the requirements of its customers. In the case of new-build construction projects, the company proposes solutions for the nuclear island scope.

Framatome is actively involved with EDF in the construction, commissioning and maintenance of 5 EPR reactors worldwide: in France (Flamanville 3), in China (Taishan 1 & 2), and in the United Kingdom (Hinkley Point C, reactor 1 and 2), and contributes to the commissioning and maintenance of the EPR in Finland (OL3).

Framatome is actively involved with EDF in the construction of EPR projects in France (EPR2 programme) and the United Kingdom (Sizewell C 1 & 2).

In 2017, EDF and Framatome created Edvance, a joint engineering subsidiary for the construction of new nuclear power plants in France and in the world.

1.4.1.1.4.2 Key achievements by Framatome in 2023

The execution of projects was well controlled in accordance with the contractual commitments and the actions to optimise the structural costs continued. The production of the plants was in line with the commitments made to customers despite supply chain tensions.

Several primary component replacement operations were carried out in the French fleet on behalf of EDF (replacement of elbowsbends in the Saint-Laurent-des-Eaux and Chinon nuclear power plants) and in South Africa on behalf of the customer Eskom (replacement of the steam generators of unit 1 of the Koeberg power plant). Framatome continued to grow in the North American market in a still highly competitive environment. The deliveries of equipment for the Angra 3 projects in Brazil and to the electricity producer Bruce Power in Canada continued without incident.

The instrumentation and control business continued to grow, driven in France, the United Kingdom and Central Europe by new construction and renovation projects. Losses were recorded in North America and are entailing remedial actions. Framatome Grenoble (formerly Rolls-Royce Civil Nuclear), acquired at the end of 2021, specialising in engineering and the development of instrumentation and control systems on a global scale, was merged with Framatome SAS at the end of 2023.

The major project management and component manufacturing activities were driven by the completion of the repair work to the Main Secondary Circuit welds and hot tests of the Flamanville 3 EPR. In the United Kingdom, several primary components of unit 1 of the Hinkley Point C EPR project were delivered (delivery to the site of the reactor vessel and delivery to the factory of the first two generators) and the manufacture of forged parts and equipment for the Sizewell C project is well underway. 2023 was also marked by the ramp-up of engineering design work for the first mass production of forged parts for the EPR2 programme.

The fuel business signed contracts in the Czech Republic and Bulgaria to supply fuel to VVER-type power plants and continued its actions to increase its market share in Europe and North America.

Investments were finally launched as part of an industrial programme to ramp up production in connection with the EPR2 programme in France. These investments concern the manufacturing and assembly of primary and auxiliary equipment components. They also concern the fuel supply chain, which is being modernised and is securing its ability to produce new productions, in particular at the Romans-sur-Isère site.

Framatome also continued to develop its brands (Framatome Healthcare, Framatome Défense and Framatome Space launched in 2023).

As part of the deployment of the business of its Framatome Healthcare brand, Framatome is continuing its partnership with Bruce Power and Isotope Technologies Munich (ITM) through the joint venture ISOGEN. ISOGEN has developed the commercial production of lutetium-177, a medical isotope used in cancer treatment, based on technology developed by Framatome.

The Framatome Défense™ brand, launched in October 2020, allows Framatome to meet the needs of defense programmes and the challenges of sovereignty in this area, with the industrial establishment of Framatome throughout the country. Framatome Défense's contributions concern, in particular, future nuclear programmes such as the Barracuda-type nuclear submarine programme, third-generation nuclear ballistic missile submarines (SNLE 3G), the future new-generation aircraft carrier (PAN-NG) and also projects for the benefit of the CEA/DAM (CEA's Military applications division), particularly in the field of nuclear propulsion. All Framatome Business Units are in demand, and 2023 saw the implementation of investment projects in industrial capacities, financed by defense, and the production and delivery of equipment, components, studies and services from several industrial sites, for the benefit of its defense customers.

The Framatome Space™ brand was launched in October 2023. It enables Framatome to offer its skills and tools to the space industry to help meet new exploration challenges. Framatome is collaborating with USNC (Ultra Safe Nuclear Corporation) in the United States on the manufacture of fuel for future reactors.

1.4.1.1.4.3 Nuclear facilities and safety

Basic nuclear facilities

Framatome operates a Basic nuclear installation (*Installation nucléaire de base*, INB) located at the Framatome site in Romans, named INB 63-U, for the manufacture of nuclear fuels.

2023 results on nuclear safety(1)

As in 2022, no major safety or radiation protection event was recorded at Framatome's Romans-sur-Isère site. In 2023, Framatome's site declared 15 significant safety events (SSE) classified at INES 0, 1 SSE at INES 1 and none at INES 2.

The 2023 detailed results on nuclear safety are published in the annual report drawn up by the General Inspector for Nuclear Safety and in the TSN report of the Framatome site of Romans-sur-Isère(2).

Dedicated assets

Dedicated assets have been constituted to cover long-term nuclear commitments (see section 6.1, note 17.1 "Other provisions for decommissioning" in the appendix to the consolidated financial statements for the financial year ended on 31 December 2023).

1.4.1.2 Thermal generation in mainland France

Thermal power generation facilities are one of the important components of the electricity mix that help ensure a balance between generation and consumption in real time. They respond to fluctuations in electricity consumption and renewable energy generation (solar and wind power in particular). They contribute to ensuring an adequate level of voltage and frequency on the network. This role will increase with the massive inclusion of intermittent generation resources in French and European electricity systems.

1.4.1.2.1 EDF's thermal generation in mainland France

At 31 December 2023, the thermal fleet operated by EDF were of different types, both in terms of fuel and power:

Fuel	Unit capacity (in MW)	Number of units in operation at 31/12/2023	Total capacity (in MW)	Year commissioned	Net energy output (in TWh) At 31/12/2023	Net energy output (in TWh) At 31/12/2022
Coal	580	2	1,160	in 1983 and 1984	0.25	1.64
Fuel oil and dual-fuel combustion turbines (gas and fuel oil)	85	4	340	in 1980 and 1981	0.46	0.68
	203	1	203	in 1992		
	134	1	134	in 1996		
	125–129	2	254	in 1998 and 2007		
	185	2	370	in 2010		
	179–182	3	542	in 2008 and 2009		
Combined Cycle Gas Turbine	427	1	427	in 2011	6.01	8.92
	465	2	930	in 2012 and 2013		
	585	1	585	in 2016		

(1) The objective of Framatome is to detect, report and treat in the best possible manner all deviations and anomalies occurring in connection with its activities. The purpose of this indicator is to enhance the sharing of experience, broaden analysis and the importance given to weak signals. Events declared at level 0 on the INES scale are safety deviations, considered as "weak signals". It is essential to take them into account as part of a continuous improvement process for a better management of risk prevention in the conduct of activities. In order to facilitate the reporting on "weak signals" and the sharing of experience, Framatome detects and records any deviation. The analysis of the latter, by the *Filière indépendante de sûreté* (independent safety reviewer), assesses the level of reporting to the safety authority.
(2) Available on the www.framatome.com website.

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Generation in 2023

EDF's electricity generation from its thermal power plants in mainland France represented 2% of its total electricity generation in 2023. By end 2023, this fleet had a total installed capacity of 4,945MW.

Thermal generation (net energy) in 2023 amounted to 6.72TWh, a lower level of operation than in 2022 (11.24TWh). In 2023, coal units supplied 0.25TWh, CCGT plants 6.01TWh and combustion turbines 0.46TWh.

The priority for these thermal means of generation required on a variable basis all year round is to ensure maximum reliability and availability. The fleet's adaptability to a sustained level of operation was demonstrated. In particular, combustion turbines were in high demand and had a very good response rate when called into operation.

1.4.1.2.2 Challengesrelating to thermal generation

Coal-fired fleet in transition

Between 2013 and 2015, EDF permanently shut down 10 coal-fired generation units. Between 2014 and 2016, it renovated the 3 newer technology production units located in Le Havre (1 unit) and Cordemais (2 units) to improve their reliability and efficiency.

EDF proceeded to shut down the Le Havre power plant on 1 April 2021.

In its Project supply estimates released on 20 September 2023, RTE has confirmed the need to maintain generation at the Cordemais power plant until the nominal commissioning of Flamanville 3 so as to maintain balance between demand and supply in the *Grand Ouest* region.

With this context, EDF has undertaken actions to provide maintenance to the power plant until 2027 and to limit its environmental footprint until then: work has been carried out to replace 20% of coal with biomass on each of the power plant's two units, as long as a sufficient quantity of pellets is available.

The public authorities have announced that the last coal-fired power plants in France should be fully converted to biomass by 2027. In this context, EDF has initiated discussions with the public authorities to explore the regulatory issues related to this perspective.

An action plan to limit the environmental footprint of other thermal fleets in mainland France

A "decarbonised thermal" Strategic Project, cross-functional within the Group, was launched in 2021 and made it possible to identify the various decarbonisation measures and techniques used for thermal means of generation currently using fossil fuels and the construction of new low-carbon thermal means of generation.

In this context, roadmaps were defined and are currently being implemented to examine all the opportunities for decarbonising existing means of generation and to manage solutions for developing new decarbonised thermal capacity when the electricity system needs it.

As such, in July 2023, operating tests with a bioliquid (Hydrotreated Vegetable Oils, in compliance with the RED II directive) were carried out on a combustion turbine (TAC).

The positive results of these test for both technical and environmental aspects, allow to carry out further tests in 2024 to confirm this solution's contribution to decarbonisation efforts.

Emissions of the thermal fleet

In 2023, EDF's thermal fleet n mainland France emitted 2.91 million tonnes of CO_2 (5.32 million tonnes in 2022). The CO_2 content per kWh generated by EDF's thermal power fleet in mainland France in 2023 is 425g/kWh net (473g/kWh net in 2022). This drop is the result of a lower use of coal units in EDF's thermal generation mix, which accounted for nearly 4% of thermal power generation in 2023 (compared with approximately 15% in 2022). As a reminder in 2010, the CO_2 content per kWh generated more than 900gCO_2/kWh net.

In 2023, EDF's thermal power fleet in mainland France emitted 419kt of SO_2, 1,865kt of NO_x and 17kt of dust. Per kWh generated, polluting emissions have fallen compared with 2010 by five times for NO_x, by over 25 times for SO_2 and by over 27 times for dust. These drastic reductions in emissions were made possible by:

- the shutdown of the oldest thermal power plants;
- the renovation and installation of smoke treatment equipment using the best techniques available at the most recent power plants;
- the use of low sulphur fuel;
- the commissioning of natural gas combined cycle turbines.

For example, Cordemais units are thus equipped with flue gas desulphurisation and denitrification systems (90% reduction in sulphur dioxide emissions and 80% reduction in nitrogen oxide emissions) as well as dust collectors that trap almost all dust.

Regulatory notice

Emission regulations

Several provisions of the French Energy Code (*Code de l'énergie*) have altered the greenhouse gas emissions ceilings for some power generation facilities and also set out offsetting obligations for greenhouse gas emissions resulting from the increase of the aforementioned ceiling. This offsetting makes it possible to finance projects that comply with the principles set out in Article L. 229-55 of the French Environment Code.

Thermal generation activities are also subject to other specific legislation derived from a number of EU Directives (Directive 2012/18 of 4 July 2012 [known as the Seveso 3 Directive], Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants, and amended Directive 2010/75/EU of 24 November 2010 on industrial emissions [the IED Directive]). Some of these directives are currently being revised (the finalised text of the revised "FDI" Directive was adopted on 19 December 2023).

Shutdown of the oil-fired fleet

In spring 2018, EDF permanently shut down its last thermal power plant operating on heavy fuel oil, in Cordemais.

Modernising the thermal generation fleet with natural gas combined cycle turbines

EDF commissioned:

- the first combined cycle gas turbine (CCGT) plant in France at Blénod in 2011;
- 2 CCGT plants at Martigues in 2012 and 2013;
- a next-generation CCGT plant at Bouchain in 2016 in partnership with General Electric.

This modernisation of the thermal generation fleet reduces its atmospheric emissions of CO_2, nitrogen oxides and sulphur oxides.

The CCGTs in Martigues are the result of the repowering of former oil-fired units, a part of whose facilities, such as the steam turbine, the condenser and the water treatment facilities, were reused. The installed capacity of the Martigues site is 930MW and the return is over 50%, markedly higher than the return from coal-fired thermal units.

The innovative Bouchain CCGT delivers improved capacity (600MW achievable in under 30 minutes) and return (over 60%) and offers good environmental performance with CO_2 emissions of around 360g/kWh on average, which is almost a threefold reduction compared to those of the nearby old coal-fired power plant shut down in 2015.

Decommissioning of thermal fleet shut down units

EDF has planned all the decommissioning operations on its units which were shut down or whose shutdown is scheduled. Provisions for these operations have been set aside to cover the decommissioning costs for all the units in operation and the site remediation works[1].

In 2023, EDF continued the decommissioning work on sites that had been definitively shut down.

EDF is careful to preserve the potential of its sites through a reasoned allocation of spaces and the implementation of local monitoring of urban planning regulations to secure its own needs. This differentiated management of spaces and soils allows for the gradual release of EDF's land from occupancy constraints (freeing up new land resources, biodiversity potential, or soil de-artificialisation), taking into account the Group's needs and assisting local authorities with the development of new types of activity.

Regulatory notice

Regulations applicable to shutdowns

Fossil fuel-fired power plants are subject to legislation on facilities that are classified for the protection of the environment (ICPEs), codified in the French Environmental Code. Activities covered by listed facilities legislation are listed in a register which places them in a declaration, registration, or authorisation regime depending on the level of risks and drawbacks which may arise. These regulations require sites to be restored when a facility is taken out of service, depending on the expected future use of the land; for certain facilities, the constitution of financial guarantees is also required. Depending on the nature of the hazards and/or drawbacks for each category of installation, these are designed to ensure surveillance of the site, the ongoing security of the facility, interventions in the event of accidents prior to or subsequent to closure, and restoration of the site after closure.

1.4.1.3 Renewable energy generation and storage

The EDF group is now a major player in renewable energy in Europe and more specifically, the leading supplier of hydropower in the European Union.

Hydropower is the Group's largest renewable energy source. The Group is also a leader in the developing competitive industrial sectors, primarily wind and solar power.

Renewable energies account for over a quarter of the Group's overall installed capacity.

The EDF group's commitments in respect of the development of renewable energies are also dealt with in section 3.1.1.4 "Roadmap for increasing the Group's decarbonised generation".

NET GROUP INSTALLED CAPACITY IN RENEWABLE ENERGIES AT END-2023[1]

(in MW)	Hydropower	Wind	Solar Power	Biomass	Geothermal	Marine	Total
France	20,504	1,971	770	413	1	240	23,899
Europe excl. France	1,190	1,841	477	3			3,511
America	205	4,855	1,646				6,706
Asia	432	997	674	23			2,126
Africa[2]		259	1,168				1,427
TOTAL NET INSTALLED CAPACITY	**22,331**	**9,923**	**4,735**	**439**	**1**	**240**	**37,669**

(1) As a proportion of the percentage held.
(2) Including Middle East countries.

(1) *See section 6.1, note 17.1 "Other provisions for decommissioning" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.*

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1.4.1.3.1 Hydropower generation in France

1.4.1.3.1.1 EDF's hydropower generation fleet

Hydropower is the first source of renewable electricity in France and the second source of electricity generation after nuclear power. This is an important sector for the electricity system due to its flexibility and its contribution in terms of grid security and balancing.

There were 425 power plants within the scope of EDF at the end of 2023, with an average age of 78 years[1].

Hydropower generation facilities	31/12/2023	31/12/2022
Total Maximum Capacity *(in GW)*	20.2	20.1
Total Output Including pumped-storage hydropower plants *(in TWh)*	38.7	32.4

Within mainland France, hydropower plants are mainly located in mountainous areas in the Pyrenees, the Alps, the Massif Central and the Jura, as well as on the Rhine. The whole represents an installed capacity of approximately 20.2GW[2], which is 23.3% of EDF's installed capacity. The annual producible energy amounts to over 40TWh on average.

The various hydropower facilities are designed to optimise the use of water resources in the valleys within the framework of multi-use water management. Given the size and variety of its facilities, EDF has installations able to respond to all types of desired uses, whether base load or peak load. They offer optimisation levers due to their flexibility of use.

Facility category	Turbine capacity (MW)	Average gravity capacity over 60 years[1] (TWh)
Run-of-river	3,625	16.36
Lake-supplied	8,160	14.15
Pondage	3,076	7.75
Pumped-storage[2]	5,045	1.49
Tidal	240	0.53

(1) The average production over 60 years has been re-evaluated on the basis of observed climate change.

(2) Only gravity capacity is counted in the pumped-storage hydropower plants; pumped energy is not taken into account.

1.4.1.3.1.2 Performance of the hydropower generation fleet

EDF's hydroelectric electricity generation in mainland France was 38.7TWh in 2023[2]. In 2023, it represented 10.59% of EDF's total electricity generation, a level slightly lower than normal. It is the result of slightly negative hydraulicity conditions.

In 2023, EDF spent more than €590 million in mainland France for the development and maintenance of its fleet to ensure optimum and safe operation.

A highly-automated and remotely-managed fleet

Approximately 77.3% of the installed hydropower (15.6GW) is remotely controlled with centralised management by valley, from telecontrol centres capable of modifying their operating programme at any time, to meet the needs of the power system and the economic opportunities of the electricity market.

To improve the reliability of its power plants, EDF monitors physical parameters (temperature, vibration, etc.) of machinery, from its regional operations centres. This enables any discrepancy to be speedily detected; incidents can be avoided by a better knowledge of the state and behaviour of the equipment in operation.

Technical performance of the fleet and hydropower conditions in 2023

Hydropower generation may vary significantly from year to year, depending on climatic fluctuations in water resources. The year 2023 was characterised by slightly low levels of water availability after three very dry quarters fallowed by an autumn with excessive rainfall, resulting in good output performance.

Anticipating needs relating to the expansion of variable renewable energy (solar and wind power), the emphasis is on increasing the flexibility of hydroelectric means of generation and fine-tuning of power plant management.

1.4.1.3.1.3 Hydropower safety

EDF performs regular monitoring and maintenance of dams, contributing to hydropower safety. Hydropower safety consists of all the measures taken during the design of hydropower facilities and during their operation. It aims to protect people and property against water-related hazards due to the presence or operation of structures. Hydropower safety is a major and permanent concern of the producer.

It involves three main activities:

- the management of operational risks, by providing information to users (communication campaigns, information of the employees operating on waterways, hiring "hydro-guides" during the summer months) about changes to water levels or flow fluctuations in downstream waterways;
- the management of facilities during periods of exceptionally high water levels, in order to ensure safety at the facilities and for the surrounding communities;
- measures to address the major risk associated with dam or reservoir failures, through the regular monitoring and maintenance of facilities under the supervision of public authorities. In France[4], 237 class A and B dams are subject to a hazard assessment study conducted every 10 and 15 years, respectively. These studies consolidate an overview of the structures and associated countermeasures forming part of a risk mitigation procedure[5]. The 67 largest dams are subject to a special administrative procedure ("Special Intervention Plan").

See risk factor 1F – Hydraulic safety violations in section 2.2.1 "Hydraulic safety violations".

(1) Sliding 1-year arithmetic mean of a like-for-like fleet, recalculated in 2021.
(2) Excluding French overseas territories and departments and Corsica.
(3) Excluding the power required to operate pumped-storage plants (STEP).
(4) Metropolitan France and French overseas departments, regions, and collectivities, including wholly-owned subsidiaries.
(5) For further details, see the annual report of the Inspector of Hydropower Safety, available on EDF's website.

Numerous flooding situations were encountered in late October and early November 2023, particularly during the Aline, Ciarán and Domingos storms.

Regulatory notice

Regulation applicable to the safety and security of facilities

Articles R. 214-112 *et seq.* of the French Environment Code contain provisions that are applicable to the safety and security of hydropower facilities authorised and operated under concession contracts. Dams are divided into three classes (A, B and C) according to their characteristics, in particular their height and the volume of the floodwaters. According to this classification and the legal rules applicable to the facility, the regulations require the operator or concession contract holder to fulfil a certain number of obligations to guarantee their safety and security.

1.4.1.3.1.4 Issues relating to hydropower generation

Hydropower is a key component in energy transition, due both to the low-carbon nature of output and to its flexibility and storage capacity, which outperforms other energy storage solutions by far. Hydropower also plays a major role in the management of water resources in the regions.

Concession renewals

Regulatory notice

Regulations applicable to hydropower facilities in France

In France, hydropower facilities are subject to the provisions contained in Articles L. 511-1 *et seq.* of the French Energy Code. They are covered by concession agreements granted by the State (for facilities generating over 4.5MW), or an authorisation from the Prefecture (for facilities under 4.5MW).

Under the French Energy Code specifies that the granting of Hydropower concession is preceded by public notice and competitive tendering in accordance with the terms and conditions set out in the French Public Procurement Code.

In accordance with Article L. 523-2 of the French Energy Code, when a hydropower concession contract is renewed or extended under the conditions provided for by Articles L. 521-16-2 or L. 521-16-3 of the French Energy Code, an annual concession fee that is proportional to the revenues generated by the concession contract is levied, which is paid in part to the French State and in part to the French *département* and municipalities through which the waterways used flow.

EDF operates facilities for which it has a concession by combining energy improvement, water management, care for biodiversity, payments of fees to national government and local authorities, and local development, while ensuring the safety and security of operations.

Hydropower concessions have an initial term of 75 years[1]. Most hydropower concessions that expired before 2012 were renewed for terms of 30 to 50 years.

See also section 2.2.3 Risk 3B "Changes in the legal and regulatory framework for hydraulic concessions".

Regional anchoring in hydropower valleys

EDF is committed to contributing to the sustainable and shared development of the areas near hydropower generation facilities, which are generally rural and sometimes isolated. EDF bases its relationship with the region by acting as a responsible operator and as a long-term industrialist in the valleys.

EDF's relationship with hydropower valleys is based on two key factors:

- employment, by trying to maximise local economic returns. EDF makes 67% of all its purchases in those territories which benefit the local industrial fabric. EDF's supplier panels list is over 2,400 local companies representing trades specific to the hydropower sector. The employment footprint of EDF's hydroelectric activity in metropolitan France is estimated at 4,370 indirect jobs[2]. EDF has also been involved, alongside economic and institutional players in the valleys, with more than 10 years of the *"EDF, une rivière, un territoire"* ("EDF, One River, One Territory") programme which has created or maintained over 650 jobs by means of loans to nearly 60 local businesses;
- ongoing dialogue with economic, political, and non-profit stakeholders in the localities in question, in particular water users and environmental stakeholders:
  - > in 2023, the hydropower reservoirs operated by EDF in the Pyrenees once again contributed to the back-up in case of low water levels of the Garonne operated by SMEAG. This support made it possible to postpone until mid-October (and for only a few days, given the arrival of rainfall on 19 and 20 October) the restrictions on use that would have otherwise been in place from mid-August (*cf.* SMEAG newsletter of 3 November 2023 - *Bulletin hebdomadaire d'information du SMEAG du 3 novembre 2023*),
  - > a voluntary approach to dialogue and consultation process with the local authorities and residents concerned, for example on the Cheylas STEP sediment management project.

Managing access to water

The maximum capacity[3] of the dams operated by EDF in France is nearly 7 billion m³ of water. Over and above being a hydropower supplier, EDF is therefore also engaged as a contributor to the sustainable local management of water resources.

EDF maintains the flows of many rivers in summer for the benefit of aquatic environments and other water uses: drinking water, irrigation, sports and leisure activities in rivers. *etc.* (see example of SMEAG above).

Management of water resources is carried out in consultation with the various stakeholders; in some cases, this includes agreements where the State is the contracting authority, with local authorities, fishermen, farmers, and the managers of tourist destinations and industrial sites. EDF is thus very much a stakeholder in local water management governance. For instance, EDF has set up an innovative "Basin coordinator delegate" scheme, so that all EDF's business lines have representation in water-related authorities such as basin Committees and water authority Boards of Directors, on behalf of the UFE[4].

(1) Pursuant to the French Law of 16 October 1919 on the use of hydropower.
(2) In accordance with commonly accepted academic definitions and based on purchases of €506.6 million made addressed to the French economic sector in 2023, and an indirect employment impact per million euros on 64 economic sectors; based on INSEE economic data.
(3) This should be distinguished from the volume capacity that can actually be exploited given the characteristics of the facilities: height of water intakes, etc., which is necessarily less.
(4) UFE: Union française de l'électricité (Union of the French electricity industry).

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Action to adapt to climate change

EDF has always had to adapt to natural hydrometeorological variability, which can lead to significant variations in its generating capacity from one year to the next on mainland France scale. Numerous projects have been launched over several years on the adaptation of structures, operating methods, design of hydropower facilities but also consultation on responsible water management (see above). Coordination of this work on climate change adaptation for EDF hydropower generation was launched in 2021 and resulted in approval by the CSR Executive Committee at the end of 2023, of the ARCHE project (Adaptation and Climate Resilience of Hydropower at EDF). This involves an approach structured around three issues (safety of facilities and people, high level of economic and environmental performance and essential contribution in the management of the multi-use of water) and focused on four major areas of adaptation (knowledge, heritage, operation and resilience of the regions) broken down into around 30 actions.

1.4.1.3.2 Other renewable energies

Biomass and biogas

Through its holdings, the EDF group owns shares in France (notably through its subsidiary Dalkia), and abroad in several dozen heating networks and small-scale, mainly wood-fired generating plants. It has been committed for several years to the development of anaerobic digestion, with the biogas produced used both in cogeneration and for direct injection into the natural gas distribution network.

Geothermal energy

To develop this type of energy, EDF is using its subsidiary Électricité de Strasbourg, which operates two industrial facilities in Alsace: one for heat at Rittershoffen, Ecogi, for a local industry, and the other for power generation, at Soultz-Sous-Forêts.

Dalkia has also specialised in geothermal energy for over 40 years. Dalkia operates a number of surface and deep geothermal facilities (about 20 in the Ile-de-France region) in France.

1.4.1.3.3 EDF Renewables activities

Apart from hydropower, the EDF group's involvement in renewable energy is mainly managed by its subsidiary EDF Renewables. EDF Renewables companies in France and abroad had a combined headcount of 5,022 as of 31 December 2023.

EDF Renewables is fully engaged in the renewables market dynamic, with a strong continuing presence in onshore wind power, while accelerating its solar and offshore wind power business.

EDF Renewables is also expanding into the storage sector, in line with EDF's Storage Plan which targets up to 10GW of new capacity by 2035, including 4GW from large-scale batteries.

EDF Renewables is also involved in the Group's low-carbon hydrogen development strategy with the ambition of positioning itself as a major European player in decarbonising industry and heavy mobility.

Finally, EDF is also present in the decentralised renewable energy sector (rooftop solar power) for residential and corporate customers. It has operations in France (*via* its subsidiary EDF ENR) and abroad (*via* EDF Renewables), in particular in the United States, China, the United Kingdom and, since 2021, in Vietnam, Israel and Germany.

EDF Renewables is continuing to grow its installed capacity (up 10%/year on average over the past five years). As of 31 December 2023, EDF Renewables had gross installed capacity of 21,164MW, net installed capacity of 12,809MW and 5,972MW gross currently under construction. The projects portfolio amounts a gross capacity of 101GW[1] at the end of 2023.

Present in more than 20 countries, EDF Renewables is one of the leading players in the development and generation of electricity from renewable energies. Its main areas of historical operations are North America (United States, Canada and Mexico) and Europe, starting with France and the United Kingdom. EDF Renewables has also undertaken a geographical rebalancing of its activities. It is strengthening its presence in other countries with high potential for the development of renewable energies such as South Africa, Brazil, China, India, the United Arab Emirates, Saudi Arabia, Morocco and Oman.

EDF Renewables is an integrated operator in renewable energies and is involved in every stage of the value chain. EDF Renewables operates upstream, in project development, as well as in engineering during the construction of wind and solar farms and their operation and maintenance. EDF Renewables develops projects on its own or in partnerships, as appropriate. At year-end 2023, it has a portfolio balanced with 65% of wind power, 33% of solar power and 2% of storage[2], and continues to undertake its technological rebalancing initiative by accelerating its development in solar power.

As part of its business model, the Group is also involved in the Development and Sale of Structured Assets (an activity referred to as "DSSA"), which consists of selling projects it has built, in whole or in part, to third-party investors. With regard to DSSA, the net capacity sold in 2023 amounted to 461MW.

(1) Including storage.
(2) Net values.

1.4.1.3.3.1 Fleet

INSTALLED CAPACITY BY SEGMENT AND COUNTRY

(in MW)	At 31/12/2023		At 31/12/2022	
	Gross[1]	Net[2]	Gross[1]	Net[2]
Wind power				
South Africa	145	73	145	73
Germany	164	162	176	174
Saudi Arabia	426	152	416	149
Belgium[3]	325	27	325	27
Brazil	951	768	709	526
Canada	807	599	607	542
Chile	175	88	175	88
China	1,001	476	905	380
United States	3,623	2,925	3,815	3,040
France	2,547	1,959	2,328	1,918
Greece	264	238	264	238
India	571	459	553	432
Morocco	87	34	87	34
Mexico	324	162	324	162
Poland	68	68	68	68
United Kingdom[4]	635	183	632	181
Turkey	0	0	0	0
Total Wind power[5]	**12,115**	**8,372**	**11,530**	**8,031**
Solar power				
Saudi Arabia	388	133	0	0
Brazil	399	199	399	199
Canada	61	42	61	42
Chile	115	58	261	131
China	299	299	137	136
Egypt	167	82	164	80
United Arab Emirates	3,165	590	2,440	445
United States	1,474	971	1,280	860
France	682	679	508	449
Greece	172	156	62	57
India	663	332	663	328
Ireland	27	14	27	14
Israel	589	349	531	296
Mexico	120	120	120	120
UK	218	111	5	2
Vietnam	83	43	66	34
Total Solar power[5]	**8,621**	**4,177**	**6,722**	**3,194**
Storage				
Germany	2	2	2	2
China	10	3	10	3
Egypt	1	1	0	0
United States	216	154	125	83
UK	200	102	150	76
Total Storage[5]	**429**	**260**	**287**	**163**
TOTAL[5]	**21,165**	**12,809**	**18,538**	**11,388**

(1) Gross capacity: total capacity of the facilities in which EDF Renewables has a stake.
(2) Net capacity: capacity corresponding to EDF Renewables' stake.
(3) MW in offshore wind exclusively.
(4) EDF Renewables owns 51% of EDF Renewables UK (the other 49% is owned by EDF Energy).
(5) Corresponds to the sum of the exact values rounded to one decimal place.

In 2023, the electricity generation of EDF Renewables' fully consolidated fleet across all segments and countries was 32.9TWh. The load factor at end-2023 reached 33% in onshore wind power generation and 17% in solar power generation.

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1.4.1.3.3.2 Segments and highlights

For details of renewables activities in Italy and Belgium, see sections 1.4.5.2 "Italy" and 1.4.5.3.1 "Northern Europe" respectively.

Wind power

Onshore wind power

In 2023, EDF Renewables continued its growth in onshore wind power. EDF Renewables had a gross total of 10,494MW onshore wind power capacity in operation as of the end of 2023. Onshore wind farms with a gross capacity of 590MW (538MW net) were commissioned in 2023. Onshore wind farms under construction represented a gross capacity of 1,370MW at 31 December 2023.

France

EDF Renewables continued its development by launching the construction of six wind power projects for a volume of nearly 95MW and won 106MW in Energy Regulation Commission (CRE) calls for tenders.

South Africa

EDF Renewables is continuing the construction of the Phezukomoya, Coleskop and San Kraal wind farms, for a total of 420MW.

EDF Renewables set up, with its Anglo-American partner, a joint venture called Envusa Energy, which acts as a trader between the "producer" projects (generator) on the one hand and "consuming" mines (offtaker) on the other.

Saudi Arabia

EDF Renewables (lead contractor) commissioned the Dumat Al Jandal project in a consortium with Masdar and Nesma in 2022. With a gross installed capacity of 426MW, this project is the first such wind farm in Saudi Arabia and the biggest in the Middle East. Since July 2022, the wind farm has been operating at full capacity, providing over 70,000 homes with renewable electricity.

Brazil

EDF Renewables has been operating in Brazil since 2015, and is one of the country's leaders in the renewable energy industry. The first phase of the Serra do Seridó wind farm in the state of Paraíba, with a total installed capacity of 242MW, has been commissioned in July 2023. The second phase, totalling 238MW, is under construction and its commissioning is expected in 2024.

In addition, EDF Renewables launched the construction of the Serra das Alma wind project in Bahia totalling 261MW of installed capacity.

Canada

EDF Renewables commissioned the Cypress 1 wind farm totalling 200MW.

India

In 2023, EDF Renewables completed the commissioning of the 112 turbines of the Kabini project (SECI V) in Gujarat, totalling 302MW of installed capacity.

EDF Renewables signed a PPA for 100MW of wind power as part of the GUVNL4 auction.

Morocco

EDF Renewables continues the construction of the Koudia wind farm, a repowering project, for a total installed capacity of 100MW, which is scheduled to be commissioned in 2024.

UK

Two EDF Renewables projects in the United Kingdom, the Clash Gour (223MW) and Heatland (80MW) wind farms, have been awarded a Contract for Difference (CfD) for a share of their generation.

Offshore wind power

Offshore wind power represents a strong area in EDF Renewables' development. The company already has operations on the offshore wind power market, with almost 21GW of projects under development, under construction, commissioned, and/or under management and maintenance. EDF Renewables is present in Belgium, the United Kingdom, France, Ireland, and more recently in China and the United States. Together with its partners, the company is building projects totalling almost 1.2GW.

France

EDF Renewables is the offshore wind power leader, with five out of eight projects awarded in the calls for tender launched by the French State since 2011.

It won three projects in 2012, namely the offshore wind farms in Saint-Nazaire, Fécamp and Courseulles-sur-Mer. Together, the gross capacity of these projects amounts to nearly 1,430MW for an investing of around €6 billion. The partnership arrangement brings together EDF Renewables, Enbridge Inc., and Skyborn for the Fécamp and Courseulles-sur-Mer projects. For the Saint-Nazaire project, EDF Renewables is partnering with Enbridge Inc. The construction of the Saint-Nazaire offshore wind farm, which was begun in late 2019, was commissioned at the end of November 2022.

The Fécamp offshore wind farm has been under construction since 2020. The electrical substation and 71 foundations were installed offshore in summer 2022. All inter-turbine cables were installed and 30 wind turbines were installed as of 15 December 2023. Full commissioning of the wind farm is expected by the end of the 2024 spring.

Construction of the Courseulles-sur-Mer wind farm, off the coast of Calvados, started in February 2021. An order for recyclable blades for 10 turbines was placed in 2022. The connection of the wind farm to landfall and the electricity grid is currently being completed. The foundations are due to be installed in mid-2024. The commissioning of the won farm is scheduled for the end of summer 2025.

EDF Renewables is, together with its partners Embridge Inc and the Canadian pension fund CPPIB, also constructing a pilot offshore wind farm project (*Provence Grand Large*) in the Mediterranean, based on floating wind power technology. Its construction continued in 2023 with the assembly of the floating platform turbines. The offshore installation of the turbines has been completed and connection works are underway. Commissioning is expected in spring 2024.

In June 2019, the Dunkerque project, with an installed capacity of almost 600MW, was awarded to a consortium consisting of EDF Renewables, Innogy (now RWE) and Enbridge. In 2021, following the withdrawal of RWE from the project, EDF Renewables and Enbridge both increased their stake in the project such that both now own 50%. The consortium (responsible for design, construction, and O&M of the future wind farm) and RTE (responsible for the electrical connection) is continuing with the consultation phase of the project, following on from the public debate organised by the Commission for Public Debate on Specific Projects (Commission particulière du débat public) in the fourth quarter of 2020. Permits for the project are under review and the public inquiry will be held in 2024, with commissioning expected between 2028 and 2030.

In March 2023, EDF Renewables won the 1GW "Centre Manche 1" call for tenders launched by the government in 2021, alongside Maple Power, an entity co-owned by Enbridge Inc and the Canadian pension fund CPPIB. This project will be the biggest offshore wind farm in France.

EDF Renewables has also been shortlisted for three floating offshore wind farms, one in the south of Brittany (awarded expected in Q1 2024) and two others in the Mediterranean (award scheduled for late 2024).

EDF Renewables is awaiting the results of call for tenders No. 5 "Bretagne Sud" (floating wind farm),

EDF Renewables is participating in call for tenders No. 7 "Oléron" (1GW of bottom fixed wind farm).

EDF Renewables is participating in call for tenders No. 8 "Centre Manche 2" (1.5GW of bottom fixed wind farm).

United States

At the end of 2018, EDF Renewables set up a 50-50 joint venture, Atlantic Shores Offshore Wind, LLC, with Shell New Energies US LLC (Shell). The purpose of this joint venture is to develop offshore wind turbines on a site located off the coast of the New Jersey (WEA) under a lease issued by the US federal authorities. In June 2021, the joint venture won a Power Purchasing Agreement (PPA) to develop 1.5GW of capacity. In July 2022, the joint venture won another maritime area offshore from the state of New York in an auction organised by the federal authorities to develop a project for 1.5GW. Project development is progressing.

United Kingdom and Ireland

In 2023, EDF Renewables continued the construction of the Neart na Gaoithe offshore wind farm in partnership with Irish electricity company ESB. This 450MW project is located in the Firth of Forth on the eastern coast of Scotland. It is scheduled to be commissioned in 2024.

In addition, EDFR won in March 2023 the Codling offshore wind power project with a capacity of 1.3GW.

Photovoltaic solar power

EDF Renewables accelerated its development in solar power. At the end of 2023, gross installed solar capacity was 8,621MWp (4,177MWp net), up by 971MWp net *i.e.* +30% compared to end 2022.

EDF Renewables also has a portfolio of solar projects under construction for 2,585MWp of gross capacity.

France

EDF Renewables has structured its policy in order to contribute to the Solar Plan launched by the Group in December 2017. EDF is implementing a strategy covering all market segments. Such strategy is based on an integrated development model for projects up to their operation, the quest for industrial excellence and continued investment in innovation. This strategy leverages EDF's research and development and the territorial networking of EDF's teams dedicated to local authorities and businesses. The lands targeted as a priority are sites referred to as "damaged", industrial wastelands, polluted, abandoned or former quarry sites, which can be rehabilitated with the development of solar power plant projects. The company is also looking to develop agrivoltaic solar projects.

EDF Renewables commissioned 22 solar power plants in 2023, for a total capacity of 162MWp, and launched the construction of solar power plants with 73MWp net capacity. Currently, 229MWp of solar projects are under construction and the portfolio of solar projects in France includes more than 600MWp of projects authorised at the end of 2023, not counting Luxel, a developer acquired by EDF Renewables in 2019.

EDF Renewables won contracts for a total capacity of 255MWp of solar power in the French Energy Regulation Commission's 2023 calls for tenders and signed PPAs with corporations, including Luxel, for a capacity of nearly 400MWp.

Innovation also supports the development of solar photovoltaic, notably in the form of:

- agrivoltaic solar projects: development of solar projects above or next to certain types of crop. In 2023, EDF Renewables launched a pilot project known as Vitisolar above vineyards in the region of Bordeaux as well as the demonstrator ADELI in Gard where, beneath the panels, crops are rotating between rice and alfalfa;
- floating solar projects: in June 2023, the EDF group's first floating solar power plant located in Hautes Alpes, called Lazer, was commissioned. This floating solar farm of an installed capacity of 20MWp has been installed on the hydroelectric reservoir, covering three-quarters of the water body's total area;
- ground-mounted solar projects for self-consumption to support industrial companies' use of low-carbon power: in 2023, EDF Renewables commissioned its first ground-mounted solar power plant for self-consumption to provide electricity for part of the Sanofi factory in Aramon, Gard.

South Africa

EDF Renewables entered into an agreement with the Anglo-American group to set up a joint venture, Envusa Energy, and launch a pipeline of over 600MWp worth of wind and solar power projects, with construction due to begin in 2024. By 2030, Envusa Energy aims to having installed capacity of between 3 and 5GWp.

Saudi Arabia

In 2023, EDF Renewables commissioned South Jeddah, its first solar power fleet in Saudi Arabia, with an installed capacity of 388MWp.

In addition, EDF Renewables won a call for tenders and signed a PPA to develop, in consortium with Masdar and Nesma, the Al Henakiyah project for an installed capacity of 1.2GWp.

United States

After commissioning the Arrow Canyon (275MWp) and Holliday Creek (117MWp) power plants in 2022, EDF Renewables North America commissioned Phase 1 of Fox Squirrel in 2023 for a total of 194MWp. Phases 2 and 3 of Fox Squirrel totalling 555MWp are under construction, with commissioning scheduled for 2024.

In addition, EDF Renewables North America has made a final investment decision for the following projects: Huck Finn (270MWp, whose commissioning is scheduled for 2024) and Milagro (183MWp solar power plant project with 75MW of storage whose commissioning in scheduled for 2025).

United Arab Emirates

The consortium between EDF Renewables and the Chinese JinKO Power Technology Co. Ltd. (alongside local partners Masdar and Taqa), inaugurated the Al Dhafra solar power plant project in November 2023. The solar power plant is located 35km south of Abu Dhabi. With an installed capacity of 2GW, it is one of the highest-capacity solar power plant projects in the world. It supplies the electricity needs of the equivalent of 160,000 local households each year.

Oman

With its Korean partner KOWEPO, EDF Renewables launched the construction of the Manah project with a capacity of 630MWp, the first site in this country.

India

EDF Renewables is developing its solar power business through EDEN Renewables India, the joint subsidiary co-owned with TotalEnergies. EDEN is continuing the development of solar projects, with a gross capacity of 663MW under construction, mainly in the state of Rajasthan.

Vietnam

EDF Renewables holds a stake in SkyX Energy, a rooftop solar developer in Vietnam.

Israel

In 2023, EDF Renewables inaugurated the Ashalim 2 project with a capacity of 42MWp.

United Kingdom

The Porth Wen, Burwell 1 and Sutton Bridge solar farms were commissioned at the end of 2023 with a capacity of 213MWp. EDF Renewables also secured the building permit for the Longfield project (400MW PV solar + 400MW batteries) and Glassthorpe.

Operating & Maintenance

As an integrated operator, EDF Renewables operates and maintains most of its own facilities. Dedicated first and foremost to EDF group wind and solar assets, this activity is also carried out on behalf of third parties. Worldwide, EDF Renewables operates 18.7GW at end December 2023 with over 1,000 experts, engineers and technicians across nine countries. EDF Renewables has long been active in the operation-maintenance field in North America where it manages over 14GW. The business in Europe and the rest of the world exceeds 4GW at end 2022.

This activity is driven by commissioning new plants and choosing which facilities to operate on a case-by-case basis according to technology and region. The aim is to achieve maximum efficiency in every facility in conjunction with providers throughout the expected or extended useful life of equipment.

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Accordingly, EDF Renewables recently set up a predictive maintenance oversight centre (e-Diagnostic Centre) drawing on specific in-house expertise centralised and coordinated with the EDF group's R&D Department. It complements the facility remote monitoring and control system made up of two real-time oversight centres in Colombiers (France) and San Diego (California).

EDF Renewables owns several European maintenance centres: in Belgium, Greece, the United Kingdom and France. These operation-maintenance units are designed to place technical teams as close to wind or solar farms as possible. In 2023, EDF Renewables opened its second operation & maintenance centre for offshore wind power in France at Ouistreham (the first two, at Saint-Nazaire and Fécamp, were inaugurated in 2021 and 2022). Some 100 maintenance technicians will work there in 2024 to operate the future Calvados offshore wind farm.

Decentralised Energy

France

EDF ENR is an integrated player in decentralised solar power generation, carrying out design, development, construction, operation, and maintenance of rooftop and car park canopy installations. A wholly-owned subsidiary of the Group, it markets solar power offers for residential customers, professionals, and local authorities in metropolitan France and overseas départements and territories through its subsidiary Sunzil. With over 60,000 facilities completed, EDF ENR now occupies a leading position. On the residential market, it carries out some 25% of all self-consumption installations in France. On the professional market, the offering features in the "EDF Solutions Énergétiques" catalogue.

In addition, EDF Renewables Technologies, a wholly-owned subsidiary of EDF Renewables, is present in the upstream segment. It owns 100% of EDF ENR PWT (Photowatt brand) which designs and manufactures photovoltaic modules using monolike crystalline silicon technology with various applications ranging from residential equipment to land-based solar farms. Photowatt is rolling out an industrial model focusing on low-carbon production of high-technology silicon wafers and ingots. Alongside this joint project, Photowatt focuses on its R&D activities, in conjunction with the EDF group's R&D Department and solar energy research centres such as INES or the Photovoltaic Institute of Ile-de-France region.

United States

EDF Renewables is engaged in a growth strategy in the United States on the decentralised energy market. Since 2016, several acquisitions and partnerships have served to develop this business (acquisition in 2016 of Global Resources Options, Inc. [groSolar] and partnership in 2018 with EnterSolar).

In 2019 in North America, EDF Renewables acquired PowerFlex Systems with the aim of speeding up large-scale deployment of infrastructures for electric vehicles in the United States. Based in Los Altos, California, PowerFlex is a pioneering firm in the field of charging technology.

In 2018, EDF Renewables in North America signed a strategic partnership with EnterSolar. It acquired a 50% stake in the company. In 2021, it acquired the remaining 50% interest in EnterSolar and consolidated all decentralised "behind the meter" activities under the PowerFlex brand. Bundling energy solutions for business and industry enables PowerFlex to offer customers a stand-alone or bundled package of on-site solar, battery storage, electric vehicle charging, microgrid and energy management systems.

In December 2022, PowerFlex announced investment of $100 million by Manulife Investment Management, which joined the Board of Directors as a minority shareholder. Today, PowerFlex is one of the largest developers and installers of commercial solar power in the United States, with over 460MW commissioned. The company has deployed and operates almost 12,500 charging stations.

Storage sector

EDF Renewables contributes to the Storage Plan launched by the Group in 2018. In a context marked by the strong growth of renewable energy generation and by the closure of large-scale electrical facilities, battery storage technology, combined with a smart control system, helps smooth out the generation of electricity of the national grid. In this context, through its subsidiaries, EDF Renewables develops innovative storage systems in the US, the United Kingdom, Germany, France and South Africa.

EDF Renewables has also launched a new microgrid activity comprising solar projects equipped with a battery storage system that is connected to a local grid in remote areas (deserts, islands).

South Africa

In September 2021, EDF Renewables and its partner Perpetua Holding were awarded an innovative project in South Africa. It combines solar, wind and battery storage technologies. This project named Umoyilanga consists of a 77MW wind farm and a 138MW solar plant, each equipped with a battery system. The financial closing of this project was reached in December 2023 and it is now under construction.

United States

EDF Renewables is developing and building storage systems linked to solar power projects.

In June 2021, EDF Renewables North America won three long-term contracts with the New York State Energy Research and Development Authority (NYSERDA) for three solar-oriented projects. These solar power and storage projects correspond to combined capacity of one gigawatt (GW).

In 2022, EDF Renewables North America commissioned two Battery Energy Storage Systems (BESS): Maverick 6 (50MW) and Big Beau (40MW).

In 2023, EDF Renewables commissioned the Arrow Canyon project (75MW, 375MWh of batteries).

UK

Through its start-up Pivot Power[1], EDF Renewables opened the most powerful vehicle recharging station in Europe, the Oxford Energy Superhub, in July 2022. This project is part of a national network of Energy Superhubs developed by Pivot Power, combining batteries connected to the transport network and an electricity infrastructure to recharge electric vehicles. The aim is to encourage the use of renewable energies and accelerate the decarbonisation of transportation. Initially the hub will offer fast charging for 42 vehicles.

In 2023, EDF Renewables UK completed the construction of a new 50MW/100MWh battery facility at Energy Superhub Coventry, capable of powering 100,000 homes for two hours.

Five projects – Pivot Power Sundon, Bredbury, Tye Lane, Braintree, Indian Queens – are in pre-construction.

(1) With Oxford City Council, Fastned, Tesla Superchargers and Wenea.

1.4.2 Sales and supply activities in France

Besides gas and electricity supply, EDF accompanies its customers by offering a wide range of services and energy solutions. EDF aspires to be a trusted partner for customers, by engaging in responsible marketing and providing simple, intelligible offers.

29.6 million	223.9 TWh	46.3 TWh
customer sites in France[1]	electricity sales in 2023[2]	gas sales in 2023[3]

(1) EDF Customer Division + Électricité de Strasbourg: electricity: 27.0 million, gas: 2.6 million.
(2) EDF Customer Division (excluding transfers to local distribution companies and EXELTIUM) + Électricité de Strasbourg.
(3) EDF Customer Division + Électricité de Strasbourg.

1.4.2.1 Presentation of the market in France

1.4.2.1.1 Competition

Since 1 July 2007, the French electricity and gas market has fully opened up, allowing each customer to choose their energy supplier.

In the electricity and gas markets, many suppliers have been proposing offers to businesses and local authorities since the early 2000s. For residential customers, competition has intensified significantly since 2017 with the entry into the market of gas and electricity suppliers that are well-established in other activities or geographical areas.

To supply their customers in 2022, EDF's alternative suppliers had access to their own generation capacities as well as to the wholesale electricity market and the ARENH.

During the November 2023 application process, demand from alternative suppliers for delivery in 2024 amounted to 130.41TWh for an ARENH volume to be distributed of 100TWh, *i.e.* an allocation rate of 76.68%. Adjusted for the impact of the new closing coefficient implemented for 2024 deliveries, this demand is almost identical to that of the previous delivery year, at the November 2022 application process.

See also section 1.4.3.3 "Regulated access to historic nuclear power (ARENH)", as well as risk 3A "Changes in public policies and in the regulatory framework in France and Europe, in particular ARENH and post-ARENH" of section 2.2.3 "Market regulation, political and legal risks".

Regulatory notice

The Energy Regulation Commission (CRE)

The CRE *(Commission de régulation de l'énergie)* is an independent administrative authority. Its responsibility is to ensure the proper workings of the electricity and natural gas markets for end consumers. In this respect, the CRE ensures, in particular, that the conditions for access to electricity and natural gas transmission and distribution networks do not impede the development of competition.

The CRE has significant powers: the power to make proposals, advisory powers and decision-making powers (approval power and regulatory power). The CRE makes proposals, in particular:

- to the Ministers for the Economy and for Energy regarding the amount of the costs that are attributable to the public service missions assigned to power producers, and the net amount of the related contribution;
- regarding the ARENH price once the Decree has been published that specifies the methods for identifying and recognising the costs that are taken into account for the calculation of the ARENH price.

Moreover, it is the CRE's responsibility to send its justified proposals to the Ministers for the Economy and for Energy for changes in the regulated electricity sales tariffs and transfer tariff to the local distribution companies.

The CRE has decision-making power to establish Tariffs for Using the Public Electricity Transmission and Distribution Networks (*Tarifs d'utilisation des réseaux publics de transport et de distribution d'électricité*, TURPE).

Under its residual regulatory power, the CRE also takes network connection decisions, as well as decisions to define the rules for calculating and adjusting the rights of suppliers to the ARENH.

The CRE is also vested with very broad powers that enable it to obtain any information and investigation that it may deem useful for the fulfilment of its remit, as well as authority to settle disputes and to apply penalties, through the Settlement of Disputes and Sanctions Committee (CoRDiS).

The Law on the Energy Transition for Green Growth also gives the CRE the possibility of having the information it obtains through its remits audited, at the expense of the audited undertakings.

Organic law No. 2017-54 of 20 January 2017 on Independent Administrative Authorities and Independent Public Authorities and Law No. 2017-55 of 20 January 2017 on the General Statute of Independent Administrative Authorities and Independent Public Authorities, provided these authorities, including the CRE, with an ordinary legal status and lay down the rules relating to the mandate and ethics of members, the operation and organisation of these authorities and parliamentary control.

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1.4.2.1.2 Regulated electricity sales tariff contracts

Access to regulated electricity tariffs

For details of the changes to the legislative and regulatory framework and tariff changes for the year for regulated electricity sales tariffs in France (formerly "blue" tariffs), see section 6.1, note 5.1.1 "Regulatory changes in France" in the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.

Since the Energy and Climate Law entered into force, the situation for electricity, by category of customer, is as follows for 2023:

- household and non-household customers having subscribed power levels for their site(s) over 36kVA: since 1 January 2016, these sites can no longer subscribe to regulated sales tariffs, which were withdrawn on 31 December 2015;
- household customers, including sole proprietors and co-owners' associations of a single residential building: these customers have to right to regulated sales tariffs for their site(s) of 36kVA or less. They can freely switch back and forth between regulated tariffs and market offers;
- non-household customers with subscribed power levels of 36kVA or less: only customers with fewer than 10 employees and a sales, total revenue, or balance sheet of less than €2 million will still be able to benefit from regulated sales tariffs after 31 December 2020. Customers who do not fall into this category lost the benefit of regulated tariffs on 31 December 2020, in accordance with the provisions of the Energy and Climate Law;
- household and non-household customers for their site(s) located in areas not connected to the continental metropolitan network: these customers have the right to regulated sales tariffs.

Regulatory notice

"Blue" tariff changes

In accordance with Article L. 337-4 of the French Energy Code, the Energy Regulation Commission (CRE) has been responsible for notifying the Ministers for the Economy and for Energy of its justified proposals for regulated electricity sales tariffs (TRV). If no objections are made within three months, the proposals are deemed to have been approved.

1.4.2.1.3 Electricity supply contracts

In France, residential and non-residential customers may also choose a market offering put forward by any supplier, including EDF.

With the exception of customers directly connected to the transmission network, who must sign separate supply and delivery contracts, all other customers may enter into a single contract with the supplier of their choice. In this regard, a commission is paid by the distributor to any supplier offering a single contract to its customers since in doing so, it provides customer management services on behalf of the distributor.

The quality of supply, which is the distributor's responsibility, is monitored on a regular basis under contracts with the distributors. EDF monitors the impact of outages and the quality of supply to its customers and their satisfaction. The aim is to work with the distributor on a continuous improvement basis.

1.4.2.2 Activities of the Customer Division

EDF's Customer Division brings together all business relating to the sale of electricity, gas, and related services in mainland metropolitan France. It also performs all customer management functions, including the management of customer requests *via* all channels (telephone, email, etc.), complaints handling, invoicing, and debt recovery. These activities spans all customer segments: residential customers, professionals, companies, and local authorities. For larger customers (industry and service sectors), energy services are mainly marketed and provided by Dalkia, a subsidiary of EDF.

The Customer Division operates on the basis of recognised fundamentals:

- constantly seeking to further strengthen consumer confidence;
- local presence in the form of 6,900 customer advisers, who are all based in France, its 8 Regional Commercial Divisions and its Key Accounts Division;
- continual innovation in the fields of digital technology, electric mobility, self-consumption solutions, and electricity flexibility.

In 2021, EDF became the first energy supplier to obtain "Relation Client France" (France Customer Relations) certification created by the French Association of Customer Relations (*Association française de la relation client*, AFRC) and the Pro France Association. This certification recognises French companies that choose to locate all of their customer service in France and that are committed to providing jobs for local communities through initiatives in the fields of local integration, training and inclusivity.

1.4.2.2.1 Activity by customer category

1.4.2.2.1.1 Residential customers

Residential customer satisfaction and trust are a priority for EDF. Approximately 9 out of 10 customers are satisfied with their relationship with EDF following telephone contact. EDF is one of the most popular French companies. Brand image surveys show that *two out of three customers trust EDF when it comes to obtaining* assistance with managing their energy consumption. The annual report of the French national energy mediator published in May 2023 shows that EDF has one of the lowest rate of complaints (with a rate of 42 complaints per 100,000 customers). The customer experience offered is both human (through its advisors who are all located in France and can be reached by telephone or by chat) and digital (online customer account access, chat, web call back, mobile application, digital solutions, social media, etc.).

Energy supply

Electricity supply

EDF supplies electricity at regulated sales tariffs and also offers a complete range of market-price solutions for electricity that are adapted to the expectations and consumption profiles of customers.

For regulated sales tariffs, 2023 was marked by the development, requested by the public authorities, of the Tempo option, which allows customers to save money by reducing their consumption on days of heavy strain on the electricity system.

For market offerings, the range is structured around two types of offer:

- the "Green Electric" range of solutions makes it possible to finance and support means of renewable energy generation to the extent of customers' consumption, through the following guarantees of origin: "Green Electric", "Green Electric Weekend", "Green Electric Auto" and "Green Electric Regional". In 2023, the "Green Electric Regional" offer was enhanced by welcoming a new region: Hauts de France. This offer once again obtained the ADEME "GreenVolt Committed Choice" label following an AFNOR audit;
- the "Zen Electric" range enables customers to have access to supply solutions that are adapted to their consumption profile and their lifestyle ("Zen Weekend" and "Zen Weekend Plus"). In 2023, the range added Zen Flex, a demand response market offering, and the marketing of the Zen Online offer was relaunched.

Gas supply

EDF supports its customers in managing and reducing their consumption and therefore CO_2 emissions. In 2023, the range of gas market offerings was reduced with the end of the three "Gas Advantage" types of contracts offering a four-year fixed price per kWh and the launch of a "Gas Advantage" offering with a two-year fixed price per kWh. The "Optimised Gas Advantage" solution, which is index-linked to the regulated gas tariff, is now index-linked to the CRE reference price as part of the end of the regulated gas tariff. Sales and marketing of this offering have enabled customers to benefit from the gas price increase cap.

Monitoring consumption

In parallel with its supply offers, EDF assists its residential customers so that they can monitor, understand and reduce their energy consumption over time. The aim is to encourage them to make energy savings using the "Mes Éco et Moi" (My Savings and Me) digital solutions. Customers who consult their energy use tracking tool more than two to three times a month can achieve savings of 10% on average on their bills. The consumption monitoring tools, in particular the "EDF et Moi" (EDF and Me) app, have enjoyed growing success, with 200 million visits in 2023.

Additional solutions and services

EDF mainly offers two services:

- *Assistance Dépannage* (Repairs Assistance), in partnership with AXA, an assistance service in the event of equipment breakdown, available with five different service levels;
- *Assurénergie*, also in partnership with AXA, is a bill payment insurance service. In the event of a personal injury, the customer receives an indemnity that is equal to the estimated monthly amount of their energy bills when the policy is purchased, for a maximum of one year and subject to contractual limits on pay-outs. In addition, the customer benefits from personal assistance services that are appropriate to his situation, in order to facilitate day-to-day living.

Since 2019, EDF has also put its customers in touch with its partner EPS if they are interested in a remote monitoring offering.

In 2023, EDF launched an electric heating management solution operated by its subsidiary Sowee to Zen Flex customers.

EDF also supports customers who move home. It provides them with advice and a checklist to facilitate their relocation. Customers who take out an energy contract with EDF also have access to special offers negotiated with leading partners in removals, household appliances, decoration, and building works.

In order to better meet customer expectations, EDF has also launched the *pack jeunes* (young people's pack), a move-in pack dedicated to young people.

The local services platform "IZI by EDF", which EDF launched in 2019, has emerged as a player in the energy retrofitting and electric mobility industry. See section 1.4.6.1.3 "Other service activities of the EDF group" – "IZI by EDF".

Earning of energy savings certificates

Regulatory notice

The Energy Savings Certificates (*Certificats d'économies d'énergie*, CEE) system, which was introduced in 2006, was updated on 1 January 2022 with the implementation of the fifth period of the system, after a fourth period (2018-2021), which targeted a total obligation of 2,133TWhcumac.

The fifth period of the CEE (which runs from 2022 to 2025) increases the efficiency of the system (through a sharp decrease in subsidies, checks on operations before filing an application, emphasis on the comprehensive renovation of housing, and enhancement of the national CEE programmes), and improves the system for the benefit of households with severe energy poverty (through an increase in the poverty requirement, restricting the scope to households with severe energy poverty and increasing the poverty penalty to €20/MWhp), while imposing additional obligations on the suppliers of carbon-intensive energies. The national obligation is set at 2,500TWhcumac for the period, of which 730TWhcumac is a "poverty" obligation; the latter has increased significantly compared to the figure for the fourth period. On 1 January 2023, this obligation was further strengthened for the period by +600TWhc (meaning a total of 3,100TWh for the fifth period), including a +400TWhc "poverty" obligation (total of 1,130TWhc in "poverty" obligation).

EDF has the obligation of being an actor of the Energy Savings Certificate legislation, and encourages residential customers to make energy savings. In particular, it promotes home energy retrofits through its "Energy Savings Partners" and distributor networks. All residential customers who have made energy efficiency alterations to their home qualify for a direct cash bonus from EDF by visiting www.prime-energie.edf.fr(1).

Solidarity policy

Solidarity is a core value of EDF, which has been pursuing a policy dedicated to economically disadvantaged customers for close on 30 years. Through its 230 solidarity experts and more than 3,000 partnerships, EDF works daily with social workers, charities and social mediation structures to implement customised solutions for customers in difficult situations.

Accordingly, at the end of 2021, EDF was the first supplier to undertake to assist its residential customers with unpaid bills by deciding not to cut off their electricity at any time during the year. With this measure, EDF went further than its regulatory obligations outside the winter grace period, by replacing the cut-off with a power limit of 1kVA. This measure will not apply if it is physically or technically impossible to limit the electricity supply to the home. See section 3.3.4 "Energy poverty and social innovation".

(1) Subject to meeting the strict requirements of the CEE regulations in force and having provided the required supporting documents.

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Energy sobriety

Since the summer of 2022, the energy situation in France caused the government to ask various energy experts to implement initiatives in order to roll out an energy sobriety policy. True to its positioning as a responsible supplier, EDF has been providing specific support to residential customers since the start of the energy crisis, and further bolstered its actions this year around three major areas:

- encouraging reduced energy consumption and modulated consumption during peak times, with a large-scale awareness campaign on useful actions in summer and winter;
- promoting demand response and modulation solutions such as the regulated sales tariff Tempo and Peak and Off-Peak options as well as the Zen Flex offer, and launching management solutions such as the heating management offer operated by Sowee, a subsidiary of the EDF group;
- helping to control consumption, especially *via* the promotion of consumption monitoring tools accessible free of charge from the EDF & Moi app or the internet customer area.

In this context, in 2023, EDF sent more than 140 million emails and 15 million letters.

EDF wants to sustainably anchor low energy consumption in the daily lives of its customers with a new positioning as a supplier of energy savings, embodied by the Housing Solutions showcase available on the website https://particulier.edf.fr/fr. This showcase brings together all available offers and services in order to better support our customers and prospects in their energy transition initiatives.

In addition, a new *Défis Utiles* ("Useful Challenges") campaign was launched in November 2023. This new eco-challenge, open to all EDF customers of one year or more, will offer customers who have reduced their consumption the chance to win tickets and prize packs for the Paris 2024 Olympic and Paralympic Games.

1.4.2.2.1.2 Business customers

EDF is firmly rooted in local territories and supports its business and local authority customers to achieve their goals in terms of sustainable performance, competitiveness and lower carbon intensity, in conjunction with the national objective of carbon neutrality. EDF proposes a wide range of electricity and gas supply offers, as well as offers of services.

EDF's offers

EDF proposes straightforward electricity and gas supply contracts, combined with management services and advice on eco-habits. For those customers who use more energy, contracts can be personalised (with specific durations and fixed or indexed prices), based on their expectations and budget forecasting capabilities. In addition, EDF provides support to customers with the highest consumption levels by means of personalised offers and rewards for customers who can shed load.

Through the structure of its offers, EDF encourages its customers to optimise their consumption and to shift it to times when there is less strain on the grid. For example, it offers a distinction of prices between peak and off-peak prices, or between summer and winter prices, as well as the low-consumption option "Sobriété", which includes a mobile peak time encouraging users to reduce consumption during hours of highest demand.

For its business customers, EDF also proposes an innovative offer, with low prices during evenings after 8pm, as well as at weekends, and on public holidays.

EDF has an enhanced range of solutions and services for all customers, and for large and small businesses or local authorities, such as repair assistance for VSEs/SMEs and electrical engineering support for companies (seeking to secure customers' internal electric facilities).

As part of the evolution of its commercial policy, EDF sells annual medium-term "ribbons" with maturities of four to five years, enabling EDF and all electricity suppliers to offer contracts that provide visibility and stability to customers over these time horizons. In this context, EDF now offers medium-term retail supply offers of up to five years.

In addition, EDF offers certain electricity-intensive customers long-term industrial partnership contracts, for a minimum period of 10 years, backed by the historical nuclear fleet (nuclear generation allocation contracts).

Most of the offers proposed by the EDF group aim to support customers in their decarbonisation efforts and reduce their bills through the following actions:

Adapting consumption habits and conducting business to consume less and/or at the right time

EDF conducts energy sufficiency awareness-raising campaigns for customers through eco-habits, and EDF offers consumption monitoring tools to all customer segments.

Transforming, changing and updating equipment and energy consumption processes

EDF offers audits and advice to improve energy efficiency, energy management and the ISO 50001 certification process. EDF supports its customers, particularly in their endeavours to replace or electrify uses. For example, with regard to electric mobility, in conjunction with its subsidiary IZIVIA, EDF offers advice on the sizing of electric charging station facilities and related services. EDF has also developed partnerships with automotive manufacturers and leaders in the automotive sector. EDF also offers advice on heat and cooling recovery for manufacturers with suitable processes.

Developing an energy mix with more renewable and/or local production

EDF offers all its customers, for all its products, an option which guarantees that an amount of renewable energy generation that corresponds to their consumption will be injected into the grid. EDF makes it easier customer to communicate regarding their commitment to the energy transition. With its subsidiary Agregio, EDF also develops PPA-type (Power Purchase Agreement) solutions for its major customers using facilities that generate renewable-origin electricity. Finally, EDF proposes optimised solar power solutions for self-consumption of electricity based on needs, together with a range of related services, including financing, maintenance, supervision, and performance monitoring, in liaison with its subsidiary EDF ENR. EDF also has offers for its self-consuming customers to complement their electricity supply tailored to their profile, whereby they can maximise their savings from self-generation and, where necessary, manage their consumption. EDF is also innovating by experimenting with services and technical systems aimed to facilitate the organisation and management of collective self-consumption operations.

Production of energy savings certificates ("CEE")

EDF encourages its industrial, services, local authority and social landlord customers to achieve energy savings by carrying out work:

- on energy efficiency and decarbonisation for industrial processes;
- on retrofit, insulation or management energy systems in collective and tertiary premises.

EDF participates in combating fuel poverty by supporting social landlords to retrofit housing and raise awareness of eco-habits among tenants.

Moreover, by funding CEE programmes, EDF participates in the following, in particular:

- raising awareness among young people of the ecological transition and eco-mobility;
- providing information and training, and contributing to the development of innovation in order to manage energy demand from industrial operators or SMEs.

EDF also contributes through subsidy funds for energy retrofits(1).

Customer satisfaction

EDF has made customer satisfaction a key priority for many years. In a rapidly changing environment, EDF has undertaken major changes to significantly and constantly improve Customer Experience and the quality of service provided.

Satisfaction measurement systems have been implemented at various stages of the relationship with customers, but also with customers who have not contacted EDF. The aim is to measure their expectations in the fields of energy supply services, information and support, in order to set up action plans when necessary. These initiatives led to a significant increase in customer satisfaction in virtually all the segments over the last five years.

EDF and regional authorities, social housing landlords, local *distribution companies (LDCs) and public service providers*

Regarding energy transition, EDF offers customised solutions for local authorities and public institutions with decentralised decision-making powers (hospitals, universities and major graduate schools, chambers of commerce and industry, CROUS(2) student service centres, ports and airports). The EDF group is also active in the following areas:

- the supply of electricity and gas at market prices, in response to their energy problems;
- the development of offers and services in the field of energy transition: local climate Plan, eco-districts, local generation, public lighting, electric mobility, energy efficiency of buildings, etc.;
- in addition, with respect to its public service missions, EDF is in charge of:
  - > the signing of concession agreements to supply electricity at the regulated sales tariff,
  - > the supply of electricity at the regulated sales tariff,
  - > the fight against energy poverty.

Overall satisfaction of customers in 2023 remains high with more than 86% of customers satisfied or very satisfied.

Concerning control over energy consumptions, agreements have been signed with regional authorities. They aim to provide support to these authorities in taking specific initiatives in the fields of energy transition and renewable energies. A support system for social landlords aims to improve the energy efficiency of social housing, and makes it possible for EDF to issue energy savings certificates. In 2023, 199,183 accommodations, 11,823 of which were given aid thanks to the *coup de pouce* ("helping hand") scheme, received support in renovation works.

1.4.2.2.2 For sustainable cities and regions

Cities and regions have to reconcile local appeal with responsible development. The EDF group meets the needs of regional development players. It identifies the various possible energy solutions and services, taking into account the technical and economic characteristics of the projects. The aim is to assist them with the energy transition and to reduce the carbon intensity of their habits. Forty-five Development Managers are present across all regions. The aim is for EDF to provide a better response to the needs of large cities, urban communities, medium-sized cities and rural areas.

EDF has developed a range of consultancy offerings with a view to:

- designing low-carbon neighbourhoods;
- developing housing retrofit strategies based on an asset strategy;
- vehicle fleet electrification, and charging station location plans with its subsidiary IZIVIA; and
- installing solar panels with its subsidiary EDF ENR or other partners.

1.4.2.2.3 Customer data protection

Specific attention is paid to the protection of EDF customers' data, and more generally to the protection of its information assets. Its goal is, in particular, the compliance of the processing of personal data with the General Data Protection Regulation (GDPR). Regular audits are carried out each year on the asset protection aspect, as well as on the information systems security aspect.

EDF curates the classification of information and documents on the basis of their degree of confidentiality and ensures commensurate security measures are implemented. All customer advisers are regularly informed and trained in this matter, so that they can respond to requests relating to personal data protection and the exercise of related rights. Complex requests are managed jointly with the Personal Data Contact (*Interlocuteur informatique & libertés*) (I2L) and the Data Protection Officer (DPO).

(1) Referred to in Article L. 312-7 of the French Construction and Housing Code.
(2) Regional Centre for University Student Social Services, Housing and Catering.

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1.4.3 Optimisation activities in France

Electricity cannot be stored: therefore, EDF has to supply just the right amount of electricity to match customer demand, at all times and at the lowest cost. The aim of optimisation is to predict this demand and implement the necessary trade-offs between the resources available to satisfy demand (production resources, long-term supply contracts, purchases on wholesale markets, *etc.*). Optimising EDF's output also involves covering physical, financial, and market risks.

Regulatory notice

Wholesale energy market – REMIT Regulation

Regulation (EU) No. 1227/2011, known as the "REMIT" regulation, on the integrity and transparency of wholesale energy markets entered into force on 28 December 2011. It aims to strengthen the confidence of market players and consumers in the integrity of the electricity and gas markets.

Strengthening wholesale energy market integrity and transparency must foster open and fair competition on these markets, in particular so that the prices set on these markets reflect a fair and competitive interplay between supply and demand. The regulation prohibits insider trading and market manipulation, and establishes an obligation to publish inside information, as defined within the meaning of REMIT.

The European Agency for the Cooperation of Energy Regulators (ACER) is primarily responsible for monitoring wholesale trades in energy products, in order to detect and prevent transactions based on inside information and market manipulations. ACER also collects the data needed to assess and monitor markets. The regulation provides that market participants, or a person authorised to do so on their behalf, must provide ACER with a detailed statement of operations on the wholesale energy market.

Market participants that perform transactions for which a declaration to ACER is mandatory must register with the national regulatory authority of the Member State in which they are established (the Energy Regulation Commission in France) or, if they are not established in the European Union, that of a Member State in which they do business.

Moreover, at the national level, national regulatory authorities also work together and monitor wholesale energy product trading. Member States determine the regime for the penalties that are applicable to REMIT breaches.

In France, the applicable regulations as now codified in the French Energy Code are as follows:

- Article L. 131-2 of the French Energy Code provides that CRE supervises the wholesale electricity and gas markets and notably guarantees compliance with the prohibitions on market abuse and the obligation to publish inside information held by market participants;
- Articles L. 135-1 to L. 135-16 relating to the investigation and control procedures by the CRE, and its powers in terms of collecting information for the performance of its missions;
- Articles L. 134-19 to L. 134-24 relating to proceedings before CRE's CoRDiS.

1.4.3.1 Role and activities of the Upstream/ Downstream Optimisation & Trading Division (DOAAT)

The balance between electricity supply and demand at EDF is managed all the way down to real time, in line with the framework established by risk policies, developed in line with the instructions issued by the Group's Risk Control Department and validated by EDF's Executive Committee. See also section 2.2.4 "Financial and market risks", risk factor 4A "Energy market risk".

Climate variations have a decisive impact on this management. For example, a fall in temperature of 1°C in winter leads to an average rise in electricity consumption in France of around 2,400MW[1]. A large part of this temperature sensitivity falls within EDF's portfolio. In addition, depending on the run-off, the difference in hydro generation output within the EDF perimeter from one extreme year to another can reach 20TW hours, sometimes more.

With respect to RTE (*Réseau de transport d'électricité*), DOAAT fulfills the role of "balance responsible party" within EDF's scope in mainland France. Optimisation consists of proposing to RTE a balanced supply program matching demand, ensuring physical supply security across its scope while minimizing risks and the cost of fulfilling EDF's contractual commitments.

The DOAAT ensures that it has, for all timeframes, sufficient resources in order to enable it to meet its commitments. To achieve this, it has a set of levers at its disposal:

- scheduling of the maintenance operations for means of generation (in particular nuclear plants);
- management of inventory (fuels, hydro-electric reserves and customer load shedding);
- purchases and sales in wholesale markets *via* EDF Trading, which is in charge of market access on behalf of DOAAT. See section 1.4.6.4 "Optimisation and trading: EDF Trading".

DOAAT also manages the exposure of EDF's upstream/downstream portfolio to price variations in the energy and fuel (gas, coal, petroleum products) wholesale markets and in the CO_2 emissions quota market, with the assistance of EDF Trading.

1.4.3.2 Long-term electricity purchase and sales contracts

EDF maintains commercial relations through energy purchase or sales contracts with European operators. These contracts are of many types, and confer:

- rights to the energy generated by facilities, primarily nuclear, over the duration of the exploitation of the facility. See section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation"; or
- drawing rights for totally or partially guaranteed electrical power generation capacity, for a duration that is generally between 15 and 25 years.

(1) Source: RTE.

1.4.3.3 Regulated Access to Historic Nuclear Power (ARENH)

Please refer to note 5.1.1 "Regulatory changes in France" in the consolidated financial statements for the financial year ended on 31 December 2023 in section 6.1, and to section 1.4.2.1.1 "Competition".

1.4.3.4 Capacity mechanism

Please refer to note 5.1 "Sales" in the notes to the consolidated financial statements for the financial year ended on 31 December 2023 in section 6.1.

1.4.3.5 Specific balancing and capacity perimeters for purchase obligations and sales to markets

Regulatory notice

EDF is a mandatory purchaser of the electricity generated by the generation facilities the government wishes to support and develop, by means of purchasing agreements (renewable energy sources and energy-efficient cogeneration facilities). Pursuant to the CRE resolution of 16 December 2014, all electricity purchased in this manner is managed within a dedicated "balancing perimeter" for installations subject to purchase obligation (*Obligations d'achat*, OA) agreements, which were implemented on 1 July 2015. The additional costs stemming from this obligation are offset for EDF by the State budget on the basis of an electricity market benchmark price (the concept of "avoided cost"), in accordance with the law (Article L. 121-7 of the French Energy Code). Since 1 January 2017, the management costs for this public-service mission have also been offset.

The DOAAT organises the sale of the energy produced by the installations under Purchase Obligation contracts directly on the energy markets. The management of this perimeter is completely independent of that of the EDF portfolio. The electricity volumes under Purchase Obligations which are foreseeable over the long term (the portion of the Purchase Obligations referred to as "virtually certain") are sold *via* transparent and non-discriminatory calls for tenders. Electricity volumes under Purchase Obligations that can be forecast in the short term (from one day to the next, known as the "random portion of the Purchase Obligations") are sold on EPEX Spot.

Similarly, within a dedicated Purchase Obligation perimeter, the Upstream-Downstream Optimisation & Trading Division (DOAAT) carries out certification of the capacity of production installations that are subject to Purchase Obligations, together with the necessary rebalancing and sales to the market of the related capacity guarantees.

1.4.4 Regulated transmission and distribution activities in France

Power transmission and distribution activities in mainland France are the remit of the transmission system operator (RTE) for high and extra high voltages, and of distribution network operators (Enedis and the local distribution companies in their respective exclusive service areas) for medium and low voltage.

RTE, which is an Independent Transmission Operator (as defined by EU law), and Enedis are managed in accordance with the rules on management independence, as provided for by the French Energy Code.

1.4.4.1 Transmission – Electricity Transmission Network (RTE)

105,800km	**9,900**	**379TWh**	**€2.1billion**
high and extra high voltage lines in 2023	employees (including approximately 500 work-study students)	withdrawals in 2023 (adjusted for the weather effect)	investments in 2023

Réseau de Transport d'Électricité (RTE) was founded on 1 July 2000 and has been a subsidiary since 1 September 2005. It is the owner and operator of the French electricity transmission network, which it operates, maintains and develops. At the end of 2023, with 98,450km of overhead power lines, more than 7,350km of underground power lines, approximately 2,840 substations operated individually or jointly and around 50 cross-border lines, this network is the largest in continental Europe. Its particular geographical positioning places it at the heart of the European electricity market.

RTE guarantees the safety and good working order of the electricity system, and provides open and fair access to all network users. In its role as a neutral and independent industrial operator for energy transition, RTE is optimising and transforming its electricity network in order to be able to connect new consumption and generation facilities. RTE's expertise and prospective reports assist the public authorities in making informed choices.

As at 31 December 2023, RTE is indirectly owned (50.1%) by EDF *via* the company Coentreprise de Transport d'Électricité (CTE). Its specific conditions of governance mean that RTE is not fully consolidated by the Group, but rather accounted for using the equity method.

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1.4.4.1.1 Governance of CTE and RTE

CTE

CTE is a limited company (*société anonyme*) with a Board of Directors, owned by EDF (50.1%), Caisse des Dépôts et Consignations (29.9%) and CNP Assurances[1] (20%). CTE holds 100% of the share capital of RTE. In accordance with its articles of association, the sole purpose of CTE is the acquisition and holding of RTE's shares, and more generally, all commercial, financial, intangible and tangible property transactions relating directly, or indirectly, to its corporate purpose or that may facilitate the fulfilment thereof or stimulate business growth.

CTE's Board of Directors is composed of eight members, who are appointed for a term of six years, including four EDF representatives, two CDC representatives and two CNP Assurances representatives. RTE's Compliance Auditor General attends meetings of CTE's Board of Directors.

RTE

RTE is a limited company *(société anonyme)* with both a Management Board and a Supervisory Board. RTE's Supervisory Board is composed of 12 members appointed for five years. Six are representatives of the shareholder CTE, two are appointed pursuant to Articles 4 and 6 of Order no. 2014-948 of 20 August 2014 on governance and the capital transactions of companies with public shareholding (the French State and the Board member appointed at the proposal of the French State), and four are employee representatives.

Other individuals attend Supervisory Board meetings but are not members:

- a Government Commissioner;
- a representative of the CGEFi (*Contrôle général économique et financier*);
- the Secretary of RTE's Central Social and Economic Committee (CSE-C);
- RTE's Compliance Auditor General;
- the members of RTE's Management Board[2];
- the Secretary of the Supervisory Board.

RTE's Management Board is made up of five members, who perform their duties under the authority of the Supervisory Board, within the limits fixed by the French Energy Code and RTE's articles of association. With the agreement of the Energy Minister, the Supervisory Board appoints the President of the Management Board and, at the President's proposal, the other members of the Management Board.

1.4.4.1.2 RTE's activities

In France, RTE manages the public transmission network and the balance between electricity supply and demand. It carries out its missions under the conditions set out in standard specifications, which were approved by a decree that is applicable until 2051.

RTE thus manages the transmission infrastructure, guarantees access to the transmission network and manages energy flows to ensure the balance of the energy system.

RTE has to address various challenges in its mission as an electricity transmission network operator:

- the integration of the European market;
- the development of new means of production and transformation for energy-mixes, particularly with the advent of decentralised renewable energies and offshore wind farms;
- societal changes that increase the pressure to integrate new infrastructures of general interest; and
- maintaining its industrial facilities to meet the requirements of customers and of the community at large.

(1) 0.96% is held by its subsidiary CNP Retraite.
(2) Excluding executive session.

Publication of the French power system outlook 2023-2035 *(Bilan prévisionnel 2023-2035)*

On Wednesday 12 September 2023, RTE presented its provisional balance sheet for 2023. This publication offers a detailed analysis of the development outlook for the French electricity system by 2035. The analysis allowed RTE to enhance, supplement, and update *Futurs énergétiques 2050* (Energy Futures 2050), published in October 2021, over a shorter time period (2023-2035). Since then, it has become necessary to update the trajectories given the evolution of certain parameters:

- global geopolitical and economic context (war in Ukraine, energy crisis);
- the new climate and decarbonisation targets required by the European Union (EU) in its "Fit for 55" plan (to reduce the EU's net greenhouse gas emissions by at least 55% by 2030);
- France's desire to strengthen industrial and energy sovereignty.

With this in mind, the 2023 provisional balance sheet drawn up in consultation with all players in the sector (electricity and gas producers, suppliers and distributors, NGOs, professional organisations, universities, think tanks and institutions) through its three scenarios, informs on the challenges of the major transition to a decarbonised society.

Publication of the outlook study for the security of electricity supply for the winter of 2023-2024

On 8 November 2023, RTE published its annual and projected study on the functioning of the electricity system for the winter 2023-2024 period. After the heightened vigilance over the winter of 2022-2023, the outlook for electricity-supply security this winter is much more favourable, and the risk of imbalance between supply and demand slight. This is due to better generating-facility availability, high levels of hydropower and gas stocks and smooth-running European exchanges. The forecast is based on the assumption that electricity consumption will remain below pre-crisis levels, as observed last winter.

In addition, RTE has developed the EcoWatt system, which aims to alert individuals, companies, and local authorities, ahead of time, so that they can get organised and adopt appropriate eco-habits to reduce their electricity consumption. The new version of EcoWatt now indicates the times when France is able to cover the demand using fully decarbonised national electricity generation (nuclear, hydropower, wind, solar).

Regulatory notice

Certification by RTE

In accordance with the French Energy Code, transmission network operators must be certified according to a process that associates the CRE and the European Commission. It aims to ensure that the entity concerned meets the independence requirements for undertakings that engage in deregulated activities. RTE obtained certification from the CRE in 2012 and on 11 January 2018 (after a change of shareholder) as an ITO (Independent Transmission Operator). This certification was confirmed by the CRE decision of 2 July 2020, following the reorganisation of the CDC's shareholdings.

Tariffs for Using the Public Electricity Transmission and Distribution Networks (TURPE)

Pursuant to Article L. 341-3 of the French Energy Code, the tariff for using the public electricity transmission network (TURPE) is set by way of a reasoned decision by the CRE, which defines the framework, structure, and level thereof.

TURPE 6 HTB was set by a CRE decision dated 21 January 2021, which was published in the French Official Journal on 23 April 2021 ("TURPE 6 HTB decision"). TURPE 6 determines:

- the resources available to RTE for the execution of its missions;
- the network user tariffs, which change each year according to inflation and the costs of managing the electricity system;
- the regulatory framework that is applicable to RTE and, in particular, the financial return on its assets, which is calculated by multiplying the regulated asset base (RAB) and a pre-tax nominal rate. For the 2021-2024 tariff period, the tariff decision set the rate of return at 4.6%. At 1 January 2024, the RAB stands at €16.7 billion(1). The value of the RAB includes RTE's commissioned industrial assets, minus investment subsidies, and is calculated excluding assets under construction (which are remunerated at the debt rate, 2.4% as from 2021 pursuant to the TURPE 6 tariff). See also note 5.1.1 "Regulatory changes in France" in the notes to the Group's consolidated financial statements in section 6.1.

In a context of sharply increasing and highly volatile wholesale electricity prices in Europe, the CRE amended, by decision No. 2023-01 of 5 January 2023, the "TURPE 6 HTB decision" by changing the regulatory incentive framework. This change primarily concerns the risk-sharing terms between network users and RTE relating to electricity-system management, such as network congestion, contractual arrangements for reserves and voltage management.

1.4.4.1.2.1 Maintenance of the transmission infrastructure and asset management

RTE manages the assets of the transmission network through the maintenance, refurbishment or replacement of structures and emergency repairs.

The gradual integration of new technologies, in particular monitoring, makes it possible to:

- adapt technical policies for asset renewal; and
- develop conditional and predictive maintenance *via* the optimisation of resource management, by targeting priority operations and limiting action to what is strictly necessary.

Grid digitalisation and large-scale monitoring make it possible to carry out remote diagnosis and deploy new maintenance technologies such as drones, 3-D visualisation, and augmented reality. Alongside this, test and simulation software provide decision support for grid management. Mass data analysis will allow new asset management strategies to be developed, which may lead to different balances between maintenance, renovation, and replacement.

Finally, the gradual implementation of rooms dedicated to the real-time infrastructure management, over the next few years, will prioritise damage nationwide.

1.4.4.1.2.2 The development and achievement of new capital investments

RTE's investment strategy is currently part of the 10-year plan, to develop the network (SDDR), published on 17 September 2019, currently in force. The plan was approved by the Minister for Energy on 13 November 2019, as well as by the CRE in its Decision No. 2020-200 of 23 July 2020.

However, the general framework of RTE's network investments is set to evolve rapidly in the coming years, according to a strategy that will be formalised in an SDDR project in 2024. This document will set out the new principles of RTE's industrial trajectory and the changes to be made to achieve the government's new objectives in terms of accelerating decarbonisation, reindustrialization and climate change adaptation.

Each year, RTE draws up an annual investment plan to submit to the Energy Regulatory Commission (CRE) for approval. The 2024 investment plan should enable RTE to continue to increase its pace of investment and the preparation of new projects with a view to a sharp acceleration in the second half of the 2020s.

In 2023, the total amount of investments made by RTE within the scope regulated by CRE amounted to €2,077 million. The planned investment amount for 2024 of around €2.3 billion has been submitted for approval to the CRE.

The main investments in 2023 were as follows:

- the achievement of the construction works on the "Savoie-Piedmont" direct current interconnection between France and Italy, with the commissioning, on 4 August 2023, of the second HVDC (high-voltage direct current) link. Final adjustments still have to be made, after observation of the entire infrastructure in operation, to bring the project to a close;
- the continuation of connecting renewable energies, which will actively contribute to supply security. In particular, in 2023:
  - > after connecting the Saint-Nazaire wind farm at the end of 2022, RTE made connecting links to Fécamp and Saint-Brieuc available (which have started production and will gradually reach their target power of 1GW) as well as Courseulles-sur-mer,
  - > the continuation of the connection works for the Noirmoutier and Dieppe le Tréport offshore wind farms,
  - > the connection of new renewable generation facilities, through the progress of the Regional Schemes for the Connection of Renewable Energies to the Grid (S3REnR)(2);
- the increase of border exchange capacity with:
  - > the commissioning of the Argia – Hernani link with Spain in mid-2023,
  - > the start of work on the new interconnections with Spain (Bay of Biscay) and Ireland (Celtic);
- the final commissioning of the local-initiative power line undergrounding ("MESIL") in Villeneuve-la-Garenne, in August 2023, to support the infrastructures that are planned for the 2024 Paris Olympic Games;
- the completion of the work to build the South Averyon station in order to secure the electricity supply to northern Occitania, while allowing for the introduction of renewable generation;
- the implementation of the *Haute-Durance* programme (securing supply to the *Haute-Durance* Valley).

(1) Amount to be confirmed by the CRE.

(2) Law No. 2010-788 of 12 July 2010, known as the "Grenelle II law", mandates that RTE support the development of renewable energies by drawing up Regional Schemes for the Connection of Renewable Energies to the Grid (S3REnR), which make it possible to integrate renewable energies into the electricity system, while ensuring the safety of the system and cost control.

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Investment forecasts 2024-2027

In a context of strained supply conditions, the 2024 investment plan and its forecast for the coming years is now an important document in terms of the signal it sends to equipment suppliers concerning the reality of the situation they will be facing.

RTE expects a steady increase in its investments over the 2024-2027 period, relating particularly to continued major investments in the development and renewal of the network:

- to support energy transition, particularly through work relating to the connection of industries that are undergoing decarbonisation (especially in the Dunkerque, Le Havre and Fos-sur-Mer areas);
- to develop the electricity grid of the future, including offshore; to accelerate network replacement, which will be RTE's primary area of investment over the coming years; to reduce areas of electrical vulnerability (in particular with the "Gironde-Loire Atlantique" project for a double offshore link between the Bordeaux and Nantes areas);
- to facilitate the integration of the European electricity system through interconnections;
- to replace aging network infrastructures.

1.4.4.1.2.3 Operation of the electricity system

The operating procedures for the electricity system and for the management of market mechanisms (including the management of interconnections), and the coordination of networks in Europe are organised in accordance with the European legislative and regulatory texts (network codes, Clean Energy Package, etc.).

Management of the electricity system

RTE manages the flows on the transmission network in real time. It makes use of the resources available to it through the adjustment mechanism to ensure the balance between supply and demand in real time. The cost of the adjustments made by RTE is due to the negative differences between the forecast and actual flows, and is passed on to the "balance responsible entities" (producers, traders, suppliers, etc.) in proportion to their difference. In the event of a positive difference, RTE compensates the balance responsible entities concerned financially.

Management of the interconnections

RTE manages access to international interconnections in collaboration with the neighbouring European transmission network operators. These interconnections ensure the transmission of energy from one country to another, bolster the operating safety of the electricity transmission networks, and contribute to the development of the European electricity market. They allow electricity market players to buy and sell energy in other European countries, by taking into account the price differences on either side of the border. This enables better production-resource pooling in Europe (especially renewable energies).

Network coordination in Europe

The regulatory texts also define the services that Coordination Centres[1] will provide to the transmission network operators, within a harmonised framework and by implementing complementary and robust terms and conditions of supply between them. The first five services, the complete implementation of which is pending, concern the design of shared network models, capacity calculations, security analyses, the coordination of structure removals and the assessment of the extent to which supply meets demand. The Clean Energy Package includes a list of 16 additional services (*ex post* analyses, regional sizing of reserves, training, etc.). The network operators and Coordination Centres are currently designing shared methodologies for their progressive implementation, which started in mid-2022.

1.4.4.1.3 Electricity report 2023

In France, the adjusted electricity consumption[2] (including Corsica) was 445TWh[3] in 2023, down by 3.2% in relation to 2022's 460TWh. This decrease throughout the year, concerned all sectors and reflects the considerable energy savings made. After an exceptional year in 2022, during which France imported, the balance of French trade exports in 2023 amounted to 50TWh.

The quality of electricity supplied by RTE is estimated on the basis of two indicators: equivalent outage time and outage frequency. The values of these indicators for 2023 are still provisional. Based on information available to date, equivalent outage time is 3min 5s (the target set by the CRE is 2min 48s) and outage frequency is 0.421 (the target set by the CRE is 0.46).

1.4.4.2 Distribution – Enedis

38.5 million	1.4 million	€4,886 million	40,001	376
customers	km of network	investments in 2023	employees	concession agreements

As a distribution network operator, Enedis' main mission is to operate and develop the public electricity distribution network. Enedis guarantees the security and safety of the network, and oversees the balance of electricity flows at all times. Enedis now serves around 95% of the population in continental metropolitan France. The remaining 5% are served by local distribution companies (LDCs).

Enedis in 4 key principles

The French model for the electricity distribution operator Enedis is based on four main principles:

- **a public service concession** which entrusts Enedis with 95% of the electricity distribution in mainland France;
- **tariff equalisation** and invoicing for delivery using a postage stamp approach, guaranteeing fairness and solidarity for users and regions;
- **concession agreements signed with the various electricity distribution authorities**, guarantors of decentralised regional governance;
- **strict separation from competitive activities and other players** (in particular electricity suppliers and producers), in order to comply with the rules of independence and to ensure, in particular, that access to the network is non-discriminatory.

(1) Among these, Coreso, a technical coordination centre, brings together 9 transmission system operators (TSOs): RTE, ELIA, NGSO, EirGRID, Soni, 50hz, TERNA, REE, REN.
(2) Electricity consumption that would have been observed on the basis of reference temperatures and in the absence of 29 February for leap years.
(3) Source: "Annual Electricity Review 2023" *(Bilan électrique 2023)*.

In 2023, Enedis distributed electricity to more than 38.5 million customers (points of delivery). It also enabled feed from more than 841,993 generation sites in mainland France by means of a network of around 1.4 million km.

At 31 December 2023, the Enedis distribution network was made up of around:

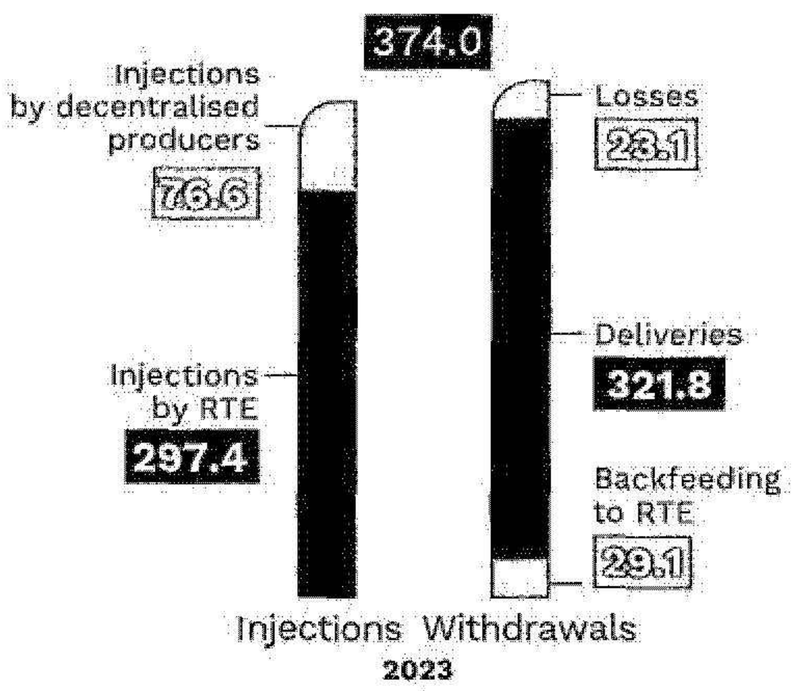
> 668,700km of A-type high-voltage (HVA) lines of 20,000 volts;

> 740,300km of low-voltage (LV) lines of 400 volts;

> 2,250 HVB/HVA source substations;

> 812,600 HVA/LV transformer stations.

Simplified report of energy flows – 2023
(in TWh)



Electrical losses are inherent in the functioning of the distribution network. They result in particular from physical effects, which are directly dependent on the amount of electricity delivered. Enedis must compensate these losses to complete the amount of energy delivered to all the customers connected to the distribution network.

Energy purchases made to compensate losses recognised in the accounts, including restatements of prior financial years, amount to €3,755 million. To provide this compensation, and in application of its hedging policy, Enedis purchases the corresponding electricity on the wholesale, future or spot markets. It acts either through organised market platforms or through calls for tenders involving around 20 qualified suppliers. Enedis also takes part in the calls for tenders for the sale of electricity organised by the Purchase Obligation mission, within DOAAT[1].

Enedis' access to ARENH rights[2] to cover losses is implemented through specific calls for tender with a panel of qualified suppliers for this product. Enedis exercises its ARENH rights when the market prices are higher than the ARENH price.

1.4.4.2.1 Organisation of Enedis

Pursuant to the EU Directives, in order to comply with the rules on non-discriminatory access to networks and on management independence that are binding on network operators, said operators must be independent from any energy supply and production activity. If the distribution network operator is part of a vertically integrated company, it must be legally separate in order to guarantee its functional and decision-making independence.

In this regard, EDF and Gaz de France, now Engie, made their distribution network operators subsidiaries. Created in 2008, ERDF became Enedis on 1 June 2016. This new name will also raise the profile of the electricity network operator and clarify its purpose, as the CRE recommended.

Enedis and GRDF share an "ordinary service function" in accordance with the legal framework. See section 1.4.4.2.3 "Service shared by Enedis and GRDF".

- The Supervisory Board comprises 15 members, of which:
  > 8 are appointed by the Ordinary General Meeting;
  > 5 are representatives of the employees elected in accordance with the conditions set out in Law No. 83-675 dated 26 July 1983 relating to the democratisation of the public sector;
  > 1 member is appointed by the French State by virtue of Articles 4 or 6 of Ordinance No. 2014-948 dated 20 August 2014; and
  > 1 member, representing the organising authorities for electricity distribution, is appointed by decree pursuant to Article 153 of Law No. 2015-992 relating to energy transition for green growth.
- Pursuant to the possibility offered by Ordinance No. 2014-948 dated 20 August 2014 (Article 15) and in compliance with Decree No. 2015-38 dated 19 January 2015, the French State appointed by a Decree dated 21 April 2020 a Government Commissioner for the purposes of attending the meetings of the Enedis Supervisory Board.
- The Management Board, which was made up of 5 members, performs its work under the oversight of the Supervisory Board, within the limits defined by the French Energy Code and Enedis' articles of association.

Enedis' missions in France

Enedis, pursuant to the conditions set by law and the concession contracts signed with each of the public electricity distribution contracting authorities, performs its missions as the public distribution network operator in mainland France. These missions are:

- define and implement operational, investment and development policies in relation to the electricity distribution network;
- provide connection and access for users to these networks under objective, transparent and non-discriminatory conditions, as well as inter-connection with other networks;
- provide users with the information needed to access the network efficiently (information protected by regulations or law excepted);
- negotiate, conclude and manage concession agreements with the organising authorities for the public distribution of electricity;
- operate, maintain and repair the electricity distribution networks;
- design and build infrastructure, as well as manage work on the networks;
- carry out metering activities for users connected to the networks, particularly as regards supply, installation, meter inspection, maintenance and renewal of metering devices, as well as managing data activities and any other missions relating to its work as a whole;
- ensure that the market works properly, and provide equal access to the distribution network and data for market players;
- encourage the integration of renewable energies in the grid and the implementation of energy efficiency initiatives;
- ensure the monitoring of the load sharing perimeters;
- be the guarantor of the distribution and accounting of energy flows between the network user players, and the fair compensation of losses on these networks.

Enedis, first company in the energy sector with a mission

On 27 June 2023, Enedis became the first major company in the energy sector with a mission. As an extension of its public service missions, Enedis reaffirms its commitment to contribute in the long term to a fairer and more sustainable society by focusing its decisions on creating a positive environmental and social impact.

(1) EDF Upstream-Downstream Optimisation and Trading Division.
(2) Regulated access to historic nuclear power (*Accès régulé à l'électricité nucléaire historique*)

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1.4.4.2.2 Distribution activities

Change in investments

In 2023, Enedis invested €4,886 million, of which:

- €2,524 million was earmarked for connections (consumers and producers) and adjusting the grid to the load;
- €1,743 million was dedicated to the quality of the service, to securing the networks, and to the security and preservation of the environment;
- €619 million was invested in information systems, telecommunications and operational resources (vehicles, machinery, real estate, etc.).

GROSS INVESTMENTS MADE BY ENEDIS

(in millions of euros)	2023	2022
Connections and reinforcement	2,524	2,266
Regulatory, safety and transmission channel obligations	576	529
Work instruments and operational resources	619	531
Network modernisation	1,167	1,089
TOTAL INVESTMENTS OF ENEDIS	**4,886**	**4,415**
WORK ALLOWANCES BY THIRD PARTIES AND LOCAL AUTHORITIES[1]	**812**	**745**
TOTAL NETWORK INVESTMENTS	**5,698**	**5,160**

(1) After deduction of PCT[a] and Article 8[b] for the portion financed by Enedis.
(a) PCT (portion covered by the tariff): portion paid to project manager contractors from the contributions to the delivery tariff for financing a connection.
(b) Article 8 of Annex 1 of the concession specifications relating to the integration of works into the environment (for example, work to bury lines).

In addition to its investments, Enedis continues its efforts in the preventative maintenance of networks, including work relating to tree topping. These expenses, recognised in operating expenses, came to €359 million in 2023 (compared to €343 million in 2022).

Quality of service

The quality of service is a major objective of Enedis. In 2023, the average outage duration experienced by low-voltage customers was 73.2 minutes. It exceeds the target set at 62 minutes by the incentive regulation as part of the TURPE, due to the very numerous and severe transient climatic events. The year was indeed marked by multiple storms at the beginning of the year (Gérard, Fien, Larisa and Mathis) and by thunderstorm episodes. At the end of the year, the Ciarán storm, closely followed by the Domingos storm, violently struck Brittany and Normandy, with higher winds than in 1999. Outage duration is trending downward with structural improvements over a long period, thanks to investments to improve the quality of supply and network resilience, thanks to preventive maintenance and actions to improve responsiveness in the event of incidents. The quality of service is also reflected in the maintenance of a consistent voltage, within the range of values set by regulations, and by minimisation of the number of power outages.

To respond to large-scale incidents, Enedis relies on an Electricity Rapid Intervention Force (*Force d'intervention rapide électricité*, FIRE). This system allows it to mobilise, at any time, in an affected region, the teams and resources from other regions in order to restore customers' electricity as rapidly as possible. In 2023, FIRE was called out 7 times for the networks managed by Enedis. During the Ciarán and Domingos storms in early November, up to 4,400 people, Enedis employees and service providers, were mobilised to repair the damaged networks.

Investments in connections are still growing in 2023 due to high demand. Demand is being driven, on the customer side, by individual and multi-family housing, and electric vehicles charging points. On the producers' side, it stems from the impacts of energy transition and the development of renewable energies (wind and solar power).

In addition, the contracting authorities invested €812 million in 2023.

In all, almost €5,698 million was therefore invested in 2023, in mainland France, on distribution networks within the scope operated by Enedis.

Development of renewable energies

During 2023 there was a significant increase in the number of new facilities that Enedis connected to the network, in particular photovoltaic facilities. Accordingly, 206,944 new photovoltaic facilities were connected (compared to 97,740 in 2022) for total power of 3,135MW (compared to 2,400MW in 2022). The increase in wind power generation connected to the public distribution network also continued, with 1,010MW connected in 2023 (compared to 1,219MW in 2022).

At the end of 2023, a total of around 35.5GW in solar power and wind power generation fleet was connected to the Enedis grid. It is made up respectively of 17.2GW from solar power plants and 18.3GW from wind power generation. To the power thus generated are added other sources of power generation, in particular hydropower plants (1.7GW), cogeneration (2.6GW), biogas, biomass and dispatchable fossil-fuel thermal. In all, at the end of 2023, the generation fleet connected to Enedis was around 42.1GW.

In the total connections of photovoltaic facilities in 2023, 199,070 concern generators with low voltage connections[1] of less than 36kVA, which are connected for self-consumption purposes, with or without sale of the surplus, which represents around 100% of the year's connections for "small producers".

In addition, Enedis has continued its efforts to develop capacities for accepting renewable energies. It has initiated construction work on substations within the regulatory framework of the regional plans for the connection of renewable energies to the network.

Development of electric mobility

The electrification of the transport sector has generated a significant amount of business for Enedis. All the charging stations that are needed for electric vehicles must be directly or indirectly connected to the public distribution network. This network must be capable of delivering the quantity of electricity needed for the instantaneous power required.

Sales of electric vehicles really took off in France in 2020, and represent around 10% of new vehicle sales, compared to between 2% and 3% in 2019. The increase continued in 2021 and in 2022. At the end of 2023, the number of electric vehicles[2] on the road reached 1,594,841, an increase of 45% compared to the figure at end-2022.

(1) Low voltage.
(2) Electric vehicles (EVs) and plug-in hybrid vehicles (PHVs).

In order to address the increase in connection volumes to Charging Facilities for Electric Vehicles (CFEV), Enedis set up a department to handle key CFEV accounts. It is tasked with coordinating the monitoring of connection studies and work by "CFEV multi-connectors" that roll out charging station installation plans throughout France. Since May 2023, France has been home to more than 100,000 publicly accessible charging points.

In 2023, Enedis made 11,500 vehicle charging infrastructure connections. This figure is up by 47% compared to 2022.

Equipping multi-family residential car parks with charging infrastructure is also a key issue in the roll-out of electric mobility: nearly one in two French households is in a block of flats. Within the area served by Enedis, there are 236,000 residences that have more than 5 parking spaces. Their co-owners or landlords can choose either:

- to entrust the charging infrastructure equipment to a private operator, meaning that Enedis will have to connect a dedicated delivery point; or
- to opt for the public solution, which consists of extending the public distribution network in the car park to supply the parking spaces in advance.

Enedis assists local authorities in defining infrastructure management schemes for electric vehicle charging (SDIRVE). At the end of 2023, 116 SDIRVEs had been launched and nearly half had been approved by the prefecture.

Enedis is committed to the electrification of its own vehicle fleet. At the end of 2023, 31% of its fleet of light passenger vehicles and light commercial vehicles, a total of around 18,000 vehicles, had been electrified, and 5,905 charging stations are installed on its sites.

Activity of distribution network operator in connection with market participants

Under contracts with distribution network operators and suppliers, Enedis carries on activities in liaison with balance responsible entities and electricity suppliers. It reconstitutes the energy flows within the scope of each balance responsible entity (there were 78 such entities at the end of 2023), in order to provide information to the balance responsible entity mechanism run by RTE. Enedis is responsible for day-to-day relations with electricity suppliers (of which there were 94 at the end of 2023), to ensure that their customers with a single contract benefit from electricity supply and the associated services.

In an energy context where sobriety is a major issue, the data measured by Enedis (energy and power) are used extensively by electricity suppliers as well as 689 third parties[1] with a data access contract *via* the interface portal set up by Enedis.

Regulatory notice

Tariff for Using the Public Electricity transmission and *Distribution Networks (distribution TURPE)*

Over 90% of Enedis' sales are made up of revenues collected in respect of electricity transmission. The Tariff for using the Public Electricity transmission and distribution Networks (TURPE), in terms of levels and structure, is set by the CRE in a transparent and non-discriminatory manner, in order to cover all the costs borne by efficient network operators. See section 6.1, note 5.1.1 "Regulatory changes in France" of the appendix to the consolidated financial statements for the year ended 31 December 2023.

Concessions

At 31 December 2023, Enedis, alongside EDF, is the joint operator for 376 concession agreements. They serve approximately 95% of the mainland French population. These concession agreements are generally concluded for a period of 25 to 30 years.

In December 2017, the French National Federation of Licensing Authorities *(Fédération nationale des collectivités concédantes et régies*, FNCCR), France Urbaine, EDF and Enedis signed a framework agreement based on a new concession agreement model. France Urbaine represents municipalities, large urban inter-municipalities and cities. Most of its members have contracting authority status for public distribution of electricity.

The standard agreement thus revised restates the principles of the French concession model: public service, regional solidarity and national optimisation, while at the same time taking into account issues involving energy transition. The official introduction of this new template opens the way to a modernised and lasting relationship between Enedis and the contracting authorities.

At 31 December 2023, 301 concession agreements had thus been entered into on the basis of the new template, along with 31 agreements that were previously renewed or amended and that contain provisions that are similar to those of the new template, for a total of 332 modernised agreements. Negotiations are continuing with a view to renewing the contracts that were based on previous templates.

Regulatory notice

French legal system applicable to concessions

In accordance with Articles L. 121-4 *et seq.*, L. 322-1 *et seq.* of the French Energy Code, and Article L. 2224-31 of the French Local Authorities Code, the public distribution of electricity is operated under a system of public service concessions. Pursuant to this body of law, the contracting authorities organise the public electricity distribution service through concession agreements and general specifications that set forth the respective rights and obligations of the contracting authority and the operator. Currently, the contracting authorities are most often public institutions formed by associations of several municipalities cooperating together, some of which may cover an entire *département*.

The separation of generation and supply activities on one hand, and network activities on the other imposed by European Directives has led to the identification of a public service with 2 distinct missions: on the one hand, the regulated tariff supply mission entrusted to EDF and the LDCs in their respective exclusive service areas and, on the other hand, the development and operation of the public electricity distribution networks, entrusted to Enedis and the LDCs in their respective exclusive service areas, and EDF for areas not interconnected to the continental metropolitan network.

Article L. 334-3 of the French Energy Code specifies that concession agreements must be tripartite, signed by the contracting authority, the distribution network operator (or the territorially competent LDC) for aspects relating to the management of the public distribution network, and by EDF (or the territorially competent LDC) for aspects relating to regulated tariff distribution.

Within the limits defined by statute and by case law precedent, the contracting authorities are the owners of the distribution networks, which constitute returnable assets[2].

Pursuant to Article L. 3213-1 of the French Public Procurement Code, which transposed Article 10.1 of Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 into domestic law, concession agreements for the operation of the public distribution network and the supply of electricity at regulated tariffs are concluded directly, with no publicity and competitive bidding procedures.

(1) In this context, a third party refers to an actor who is neither the supplier nor the customer who owns the metering point, and has obtained prior authorisation to access the customer's data.
(2) Returnable assets are those that must imperatively be returned to the contracting local authority at the end of the concession. These assets are deemed to have belonged to this local authority from the outset. They are defined by the concession contract or even by the law. Unless stipulated otherwise, assets that are essential for the performance of the concession service are generally regarded as being returnable.

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1.4.4.2.3 Service shared by Enedis and GRDF

The service shared by Enedis and GRDF[1] is not a legal entity in its own right. Enedis' and GRDF's relations in this ordinary service are governed by an agreement that defines the scope of the service and the resulting division of costs. The agreement has an indefinite term and can be terminated at any time subject to 18 months' notice: in such a case, the parties undertake to renegotiate the agreement during the notice period. It is updated regularly. In 2019, the governance agreements between Enedis and GRDF were completely reviewed.

1.4.4.2.4 Future challenges

An ambitious investment path to facilitate ecological transition and guarantee the quality of supply in response to climate changes

Enedis plans to invest €96 billion (in 2021 euros, gross investments excluding work allowances - see section above) over the 2022-2040 period. Annual investments will thus increase from €3.9 billion in 2021 (excluding the Linky deployment) to more than €5 billion (in 2021 euros).

These investments will make it possible to support ecological transition by connecting electric vehicle charging (CFEV) and renewable energy infrastructures. The phase-out of the sale of fossil-fuel vehicles in 2035 and electric vehicles becoming standard will result in a surge in investments around 2030, in connection with which multi-family housing will be a major challenge. Moreover, the rapid acceleration of the renewable energy development will continue, especially in the solar power sector, with the publication of a new multi-year energy programme (PPE) soon to follow.

In parallel, Enedis has planned modernisation programmes that cover all at-risk structures, with targeted renewal according to the likelihood of failure. The programmes that have already started will be pursued, in order to continue the improvement of quality of supply and resilience, in an environment that has seen an increase in climate change-related risks (fires, heat waves, floods, gales and storms). They aim to:

- improve the networks' resistance to climatic variations through the burial or restructuring of lines that cross wooded areas or that are exposed to wind, ice or snow;
- improve the reliability of high-voltage overhead networks, through scheduled retrofitting;
- change buried power lines that are insulated with impregnated paper;
- change low-voltage overhead networks;
- limit the impact of floods and accelerate restoration of supply.

Enedis will support the spectacular growth of electric mobility

The development of electric mobility is the key contributing factor to the increase in France's electricity consumption over the period leading up to 2050. According to Enedis' projections, which are aligned with the National Low Carbon Strategy scenarios (SNBC), 18 million plug-in electric vehicles will be on the road in France in 2035, 40% of the total number of light passenger and light commercial vehicles at that time.

The volume of business associated with the connection of the new charging stations that are needed for these vehicles (in housing, on public streets, on mall parking lots, in company car parks and on major roads and highways, for example), and also the charging solutions for multi-family housing, represent a genuine challenge for Enedis. A dedicated project-based organisation has been set up to cope with the strong growth in this segment.

Adapting distribution networks to the growth of this new form of use is also a challenge.

In this context, Enedis has run numerous studies and experiments on the structuring questions raised by electric mobility: coordination of charging, use of vehicle batteries to provide services to the electricity system, synchronisation of charging and renewable energy production, use of data from vehicles, charging stations and meters, modelling and study of the impact on the networks in need of fast charging (particularly along motorways), etc. The aim is to anticipate the impacts on the electricity system and on the distributor's activities.

In order to address the complexity of energy transition the electricity distribution network is continuing its digital revolution

The massive arrival on the distribution network of scattered, intermittent generation sources, and the sharp growth of electric mobility, require control and management of flows that is increasingly granular and complex.

Under these circumstances, and to address the challenges of ecological transition, Enedis is relying on digital technologies and scaling up smart grids. This involves using networks with hundreds of thousands of sensors, continuing the digitalisation of previous-generation smart systems, developing digital tools to guarantee a workflow respects the technical limits of our works (DERMS), as well as improving the oversight and robustness (including of the cybersecurity) of infrastructures and information systems.

To date, the rollout of smart grid technologies on an industrial scale is crucial as a means of making it possible to accelerate ecological transition.

Regulatory notice

Linky regulation

The Linky project, led by Enedis, is subject to a specific regulatory framework regarding the lifespan of the meters (20 years), with a dedicated regulated asset basis (RAB) for the meters installed between 2015 and 2021 and the associated information systems.

The CRE's decision dated 17 July 2014 thus set a nominal return rate before tax of 7.25% for the assets and a 3% additional premium combined with an incentive regulation concerning compliance with costs, deadlines and system performance, which brings the total return on the RAB to 10.25%. As provided for in the decision dated 17 July 2014, the incentive regulation of the system's performance for 2020 and 2021 was set by the CRE in a decision dated 23 January 2020. After the massive rollout phase ended in December 2021, in its decision of 17 March 2022, the CRE defined the financial incentive indicators, as part of the monitoring of the performance of the Linky advanced metering system for the period 2022-2024. In addition, a deferred surcharge, which is designed to ensure that Linky remains tariff-neutral for customers, means that some income for the 2014-2022 period will be shifted to the 2023-2030 period. This deferred surcharge, plus an amount to cover financing costs (set at 4.6%), will thus be collected in full by the end of 2030. At 31 December 2023, the surcharge to be collected is +€1,980 million (this represents a claim by Enedis against network users, which is not recognised on the Group's balance sheet at 31 December 2023, pursuant to the accounting standards in force on this date).

(1) Defined by Article L. 111-71 of the French Energy Code.

In 2023, approximately 1.1 million new "Linky" meters were installed on the network, of which approximately two-thirds were replacements for old-generation meters. "Linky" meters now represent 94% of the active customer base and enable customers to monitor their consumption more closely.

The metering system was key, in a context of reduced availability of electricity generating plants, to ensure safe passage through the winter of 2022/2023 by scheduling the temporary disconnection of residential water heaters during off-peak hours, and thereby avoid resorting to load shedding.

This system also makes it possible to more precisely identify the areas of the low-voltage network affected by power-supply failures during climate events (storms Larisa and Noa in March and April and most recently Ciarán and Domingos in early November), and thereby speed up their restoration.

Enedis has also developed and launched new substations on an industrial scale, which are the key element of the networks. These are express source substations whose design and pre-assembly in the factory reduce a generator's connection time by one year while optimising its cost. Half of the substations that will be built between now and 2035 will be based on this system.

Innovation is crucial for optimising investments and operating infrastructures with a high degree of efficiency, while taking into account eco-design as from the launch phase of projects. The digital revolution on Enedis' grids and in its business lines is undertaken in cooperation with the entire innovation ecosystem, in the fields of both smart grids and FrenchTech. This innovation policy systematically draws on the support of research laboratories, universities, start-ups, associations and undertakings of all sizes. This approach represents job and growth opportunities for local communities and gives these achievements international visibility.

Enedis (with RTE) was thus behind the creation of Think Smartgrids, the French smart grid industry association that promotes the sector internationally. It currently has over 100 members.

Data management, a key aspect of the digital revolution

In a few years, Enedis has also become one of the energy sector's leaders in the field of data. At present, around 500 types of data per year are made available to customers, local authorities and market participants. Enedis was one of the first companies in its sector to launch a Europe-wide Open Data platform. It was also the driving force behind the creation of the ORE[1] (Energy Grid Operators) Agency, which brings together all the electricity and gas network operators in France. This Agency releases comprehensive data on all the operators.

Enedis' remit to collect, protect and make data available has made it possible to develop industrial solutions for the entire French population, along the same lines as the Linky programme. The use of this data is of strategic interest to Enedis. This data also makes it possible for Enedis to improve its industrial performance and the quality of the service provided to customers. This moreover raises significant new challenges in the field of cybersecurity and requires enhanced protection of systems and data. All of Enedis' information systems comply with the rules on individual data protection. In this regard, Enedis complies with the standards and rules laid down by the French Data Protection Agency (*Commission nationale informatique et libertés*, CNIL).

A public service with a positive impact that supports ecological transition

Enedis is a major player in the French electricity system, and is convinced that its industrial and economic performance requires exemplary conduct from a social, societal and environmental standpoint. It is also the first Group subsidiary to become an "Entreprise à Mission" (Company with a Mission), on 27 June 2023. Building on the large-scale consultation with its internal and external stakeholders in 2020 and continuing in the vein of its corporate endeavours, Enedis has defined its *raison d'être*: **"Acting for an innovative, efficient and socially responsible public service electricity network. Connecting people to the collective challenge of a sustainable world".**

Enedis, having become a company with a mission, has added its *raison d'être* and the following 5 environmental and social objectives to its articles of association:

- Leveraging our industrial and digital expertise to create an efficient electricity network that supports the development of renewable energies while promoting sobriety and innovative electricity uses.
- Integrating in our activities climate issues along with biodiversity and natural resource preservation.
- Engaging our human, industrial, and financial resources to support communities, enhancing local cohesion and resilience.
- Acting with our employees and partners for customer-centric public service.
- Promoting diversity and career development and protecting health and safety at work.

A Mission Committee was set up in September 2023 with the purpose of monitoring and challenging the mission and ensuring that the Company allocates the necessary and sufficient resources to meet its statutory objectives.

The CSR policy approved in 2021 and aimed at creating a positive impact for the planet, people, and regions, is now reflected in the five mission objectives enshrined in the Enedis articles of association.

Key actions for the climate

Enedis' commitment has been enhanced and clarified in the CSR policy, and is centred around major ambitions that aim to mitigate the various impacts on the climate:

- reduce greenhouse gas emissions and contribute to France's National Low Carbon Strategy, which aims to achieve neutrality by 2050;
- promote the connection of renewable energies and public electric vehicle charging facilities to the distribution network;
- facilitate eco-design and the circular economy;
- prevent air pollution.

Enedis' priority ambition is to contribute to "carbon neutrality" by 2050. It aims to drastically reduce its own emissions (Scope 1) and drive an ambitious procedure with its suppliers and providers to reduce Scope 3 emissions to the greatest extent possible.

Enedis also intends to contribute to the objectives of the Paris Agreement by accelerating the large-scale rollout of low-carbon electricity solutions – in particular with low-emission generators and the electrification of sporting events, including the 2024 Paris Olympic Games[2] – and the controlled electricity consumption by means of smart meters.

(1) The ORE Agency federates all the French electricity and gas distribution market participants. It provides an overview of distribution in France, using a one-stop-shop approach, and makes data available free of charge. It provides aggregated data on multiple energy types and multiple network operators in order to support energy transition in local communities throughout France, using an open data approach and in the form of data visualisations.
(2) Electrification of the 2024 Paris Olympic Games: an estimated -80% of CO_2 emissions were avoided by grid connection to replace the installation of generators.

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Adjustment of distribution networks

Enedis has drawn up a Climate Hazards Adaptation Plan in order to reduce the vulnerability of its 1.4 million km of networks to the various climate risks identified.

Feedback from recent climate events (heat waves in the summer of 2022, storms in 2023) confirms the merits of the programmes put in place. For high-voltage overhead lines, this involves burying specific sections of line and a vast renovation programme aimed at making all networks more reliable in 25-year cycles. Low-voltage overhead lines are replaced by isolated twisted lines or by underground networks. High-voltage underground networks that are insulated with impregnated paper cable impregnated are replaced by new underground networks, depending on their reliability and vulnerability to the risk of heat waves.

Moreover, the Electricity Rapid Intervention Force (FIRE), which makes it possible to reposition resources and manpower anywhere in France in order to restore power as quickly as possible, has been modified in order to take into account the new interactions with other infrastructures (telecommunications, in particular).

1.4.4.3 Island Energy Systems

Electricity systems which are not inter-connected to the continental metropolitan network, or NIZ (Non-Interconnected Zones) and which are operated by EDF provide power to all customers in Corsica, the overseas *départements* (except Mayotte) and the overseas territories of Saint-Barthélemy, Saint-Martin and Saint-Pierre-et-Miquelon, as well as several Ponant islands (Sein, Ouessant, Molène and Chausey).

EDF's organisation in these regions is based on two structures:

- the Island Energy Systems (IES) Department, which is responsible for the supply and demand balance on a daily basis. It manages the whole networks and provides customers with electricity on the basis of regulated tariffs, supported by an active energy efficiency policy;
- the subsidiary EDF Production Électrique Insulaire (EDF PEI), which is responsible for building and operating new generation plants.

The difference between generation costs in these territories and generation costs on mainland is regarded by the legislature as a public service cost and, as such, is offset by the State budget.

The total costs incurred by the network operator are covered by the Tariffs for Using the Public Electricity Transmission and Distribution Networks (TURPE) and by the Electricity Equalisation Fund (*Fonds de péréquation de l'électricité*, FPE) for paid by network users.

IES KEY METRICS

	Data (end-2023)
Number of customers	Approximately 1,253,000
Network length (in km)	Approximately 39,900
Net installed capacity of the EDF fleet* (in MW)	2,005
of which hydropower fleet and other renewable energy sources	*22%*
of which thermal fleet	*78%*
Net output* (in GWh)	6,057
of which hydropower output	*23%*
Purchases of energy from third parties outside EDF (in GWh)	3,832
of which renewable energies, including bagasse	*61%*
of which other energies	*39%*
TOTAL ENERGY GENERATED* AND PURCHASED FROM THIRD PARTIES	**9,889**

** Data including the EDF IES (Island Energy Systems) Division and EDF Production Électrique Insulaire (PEI), a wholly-owned subsidiary of the EDF group.*

Changes and outlook

Investments to decarbonise and reinforce the electricity generation fleet

In accordance with the local multi-year energy programmes (PPE), the EDF group has undertaken to replace the main power plants that are at the end of their useful lives. The new power plants will be constructed and operated by the subsidiary EDF PEI. In accordance with the content of PPE, EDF PEI is planning to operate these new power plants, or to convert its existing plants (that were commissioned between 2012 and 2015) to use liquid biomass (in accordance with the requirements of Articles L. 281-2 *et seq.* of the French Energy Code) such that 100% of its generation assets produce renewable electricity by 2030. The plant on Reunion Island "Port Est" was the first of kind to be converted during the second half of 2023.

EDF PEI is currently a partner in a photovoltaic plant with battery storage project in French Guiana, and in a wind power plant with battery storage project in Martinique. EDF PEI is strengthening its renewable energy capacity through ordinary projects with EDF Renewables. EDF PEI is also a partner of GMOB, the purpose of which is to install and run a network of electric charging stations in the French Caribbean.

Investments in electricity networks

The continued increase in consumption in most of these communities, despite being offset to a certain extent by the energy efficiency actions undertaken, the development of renewable energies and the growing number of generation facilities coming online, have led the EDF network operator to continue the expansion and reinforcement of the electricity networks. In total, the network operator EDF IES invested €259 million in Network activities in 2023.

A commitment to improving integration of renewable energies in the electricity generation mix and to optimising the management of electricity systems through significant projects

As electricity system manager, EDF IES contributes to improve technical capabilities to allow more non-synchronous renewable energy generation to develop in NIZ. EDF makes a difference by changing their technical specifications, by adapting the electricity system to make it more resistant to power disruptions, and by developing smart metering systems.

EDF IES has also brought online and manages several centralised storage systems. These are used as a power reserve, in the event of loss of a generation means, or to cover consumption peaks.

Work is ongoing to create smart grids that are 100% powered by renewable energies in certain isolated areas. In 2017, an innovative system combining solar power, digital monitoring and storage was installed on the Island of Sein. It now provides 100% renewable energy for several hours a day. In 2021, in Saint-Georges-de-l'Oyapock in French Guiana (4,000 inhabitants), EDF commissioned a smart grid fuelled solely by renewable energies (solid biomass and a bit of hydropower), combined with a storage system and a smart energy management system.

Energy efficiency is a crucial energy transition lever in the island systems. EDF contributes to the elaboration and implementation of the consumption reduction territorial strategy. One of the main tools is capital grants towards efficient projects to reduce energy consumption (over €600 million approved by the CRE for 2019-2023). EDF actively promotes such operations financed by these grants for all types of customers, particularly through the "Agir Plus" label.

EDF IES has committed to deploying 1.2 million digital meters in the overseas *départements* (excluding Mayotte) by end of 2024 (and end of 2025 in Corsica). This represents an investment of €268 million. These digital meters will contribute to an extensive modernisation of customer relations and enhance the effect of energy transition drivers. At end-2023, over 1,000,000 meters had been installed.

According to the Multiannual Energy Programme of Corsica[1], EDF intends to enter into a partnership to enable, from 2029, to import 100MW (compared to the current 50MW) through the SACOI connexion, which has connected northern Italy to Sardinia via Corsica in direct current since 1964.

1.4.4.4 Électricité de Strasbourg (ÉS)

The ÉS group is an alsatian energy utility committed to the long-term energy and economic performance of the territory through its four business lines: electricity and gas distribution[2], energy supply, energy services and renewable energy generation. This portfolio enables the ÉS group to provide the best possible support to its customers for energy transition.

EDF Développement Environnement (EDEV) owns 88.64% of the ÉS group. The remaining shares are owned by the public and the company's employees. Its shares are listed on Euronext Paris.

Distribution of electricity and gas

Strasbourg Électricité Réseaux is the ÉS group subsidiary in charge of electrical distribution. It acts as a grid operator in accordance with the rules on management independence and the Code of Conduct.

Strasbourg Électricité Réseaux operates, maintains, develops and renews an electrical grid of over 15,000 kilometers in 400 alsatian municipalities under concession agreements. It includes more than 600,000 delivery points of various voltage levels, as well as connections to the Enedis grid and two other downstream grid operators.

Supply of electricity and gas

ÉS Énergies Strasbourg is the electricity sales and marketing subsidiary of Électricité de Strasbourg. At end-2023, it supplied power to more than 575,000 electricity customers (including green energy), and more than 111,000 gas and biogas customers, both individuals and businesses (in the tertiary and industrial sectors) as well as local authorities.

In addition to supplying electricity and gas, ÉS Énergies Strasbourg offers related services. These include electricity, gas and plumbing corrective maintenance and digital services designed to help customers better manage their energy consumption and support their concrete actions for responsible energy use.

For its individual customers, ÉS Énergies Strasbourg has continued the implementation of support services. They cover the renovation and construction of housing, a portal that puts customers in touch with a network of local partners. ÉS Énergies Strasbourg is also active in the development of solar power. It promotes sustainable transport, in particular charging infrastructures for electric vehicles. All of its commercial activities associated with solar power, electric mobility, energy efficiency and housing retrofits are now gathered under the "Planigy par ÉS" brand, which was launched in September 2022.

Through its various offers and advice, ÉS Énergies Strasbourg supports its customers on a daily basis in reducing their consumption and lowering the carbon intensity of their energy uses.

Energy services

ÉS Services Énergétiques, a subsidiary specializes in energy services, is owned by Électricité de Strasbourg (FIPARES) and Dalkia on a 50-50 basis. In the field of energy transition, ÉS Services Énergétiques has positioned itself as a provider of sustainable solutions and a creator of energy performance, with the aim of helping private- and public-sector stakeholders in Alsace reduce their carbon intensity. It provides attractive solutions on world performance markets and for energy performance contracts, which make it possible to:

- improve the energy efficiency of buildings, through retrofits;
- optimise the management of energy facilities;
- implement renewable energy solutions;
- raise users' awareness of energy savings.

Moreover, ÉS Services Énergétiques proposes solutions for managing and securing networks (heat, electricity or public lighting networks). It also carries out engineering work for mass catering providers.

Renewable energy generation

Deep geothermal energy

In France, the ÉS group is one of the leading players in the deep geothermal energy sector. Since 2016, it has operated the first deep geothermal power plant for industrial use in Rittershoffen. The plant's renewable superheated water output is approximately 190GWh/year. This water comes from a geothermal source located at a depth of 2,500m.

ÉS also operates the Soultz-sous-Forêts geothermal power plant, which generates around 5GWh/year.

Biomass

The Strasbourg biomass cogeneration plant uses residue from the wood industry in the Vosges and Black Forest mountains. This 37MW thermal power plant produces 60GWh of electricity from renewable sources per year and 105GWh of heat from renewable sources per year.

Hydropower

The Framont hydropower plant, which has a capacity of 410kW, allows depending on water availability, the generation of approximately 2GWh/year, which is equivalent to the annual electricity consumption of 350 homes.

Moreover, ÉS holds a 35% stake in SERHY a company specialises in the construction and operation of hydropower plants, primarily in the Alpine and Pyrenean mountain ranges. SERHY produces around 160GWh/year from renewable energy sources.

Lithium

In January 2023, ÉS and Eramet signed a Memorendum of understanding to explore the possibility of extracting battery-grade lithium from geothermal brine in Alsace. The Alsace Geothermal Energy project (AgeLi) is targeting an annual production of at least 10,000 tonnes of lithium by 2030.

(1) Decree No. 2015-1697 of 18 December 2015, *regarding the multiannual energy programme of Corsica.*
(2) The distribution business line is managed by Strasbourg Électricité Réseaux in accordance with the rules on the management independence of network operators.

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1.4.5 International activities

The EDF group supplies electricity and gas to 40.9 million customers worldwide: residential customers, businesses, and local government. It is a major energy provider on key European markets: France, the United Kingdom, Italy, and Belgium. The Group is seeking to move into new geographical areas, developing low-carbon solutions in growing countries and strengthening its positions in Europe.

1.4.5.1 United Kingdom

EDF group activity in the United Kingdom (UK) is led by EDF Energy and EDF Trading[1] and also consists of other Group companies (Dalkia UK, EDF Renewables UK, Pod Point). EDF Energy is one of the UK's largest energy companies and employs 11,588 people at sites throughout the UK as at December 2023. EDF Trading provides optimisation and risk management services to the EDF Group as well as third parties. The purpose of EDF in the UK is to help Britain achieve Net Zero. It does this by leading the transition to a decarbonised energy system in five areas:

- Nuclear: the generation of zero[2] carbon electricity, decommissioning services, the building of a new nuclear power station at Hinkley Point and development of further new nuclear power stations.
- Retail: the supply of electricity, gas and energy solutions to households and small business. Providing customers with electric mobility solutions through EDF Energy's majority stake in Pod Point and low carbon heating through CB Heating.
- Business and Wholesale: the supply of electricity, gas and wider energy services to large businesses, the public sector and asset owners.
- Renewables: the development, build and running of wind, solar and large battery energy generation and storage facilities in the UK and Ireland through EDF Renewables UK.
- Technical Services: the provision of technical and energy services to the private and public sector through Dalkia UK.

1.4.5.1.1 EDF in the UK strategy and sustainability

EDF in the UK supports the country in achieving its net zero ambitions and the EDF Group *raison d'être*: to build a net zero energy future with electricity and innovative solutions and services, to help protect and nurture the environment, and to drive well-being and economic development.

Moving to Net Zero will safeguard Britain's energy security and will help to protect customers from volatile global energy prices, creating economic opportunity for businesses and communities across the country. In an energy system that is increasingly complex and interconnected, the breadth and scope of EDF in the UK's capabilities provide a strategic advantage.

EDF's Helping Britain Achieve net zero Progress Report[3] explains the progress and plans of the business to help Britain achieve Net Zero and meet wider sustainability objectives. These include supporting customers, minimising environmental impacts, and making a positive social contribution to the UK. In line with UK regulation[4], in 2023 EDF Energy published a carbon reduction plan covering certain emissions categories to 2026[1].

EDF in the UK is Britain's biggest zero carbon electricity generator operating a fleet of wind, nuclear, solar and storage assets.

In electricity generation, EDF Energy's key priority is to sustain safe, reliable and commercially viable operations. EDF Energy's fleet of nuclear power stations supplies 13.5% (2022) of the UK power. All the AGR stations have operated beyond their original 25-30 year design lives with the extension of Heysham 1 and Hartlepool to 31st March 2026 announced with a +/-1 year provision. Further work is underway to assess life extensions of the remaining generating stations including a potential 20 year life extension to Sizewell B, to continue the provision of 3% of Great Britain's electricity demand till 2055. Nuclear generation output in 2023 was 37.3TWh vs 43.6TWh in 2022.

In 2023, EDF Energy has invested £3.9 billion building and maintaining Britain's nuclear and renewables generation. Dungeness B, Hunterston B and Hinkley Point B are all in defueling. In 2023, EDF completed defueling of reactor 3 at Hunterston B, the first AGR reactor to be defueled. EDF Energy is responsible for defueling all seven AGR power stations over the next 10+ years under an agreement with the UK Government signed in June 2021.

In April 2023, EDF Energy achieved its goal to reduce carbon intensity at the point of generation to 0gCO_2/MWh. This followed the closure of the last 2 units of the West Burton A coal plant, which had been made available to National Grid ESO for the preceding 6 months to provide security of supply over the winter.

EDF Energy is the UK's number 1 new nuclear developer.

UK Government support for nuclear has been confirmed through the ambition to increase nuclear capacity to 24GW by 2050 and launch of the "Great British Nuclear" vehicle with EDF Energy supporting this work. The Opposition Labour Party has similarly pledged its support for nuclear power including ambitious plans for new build up to 24 Gigawatts (GW) of nuclear capacity by 2050.

In partnership with CGN[5], EDF Energy is building two new nuclear units (3.26GW capacity in total) at Hinkley Point in Somerset, based on the EPR technology. At the end of 2023 the 245-tonne steel dome was lifted on to Reactor Unit 1 at HPC, closing the roof on the first reactor building, allowing the first nuclear reactor pressure vessel to be installed in 2024. There are currently c11,000 people site delivering HPC.

There are plans for a similar 3.26GW EPR project at Sizewell in Suffolk. In January 2024, the UK government has made an additional £1.3 billion investment available to support the construction of Sizewell C as it progresses towards a Final Investment Decision expected in 2024. This investment will consolidate the government's position as the majority shareholder in the project, reached in December 2023. It follows a £700 million funding pledge in November 2022 and a further £511 million agreed last summer. The UK government has gradually increased its shareholding through 2023. As at 31 December 2023, the UK Government holds a 50.6% shareholding in the project, with EDF owning the remaining 49.4%.

(1) See 1.4.6.3 "Optimisation and Trading: EDF Trading".
(2) Zero carbon at point of generation
(3) https://www.edfenergy.com/about/sustainability
(4) PPN06/21 regulation.
(5) China General Nuclear Corporation.

Sizewell C is expected to house 2 of the most powerful nuclear reactors in the world. It will generate reliable, low-carbon power for up to 6 million homes over 60 years, avoiding 9 million tonnes of carbon each year. At peak construction, it is expected to support 10,000 jobs across the country.

EDF Energy is supporting the wider UK new nuclear programme and path to net zero with skills and sites to explore new technologies. West Burton A site has been chosen by the UK Government to host the UK's first prototype fusion energy power plant and EDF is one of the companies selected to progress in a government competition supporting the Small Modular Reactor (SMR) development for greater energy security. EDF Energy is actively involved in consortium demonstrators seeking to use nuclear heat and energy for hydrogen production.

EDF in the UK is a leader in helping customers decarbonise.

EDF Energy serves 3.6 million British homes and businesses supplying electricity and gas. It is the largest electricity supplier to businesses and the public sector in Great Britain (GB). Continued high energy prices in 2023 and wider inflationary pressures have created affordability challenges for customers. In the domestic market EDF Energy was ranked highest of the large suppliers by Citizens Advice based on July-September 2023 data. In 2023, EDF Energy's total committed spend on the Energy Company Obligation (ECO 4) and the Great British Insulation Scheme (GBIS) was increased to £185m, benefitting 14,000 households by helping them to reduce energy costs and carbon emissions.

EDF Energy is now more than half-way through migrating its 3.6 million residential and SME customers onto Kraken Technologies' market-leading EnTech platform. This supports EDF Energy's objective to deliver efficient and market leading customer service across a range of products and services, making the energy customers consume greener and cheaper.

Utilising the capabilities from across EDF in the UK, EDF Energy offers solutions including electric mobility, low-carbon heating, micro generation, renewable power purchase agreements (PPAs), flexibility services and smart meters combined with data services. EDF Energy is one of the leading optimisers of grid-scale batteries in Great Britain.

EDF in the UK made significant steps to increase its capabilities in 2023. In September 2023, EDF Renewables UK and Ireland acquired SAS Energy, specialists in providing solar technology for use in the commercial and industrial (C&I) sectors. This will enable EDF Energy to deliver on-site solar projects to a wide range of business customers. In November 2023 EDF Energy acquired 100% of the shares of one of the UK's leading air source heat pump installers, CB Heating, following on from the strategic investment made by EDF into CB Heating in 2022.

1.4.5.1.2 Activities of EDF Energy

Installed capacity and output of EDF Energy in the United Kingdom – 2023

EDF Energy	31/12/2023	31/12/2022
Electricity supplied[1] (in GWh)	44,755	43,656
Gas supplied (in GWh)	27,598	29,190
Number of residential customer accounts (in thousands)[2]	5,358	5,542
Number of employees[3]	11,588	10,795
Total Recordable Incident Rate[4]	0.72	0.70

(1) Power supplied to final consumer including previous year metering cut-offs.
(2) Year-end Figure.
(3) Headcount at the end of the period, including staff on maternity leave. Pod Point employees not included.
(4) Total Recordable Incident Rate: Annual total combined number of Lost Time Incidents, fatalities, Restricted Work Injuries and Medical Treatment Injuries (excluding First Aid)/number of hours worked ×1,000,000. This covers all employees, agency and contractor staff. Excludes EDF Renewables UK and the Hinkley Point C project. The Accident Frequency Rate (AFR) for HPC was 0.086 at the end of December 2023. (In 2022 it was 0.09. Due to the fatal HPC accident the actual figure submitted was 0.)

1.4.5.1.2.1 Regulatory regime applicable to nuclear facilities in the UK

The following regime is applicable to both EDF Energy's nuclear operations and new build assets in the UK.

Regulatory notice

Basic nuclear facilities in the United Kingdom

In the United Kingdom, EDF Energy is required, under the Nuclear Installations Act 1965 ("NIA 1965"), to hold a nuclear site licence for each of its existing nuclear power plants and nuclear power plants under development and comply with a certain number of licence conditions. The Planning Act 2008 ("PA 2008") introduced the concept of Development Consent Orders ("DCOs"), which are the authorisations required to build a new nuclear power plant in the UK. The DCO application process involves conducting an environmental impact assessment, implementing environmental mitigation measures and holding a certain number of public consultations.

Office for Nuclear regulation (ONR)

In the United Kingdom, the Office for Nuclear regulation (ONR) and the Environment Agency (EA)/Scottish Environment Protection Agency (SEPA) are responsible for the safety, security, emergency planning and environmental regulation that applies to the UK's nuclear sites.

The ONR is responsible for the regulation and inspection of nuclear facilities and the following laws are overseen by the ONR:

- the Health and Safety at Work Act 1974 (HSWA 1974), which defines EDF's obligations for the safety of workers and others on its sites;
- the Nuclear Installations Act 1965 (NIA 1965), under which operators of nuclear power plants need to obtain a nuclear site licence, comply with that licence and maintain nuclear liability insurance;
- the Energy Act 2013 (Part 3) (EA 2013) conferred statutory body status on the ONR. It also confirmed ONR's purposes in respect of nuclear safety, nuclear site health and safety, nuclear security, nuclear safeguards and transport. Schedule 8 of the Act details the powers of ONR Inspectors;

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- the Ionising Radiation regulations 2017 (IRR 2017), which are based on the Basic Safety Standards Directive and provide for the protection of workers and the public against ionising radiation;
- the Environmental Permitting (England and Wales) regulations 2016 and the Environmental Authorisations (Scotland) regulations 2018. The 2016 regulations provide the current permitting framework for radioactive substances. The 2018 regulations provide a framework for the authorisation of environmental activities and currently include only Radioactive Substances activities. The EA and SEPA are the responsible regulators for these 2016 and 2018 regulations respectively.

When assessing the measures that may be required to reduce the risks from activities within the scope of HSWA 1974, the ONR requires risks to be reduced as low as reasonably practicable.

The ONR uses the powers granted to it under the NIA 1965, the EA 2013 and the 36 standard Nuclear Site Licence Conditions as the basis for its monitoring and enforcement regime. The ONR has extensive inspection powers allowing it to inspect nuclear facilities, request documents and conduct investigations. It begins with a detailed review and assessment of the safety of the design and continues throughout the operation and decommissioning of the facilities.

Under the NIA 1965, the ONR is authorised to grant licences to applicants and to impose licence conditions which may be varied or revoked. In particular, the ONR can prohibit certain nuclear operations or revoke the licence of a nuclear site. More ordinarily, the ONR may agree to specific actions, approve arrangements or require changes/variations to operations. The maximum penalty for non-compliance with safety legislation is an unlimited fine or imprisonment for a term not exceeding two years for directors or both.

Brexit

A civil nuclear agreement, the EU-UK Nuclear Cooperation Agreement (NCA) dated 30 April 2021, is similar to other NCAs that the EU has signed with third countries. It operates for an initial period of 30 years, providing a commitment to cooperation on civil nuclear, including safeguards, safety and security. It also provides a framework for trade in nuclear materials and technology, facilitates research and development, and enables exchange of information.

1.4.5.1.2.2 Nuclear Operations

EDF Energy owns eight nuclear power stations in the UK (15 reactors) of which three (six reactors) have been moved to defueling operations. The total generating capacity was 5.9GW during 2023. Centrica plc. (Centrica) holds a 20% shareholding in Lake Acquisitions Limited, the parent company in which the nuclear operations assets sit (except Nuclear New Build).

Nuclear operations fleet technology

Seven of the eight nuclear power stations are AGR power stations (Dungeness B, Hartlepool, Heysham 1, Heysham 2, Hinkley Point B, Hunterston B and Torness) and the eighth, Sizewell B, is a Pressurised Water Reactor (PWR) power station.

Safety and radiological protection

Nuclear safety is EDF Energy's overriding priority. In 2023, 4 events on the International Nuclear Event Scale (INES scale) were recorded, all of which were rated at Level 1 (anomaly).

EDF Energy operates to strict procedures to minimise and control the radiation doses received by employees and contractors at all of EDF Energy's existing nuclear power stations. In 2023, the average individual dose received by all workers on EDF Energy's existing nuclear sites was approximately 0.076mSv. The highest individual dose received in 2023 was 4.948mSv, with the legal dose limit being 20mSv per year.

Lifetime of power stations

The actual lifetime of each power station is determined primarily by the technical and economic practicability of supporting its safety case. This is assessed at each statutory outage for the following operating period through inspection, maintenance, testing and assessment of plant performance. Following the outage, consent is required from the Office for Nuclear Regulation (ONR) before restarting the reactor. The operating period between statutory outages is normally three years for the AGR power stations and eighteen months for Sizewell B.

In addition, every ten years, the stations are subject to a more detailed and wide-ranging Periodic Safety Review (PSR) of design, operational and organisational safety which must also be accepted by the ONR in order to secure continued operation. The Sizewell PSR was submitted to the ONR in January 2024, with their decision expected in January 2025.

The AGR fleet were designed with a nominal 25-year lifetime, and Sizewell B with a 40 year lifetime. However, with the aggregation of technical information, and operational and safety experience of EDF Energy, it has been possible to extend the expected AGR lifetimes. Since British Energy was acquired by EDF, the AGR lifetimes have been extended by an average of seven years. The prospect of further AGR lifetime extensions (four power stations) will be reviewed again by the end 2024 and the ambition is to generate beyond these dates, subject to plant inspections and regulatory approvals.

See also in section 2.2.1 in Risk factor 1B "Failure to comply with the objectives for operation and/or for extending the operating life of nuclear power plants (France and United Kingdom)".

CAPACITY AND OUTPUT BY POWER PLANT

Power Plant	Power[1] (in MW)	Output[2] (in TWh) 2023	2022
AGR Power Plants			
Dungeness B	-	-	-
Hartlepool	1,185	7.3	7.7
Heysham 1	1,060	6.5	6.3
Heysham 2	1,240	7.6	7.9
Hinkley Point B	-	-	4.1
Hunterston B	-	-	0.1
Torness	1,200	8.3	7.2
PWR Power Plant			
Sizewell B	1,198	7.7	10.4
TOTAL	**5,883**	**37.3**	**43.6**
LOAD FACTOR[3]		**72%**	**77%**

(1) Capacities are stated for all generating reactors, net of all power consumed for the power stations' own use including power imported from the grid, at 1 January 2023.

(2) Output in each year reflects any refuelling, planned and unplanned outages. Imports for non-generating stations are excluded.

(3) Load factors are obtained by dividing the actual output by the output that would have been achieved by each power plant operating at its stated capacity appropriate for the period. For 2022, Hinkley Point B has been included up to 30 June i.e. the end of the last quarter before end of generation, consistent with the WANO (World Association of Nuclear Operators) treatment of operational performance indicators.

Operational review of the existing nuclear generation fleet

The nuclear generation fleet produced 37.3TWh during 2023, 6.3TWh less than 2022 (43.6TWh). The reduction in output is largely due to:

- the end of operational life of Hinkley Point B (on 1 August 2022) and Hunterston B (on 7 January 2022);
- four statutory outages carried out in 2023, (versus two in 2022, which was partly offset by:
  - > three graphite core inspection outages in 2022), and
  - > lower unplanned losses, in 2023

CURRENT EXPECTED OPERATING LIVES* AND CLOSURE DATES

Power Plant	Type of reactor	Start of Generation	Power Station Lifetime (Formally Declared)	Life Extensions (Already Formally Declared)	Associated Scheduled Closure Date
Hinkley Point B	AGR**	Feb. 1976	46 years	21 years	2022
Hunterston B	AGR	Feb. 1976	46 years	21 years	2022
Dungeness B	AGR	Apr. 1983	38 years	13 years	2021
Heysham 1	AGR	July 1983	43 years	19 years	2026
Hartlepool	AGR	Aug. 1983	43 years	19 years	2026
Torness	AGR	May 1988	40 years	15 years	2028
Heysham 2	AGR	July 1988	40 years	15 years	2028
Sizewell B	PWR	Feb. 1995	40 years	–	2035

** As formally recorded by EDF Energy and approved by the Nuclear Decommissioning Authority ("NDA").*

*** Advanced gas-cooled reactors.*

Radioactive Waste Management and decommissioning

In the UK, radioactive waste is classified into four categories:

- Low Level Waste (LLW), for which a disposal route exists – including the LLW near-surface Repository at Drigg West Cumbria;
- Intermediate Level Waste (ILW), for which no disposal route is currently available in the UK;
- High Level Waste (HLW) is defined as radioactive waste in which the temperature may rise significantly as a result of the radioactivity, so this factor has to be taken into account in the design of storage and disposal facilities;
- Higher Activity Waste (HAW) – this is effectively HLW, ILW and any LLW that are unsuitable for near-surface disposal.

EDF Energy nuclear generation's strategy for LLW and HAW reflects that the UK and Scottish Governments are focused on application of the waste hierarchy (reduce, reuse, recycle, recover). The use of a range of waste recycling and disposal routes will help to make the best use of the UK's Low Level Waste Repository (LLWR) in Cumbria. Only a disposal route for LLW currently exists in the UK.

HAW is stored for the medium-term in safe, purpose-built facilities at EDF Energy's stations while longer term national solutions are being established within England and Scotland.

Spent fuel from the AGR is transported to Sellafield nuclear reprocessing site (owned by Sellafield Limited, a subsidiary of the NDA) for long term storage.

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PWR spent fuel from Sizewell B is stored on site in a purpose-built spent fuel dry storage facility which will safely store all of the spent fuel that will be generated over Sizewell B's life. Following long-term surface storage, the Sizewell B PWR spent fuel will be disposed to a future UK geological disposal facility.

The AGR spent fuel arrangements were agreed at the time of the restructuring of British Energy and through them EDF Energy pays for long term storage (and in previous years reprocessing) of spent nuclear fuel. Sizewell B's fuel storage strategy is approved by the NDA as it is funded by the Nuclear Liabilities Fund. EDF Energy has policies to continually improve and optimise the spent fuel and waste arising through the company's wider safety, sustainability and environmental policies.

Regulatory notice

Radioactive waste in the United Kingdom

In the United Kingdom, EDF is required, under nuclear site licence Condition 34, to ensure, so far as is reasonably practicable, that radioactive material and radioactive waste on its sites is adequately controlled or contained so that it cannot leak or escape.

In England the Environment Agency (EA) regulates the disposal of radioactive waste from licensed nuclear sites under the Environmental Permitting (England and Wales) regulations 2016. These regulations also regulate what was previously governed by Pollution Prevention and Control, Water Resources Act discharge consents, Flood Risk activity consents and Waste Management licensing.

The Committee on Radioactive Waste Management (CoRWM) published its recommendations for the long-term management of higher activity waste in 2006. In response, the UK government decided to prefer the use of deep geological disposal facilities for the storage of higher activity waste in England. It set the framework for the management of long-term storage through geological storage, combined with a safe and secure interim storage.

In Scotland, the Scottish Environmental Protection Agency (SEPA) regulates the disposal of radioactive waste from licensed nuclear sites. The Scottish Government is pursuing a near surface near site long storage or disposal policy for HAW arising from Scottish sites.

Decommissioning of nuclear facilities

In the United Kingdom, EDF is subject to nuclear site licence Condition 35 which forms the basis for the detailed decommissioning plans and programmes required by the ONR, but its requirements must be taken into account with other legal provisions such as the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) regulations 1999 which require an assessment of the environmental impact of decommissioning and mitigation measures to reduce the environmental impact.

Decommissioning is usually carried out in stages, with ONR formal approval required to move on to the next stage. The ONR may order operators to start or cease decommissioning at any time and must approve decommissioning plans for each stage of the decommissioning process.

Prospective operators of nuclear power plants are required to submit in their FDP (Funding Decommissioning Programme), a Decommissioning and Waste Management Plan (DWMP), setting out the operator's costed plans for meeting its decommissioning and waste management and disposal obligations, and a Funding Arrangements Plan (FAP), explaining how the operator will make financial provision for its obligations. Chapter 1 of Part 3 of the Energy Act 2008 (EA 2008) sets out the rules governing the decommissioning and clean-up of nuclear sites, along with detailed provisions on FDPs. Also see section 6.1, note 15.2.3 "Provisions for nuclear plant decommissioning" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023.

EDF Energy is party to a suite of agreements (the Restructuring Agreements) that set out how qualifying decommissioning and uncontracted liabilities costs will be funded by the Nuclear Liability Fund (NLF) as well as including a guarantee by the UK Government for the costs of decommissioning the existing nuclear plants. The NLF was funded initially through a UK Government contribution and, since privatization, by EDF Energy Nuclear Generation Ltd. making quarterly payments to the NLF under the terms of a contribution agreement. In 2020, the UK Government made an additional contribution to the NLF of £5 billion.

EDF Energy and the UK Government signed an update to the Restructuring Agreements on 23 June 2021. The changes and clarifications to the Agreements confirm the recovery of qualifying costs and stipulate that once the AGR stations have finished defueling under EDF Energy responsibility, they will all be transferred to the Nuclear Decommissioning Authority (NDA), or another station purchaser nominated by UK Government, which will be responsible for subsequent decommissioning activities[1].

(1) See also section 6.1, note 15.2.1 "Regulatory and contractual framework" to the consolidated financial statements of the financial year ended on 31 December 2023.

1.4.5.1.2.3 Thermal generation and gas storage

Power Plant	Location	Year commissioned	Number of units	Type of station	Capacity (in MW)	Output (in TWh) 2023	2022
West Burton A	Nottinghamshire	1969	-	Coal-fired and OCGT*	-	0	0.1

** Open Cycle Gas Turbine.*

The Cottam Power Plant closed on 30 September 2019 after more than 50 years of being in service. The decision to close the station was made following market changes together with a drive to actively remove carbon from the power generation process. Currently plans are progressing well with the decommissioning work and the likely timescale for completion of demolition is Q4 2025.

The West Burton A Power Station closed on 31 March 2023 after 57 years of being in service. It had previously entered into partial decommissioning on 1 October 2021, reducing the available units from 4 to 2 with the plan to fully close on 30 September 2022. Following a request from Government in April 2022, it was agreed that West Burton A would remain open for a further 6 months until 31 March 2023. The decision to close the station is in line with EDF's commitment to contribute to Net Zero. West Burton A has had minimal generation in 2022 and 2023 due to the strategic decision to reduce current coal stock and be a station of last resort in preparation for its closure. Currently plans are progressing well with the decommissioning work and the likely timescale for completion of demolition is 2027.

EDF Energy also operates a mid-cycle gas storage facility in Cheshire. Hill Top Farm became commercially operational in mid-January 2015 with three cavities. A fourth cavity became commercially operational in 2018 with the remaining cavity brought into service in December 2019. During 2020, the decision was made to decommission the Hole House Facility due to requirements for some significant investment to the plant. Decommissioning work is progressing well, it is expected to be complete by 2028.

The decision to sell EDF Energy Gas Storage Limited was made in 2023 and the business has been classified as an asset held for sale.

Carbon Pricing

As the largest producer of low-carbon electricity in the country, EDF Energy benefits over the long term from the increase in the wholesale power price as a result of the application of a carbon price to the carbon emissions of fossil fuelled generation. Electricity producers in Great Britain are subject to two main carbon pricing mechanisms, the UK Emissions Trading System (UK ETS) and the UK's Carbon Price Support tax set at £18/tonne until March 2026.

1.4.5.1.2.4 Customer business

	31/12/2023	31/12/2022
Customer electricity supplied (in GWh)	44,755	43,656
Customer gas supplied (in GWh)	27,598	29,190
Number of domestic product customer accounts at the end of the period (in thousands)	5,358	5,542

EDF Energy is responsible for the supply of gas and electricity and related services to residential and business customers across Great Britain and the wholesale market optimisation of EDF Energy's generation and customer assets. The size of business customers ranges from large public sector contracts to small privately-owned businesses. EDF Energy adopts different risk management strategies for residential and business customers.

EDF Energy is the UK leader in energy efficiency installations, through the Energy Company Obligation Scheme (ECO), and provides other 'beyond supply' services to customers, such as energy asset management and optimisation, and the sale and facilitation of electric vehicles (EVs) and heat pumps.

EDF Energy remains committed to its Smart Meter installation programme and upgrading the UK's energy infrastructure to enable concepts such as smart grids and time-of-use tariffs, which contribute to grid resilience as the UK moves towards a low carbon future.

Residential customers

EDF Energy supplied 10.935TWh of electricity and 26.312TWh of gas for the domestic segment in 2023. As at 31 December 2023, EDF Energy had 3.167 million electricity accounts and 2.191 million gas accounts. The 2023 churn (at c.5%) reflected a slight increase compared to 2022 (at c.3%), as energy prices have gradually fallen and suppliers have started to offer tariffs more competitive with the Standard Variable Tariff (SVT). EDF Energy's market share decreased from 10.4% at the end of 2022 to 10.1% (as at the most recent report, 31 October 2023).

To support its most vulnerable customers through winter, EDF Energy announced a £40m support package, which includes reducing standing charges for vulnerable customers to their pre-energy crisis levels. EDF Energy is highly engaged with Government and regulators, both bilaterally and in partnership with other suppliers *via* the industry body Energy UK, to review issues such as supplier resilience, the future of the Default Tariff Cap methodology and Government support for consumers. This includes advocating for a social tariff to be implemented for the most vulnerable customers.

EDF is delivering highly rated customer service, with an "Excellent" TrustPilot rating (4.3/5) and was rated 5th out of 16 energy suppliers by Citizens Advice based on July-September 2023 data, with the highest rating of the large suppliers, (as defined by Ofgem) in that period. EDF has taken a significant step to ensure greater efficiency and continued great service in its mass market business by selecting Kraken Technologies as its preferred contracting partner to enable use of their market-leading customer relationship management platform and the associated operating model. Migration began in April 2023, with an 18-month timeline to complete the project. We have so far migrated 3.84m customer accounts (as of 18 January 2024), which represents over half of the mass market portfolio. The new platform is more adaptable than the legacy system and will help EDF Energy meet its customers' future energy requirements.

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Energy Crisis

In 2023, the wholesale markets for gas and power have been much less volatile than during the height of the energy crisis in 2021 and 2022, as a warmer than expected winter helped Europe to adapt well to an energy system without Russian gas. Wholesale prices have generally fallen steadily since the start of the year, though remain considerably higher than before the energy crisis, and a handful of short term 'spikes' in prices reflect the enduring nervousness in the market.

However, EDF Energy still faces significant risk to its hedging strategy due to uncertainties around customer demand post-pandemic and during a cost of living crisis, and the speed with which the market for Fixed contracts re-opens. The possibility of regulatory change also presents a significant risk and will continue to grow as we move closer to the next UK General Election in 2024. Furthermore, there is additional risk of bad debt due to customer affordability issues and increasing business customer insolvency risk whilst energy costs continue to remain high.

EDF Energy is engaged very actively with the Regulator, UK Government, its Opposition, and other stakeholders in the discussions on the market regulations reform and how to support customers through 2023 and beyond on the journey to Net Zero.

Regulatory Change (for residential customers)

Default Tariff Cap and Government Bill Support

Ofgem introduced a cap on default tariffs for residential customers on 1 January 2019. The price was initially set every six months, based on the average of wholesale prices from the previous six months. This caused significant financial strain for suppliers in 2021 and 2022, as the sharp wholesale prices rises and extreme volatility in the wholesale market led to the default tariff (Standard Variable Tariff – SVT) being set significantly below market prices. Suppliers that had short term hedging strategies (i.e. those that had not purchased energy in advance to meet their customers' needs) were exposed to substantial financial losses, resulting in many suppliers failing and exiting the market. The remaining suppliers then had to service these customers of failed suppliers at a loss, incurring costs that will ultimately be recovered from consumers.

Therefore, while customers were protected from some of the sharp wholesale price rises initially, in February 2022 Ofgem announced a 54% increase to the Default Tariff Cap, and in October 2022 announced a further 80% increase, taking the average annual energy bill to £3,549 (vs. £1,127 in October 2020). Ofgem also announced that the Default Tariff Cap would be updated on a quarterly basis going forwards, rather than every six months.

To support British households, the Government introduced the Energy Bill Support Scheme (EBSS) under which it provided a £400 non-repayable rebate to eligible households to help with their energy bills over the 6 months from October 2022 to March 2023, and announced the Energy Price Guarantee (EPG), which took effect from 1 October 2022, which limited the amount an energy supplier can charge per unit of energy used so that a typical dual-fuel household would only pay up to circa £2,500 per year, with the difference to the Default Tariff Cap borne by Government. Subsequently, on 15 March 2023, the UK Government announced the extension of the EPG, at the same level, until the end of June 2023 when it increased to £3,000. As the Default Tariff Cap has fallen below the level of the EPG since the start of July, the scheme has in practice ceased to have effect for the majority of the population, outside of continuing to provide a small discount to prepayment customers to help equalise their costs with customers who pay by Direct Debit. The scheme will formally end on 31 March 2024. EDF Energy facilitated the provision of c.£1.3bn as part of the EBSS and c.£2.4bn under the Government's EPG. Energy suppliers are fully compensated by the government for the savings provided to their customers under these schemes.

Retail energy market resilience

In April 2022 Ofgem introduced a market stabilisation charge (MSC) and a ban on acquisition-only tariffs (BAT) until the end of March 2023. Following consultation, in February 2023 Ofgem announced that these measures will be extended to March 2024.

The MSC is a requirement on all domestic suppliers acquiring a domestic customer to pay a charge to the losing supplier when wholesale prices fall below the relevant wholesale price cap index. The mechanism is intended to help reduce the risk of costly supplier failures and attempts to provide protection to those firms who hedge energy in advance for their customers so that they are not penalised should wholesale energy prices fall sharply. The MSC was triggered for the first time in November 2022.

Ofgem also took steps to strengthen its milestone assessment framework for new and growing market entrants and increased the time period for assessment of new supply license applications.

These measures have steadied the market and prevented short-termism from suppliers. Along with the falling wholesale prices and the change in Default Tariff Cap methodology, they have allowed suppliers to recoup heavy hedging losses suffered in the last two years. Ofgem has recently confirmed that the MSC will fall away on 31 March 2024. It is also currently consulting on the future of the BAT post March 2024.

ECO4 and Warm Home Discount

ECO3 ended on the 31 March 2022. It was replaced in summer 2022 with the fourth iteration of the ECO scheme called ECO4. which covers a four-year period until 31 March 2026. Like ECO3, the ECO4 scheme places an obligation on larger suppliers to promote energy efficiency measures that help low income and vulnerable customers achieve notional bill savings.

Alongside this, Government has this year introduced the Great British Insultation Scheme (GBIS) which will run in parallel until 31 March 2026. The GBIS scheme is designed to widen the eligibility criteria for households to be able benefit from energy efficient measures when they do not meet the qualifying criteria to be able to benefit from the ECO4 scheme. In December 2023, EDF Energy's total committed spend on the Energy Company Obligation (ECO 4) and the Great British Insulation Scheme (GBIS) was increased to £185m.

The Warm Home Discount (WHD) scheme also continues to run annually until winter 2025/2026. The level of support given to qualifying households under the scheme is currently increased to £150 for eligible customers from winter 2022/2023.

Financial Resilience

Ofgem has introduced new rules to ensure that all energy suppliers hold sufficient liquidity based on customer credit balances, and that they can meet their obligations under the Renewable Obligation (RO). In particular EDF Energy must hold a minimum 20% of customer credit balances as cash and fully ring-fence RO requirements for Residential customers with purchased certificates or collateral. EDF Energy is fully compliant with these requirements. EDF Energy will set out in its first Annual Adequacy Assessment in March 2024 that it will meet Ofgem's new Minimum Capital Requirements that apply from March 2025.

Smart Metering Policy

GB energy suppliers were required to take "all reasonable steps" (ARS) to install smart meters for their residential and small business customers before the end of December 2021.

Since January 2022, there has been a new obligation on all suppliers to continue installing smart meters for the period until the end of December 2025. For this period suppliers need to achieve annual minimum installation targets. The government consulted on the annual minimum installation targets all suppliers will have to meet for the first two years: 2022 and 2023. These targets have been challenging given that smart meters remain optional for customers and churn in the industry has been low. Most suppliers failed to meet their 2022 and 2023 targets, though EDF were the best performing of the large suppliers in terms of the % of the target achieved in both years. DESNZ has this year following, a mid-point review now also confirmed the tolerances for scheme years 3 and 4.

EDF Energy remains committed to delivering smart meters to all residential and small business customers who want to benefit from this new technology. In 2023, EDF Energy has installed a further 475k smart meters and at the end of 2023, 61% of EDF Energy customers in scope for the rollout have smart meters. This meant that EDF Energy has installed a total of 3.38 million smart meters to date, despite several serious challenges, including a Covid-19 related pause of all smart meter installation activity.

Non-residential customers

EDF Energy supplies 257k small business customers ("SME"), and c.17k Industrial & Commercial (I&C) customers, of whom 15k are medium business customers and 2k are large business customers. Our I&C business (EDF Business Solutions - 'EBS') also includes 219] large public sector customers.

In 2023, the non-residential segment supplied a total of 33.82TWh of electricity to non-domestic customers, of which 2.163TWh was supplied to SME customers and 31.652TWh to I&C customers. In total, EDF Energy supplied 1.286TWh of gas to non-domestic customers, of which 0.977TWh was supplied to SME customers and 0.31TWh to I&C customers.

The business customer electricity market in the UK is c.159.4TWh in total, making EDF Energy the largest supplier to business customers by volume, supplying c.20% of the business market. EDF Energy's volume supplied to the non-domestic electricity market increased by 0.9TWh year on year thanks to strong growth in our B2B business.

In SME, steps were taken following the global pandemic and the energy crisis to price-in additional risk, increase credit restrictions and limit winning higher risk sectors in order to protect EDF Energy's position. Despite this, SME has developed its channels as the number of customer accounts has grown 7% this year.

Following unprecedented growth of the portfolio in 2022, EDF Energy's Medium Business segment has focused on optimising value and growing the new gas business. At 2023 year end, we supplied c.1.9k gas meter points.

In the Large Business segment, the continuation of a targeted new-business approach has led to the successful acquisitions of 16 new customers in 2023, with 3 exceeding 100GWh. Additionally, 31 Large Business contracts have been renewed.

In the Public Sector, EDF Energy have supplied 18.4TWh over several large contracts including Crown Commercial Services, Network Rail and Scottish Procurement. The Crown Commercial Services contract, which is the largest energy supply contract in the UK and represents over nearly half of the energy volume supplied to I&C customers, was renewed this year, consolidating our position as the energy partner of choice for the Public Sector.

In the electricity purchase market, EDF Energy has grown its PPA business and has become the largest renewable power offtaker (based on owned and 3rd party capacity) according to the latest industry market report. Contracts with two large wind farms were agreed in 2023, Moray West (23.4TWh total expected output from 2027) and North Kyle (4.5TWh total expected output from 2025).

Regulatory change (for non-residential customers)

Energy Bill Relief Scheme & Energy Bill Discount Scheme

In response to rising energy prices in Q3 2022, the UK Government introduced the Energy Bill Relief Scheme (EBRS) to support businesses with their energy costs. Under the EBRS, the Government provided discounts on gas and electricity unit prices. The discount was calculated by comparing the estimated wholesale portion of the unit price a customer would be paying during winter 2022/2023 with a baseline 'government supported price' which was lower than currently expected wholesale prices. The original scheme ran from 01 October 2022 until 31 March 2023, after which a new scheme, the Energy Bill Discount Scheme, was launched, to run until April 2024. Under the new scheme, firms receive a discount on wholesale prices rather than costs being capped as under EBRS. Since Q3 2022, EDF Energy has provided c.£1.1bn of Government support to our business customers under these schemes. The support is applied to qualifying customers' bills automatically with the costs then recovered from government.

Wholesale Market Services

General principles

EDF Energy's energy purchasing and risk management policies ensure that EDF Energy's activities are optimised and its services delivered at a competitive price while limiting its gross margin volatility. The Wholesale Market Services (WMS) division's purpose is to manage the wholesale market risk within pre-defined risk limits and a control framework. It provides an interface with the wholesale markets, *via* EDF Trading. WMS also provides modelling services to the whole of EDF Energy, as well as negotiating and managing asset backed commercial structures with third parties including providing route to market and optimisation agreements for producers.

Electricity sales and procurement

Since April 2010, 20% of the output from nuclear generation is sold to Centrica, the minority shareholder of the current nuclear fleet, under the agreements entered into with Centrica. The remaining 80% is sold internally under the same transfer price as used for the transaction with Centrica, based on published market prices, smoothed over forward electricity prices where liquidity allows.

Over and above its own generation, EDF Energy also sources electricity through export power supplied from power purchase agreements which are mainly with renewable and CHP generators. In 2023, EDF Energy acquired approximately 8.43TWh through this channel.

WMS Flexibility Services offer customers flexibility and forecasting services for storage and small-scale generation to earn revenues from reducing or shifting energy demand. In 2023 it secured an additional 600MW battery optimisation contracts between 7 and 12 years in length.

For delivery in 2023, EDF Energy was a net buyer in the wholesale market of approximately 4.1TWh (including structured trades), having sold approximately 24.2TWh and bought 28.3TWh.

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Gas, coal and carbon rights procurement

2023 represented the first year that EDF Energy received no coal deliveries, as both of its coal plants are being decommissioned.

Electric Vehicles (Pod Point)

Pod Point was floated on the London Stock Exchange on 4 November 2021 raising £105 million of third-party financing to fund future growth in the UK electric vehicle market. EDF has retained a 54.05% stake in Pod Point following the IPO.

In 2023, Pod Point installed 25,688 domestic Plug-in-Vehicle (PiV) charge points. These sales were achieved despite supply chain issues and a cost of living crisis that has slowed growth in the EV market. EDF Energy currently has 19,242 customers with EVs, of whom 6,673 have EV tariffs.

Heat Pumps (CB Heating)

In 2023, EDF Energy acquired 100% of CB Heating, a leading air source heat pump installer. This followed a strategic investment made into the company in 2022. In 2023, EDF Energy has completed 943 heat pump sales (gross) and has installed 508 heat pumps.

Solar pannels and batteries (Contact Solar)

In February 2024, EDF has acquired the solar panel and battery installer, Contact Solar.

1.4.5.1.2.5 Nuclear New Build business

Following the final investment decision (FID) made by EDF Energy's Board of Directors on 28 July 2016, EDF Energy and China General Nuclear Power Corporation (CGN) signed contracts for the construction and operation of two EPR reactors on Hinkley Point site in Somerset ("Hinkley Point C" or "HPC" project).

EDF participates in the development of the Sizewell nuclear power plant project in Suffolk ("Sizewell C" project, based on EPR technology).

Hinkley Point C (HPC)

At the end of December 2023, EDF Energy's share in HPC is 67.7%, with CGN owning the remaining 32.3%.

As with any project of this scope, the project presents very important industrial risks in terms of schedule and budget overruns at completion of the project (works and productivity on site, manufacturing performed off site by suppliers, contingencies around construction works and commissioning, tensions on global market). These risks are detailed in section 2.2.4, risk factor 4A "Management of large and complex industrial projects (including EPR project)".

Project achievements

Hinkley Point C project has achieved in 2023 a series of big milestones:

- On 15 December 2023, the dome was lifted and installed on Unit 1,
- The detailed design for the next phase of electromechanical (MEH) work was finalised,
- 70% of the equipment to be installed on Unit 1 has been delivered,
- The steam generators have been built and are ready for delivery,
- Testing of the UK instrumentation and control system is underway.

Project Costs and Timeline

As a reminder, the Group announced on 19 May 2022[1] that the start of electricity production was scheduled for June 2027. At that time, the risk of further delay in the delivery of the two units was estimated at 15 months. The cost of completion of the project was estimated between £25 and £26 billion in 2015 values[2].

A review of the Hinkley Point C project has been finalised in January 2024[3] and has led to a re-evaluation of the schedule and costs.

The aim of the project is to bring Unit 1 into service around the end of the decade. Several scenarios have been analysed:

- The first scenario around which the project is organised is targeting becoming operational in 2029. This schedule is based on a target productivity for the electromechanical work, which action plans are being drawn up to achieve. A second scenario (base case), which assumes certain risks inherent in the ramp-up of the electromechanical work and the testing schedule do materialise, would see Unit 1 operational in 2030.
- Finally, given the complexity of the project, an unfavourable scenario assuming a further 12-month risk materialises could lead to Unit 1 being operational in 2031.

The costs of completing the project are now estimated at between £31 billion and £34 billion in 2015 values. The cost of civil engineering and the longer duration of the electromechanical phase (and its impact on other work) are the two main reasons for this cost revision. If the risk of an additional delay of 12 months mentioned above in the final scenario does materialise it would result in an estimated additional cost of around £1 billion in 2015 values.

At the end of 2023, the actual costs incurred excluding interim interest for the project as a whole[4] stood at £22.8 billion (at nominal values), or $£_{2015}$18.9 billion. The interim interests stand at £1.419 billion.

At the end of 2023, the Group recorded an impairment in respect of the HPC project (see section 6.1, note 10.8.2 "Impairment tests on goodwill, intangible assets and property, plant and equipment" of the appendix to the consolidated financial statements for the financial year ended on 31 December 2023).

Financing of the project

EDF has committed to UK government in a side letter to the Secretary of State Investor Agreement dated 27 September 2016 that if EDF intends to sell down its shareholding in HPC to a level that results in EDF having less than the majority of voting rights before the date when the second reactor is operational, it will seek the UK Government's consent before completing the transaction.

As the project's total financing needs exceed the contractual commitment of the shareholders, shareholders were asked to provide additional equity on a voluntary basis in Q3 2023. HPC funding is now through Voluntary Equity, to which only EDF is currently contributing. In the absence of CGN's Voluntary Equity, HPC needs to find funding solutions for the full financing requirements up to COD.

Exchanges with the UK Office for Nuclear regulation (ONR)

ONR continues comprehensive regulatory oversight of the HPC project, with development of a new role 'Head of Construction' enabling dedicated focus on Health and Safety in construction, alongside continued oversight of Nuclear Safety and Security.

(1) See EDF's press release of 19 May 2022 "Hinkley Point C Update".
(2) In 2015 sterling, excluding interim interest and at a reference exchange rate for the project of £1 = €1.23.
(3) See EDF's press release of 23 January 2024 "Hinkley Point C Update".
(4) Costs at the project's boundaries which is consistent with the Project completion cost.

In 2023, ONR have issued a specification under LC19(4) by which ONR specified their justification to exercise primary powers to consent the installation of the Reactor Pressure Vessel for Unit 1. As part of its flexible permissioning regime ONR have issued notifications to the following two activities: Unit 1 reactor dome lift as well as the release of the first Steam Generator from Framatome St Marcel. Looking forward, ONR intend to permission a number of further activities as HPC progresses into Commissioning and towards Operations.

The ONR investigation following the tragic fatal incident which took place at HPC site in November 2022 remains ongoing, HPC continues to support the investigation.

Contract for Difference (CfD)[1]

The HPC project company, NNB Generation Company (HPC) Limited and the Department of Energy and Climate Change (DECC) agreed, on October 2015, on the full terms of the CfD for HPC, which was approved by the European Commission in October 2014, ruling that the terms complied with EU state aid rules.

The CfD was signed on 29 September 2016 alongside all the other contracts with the UK Government and it is a contract signed by HPC and countersigned and managed by a counterparty called the Low Carbon Contracts Company Limited (LCCC) which is a private company wholly owned by the UK Government. It provides security in respect of revenues generated from electricity produced and sold by HPC through compensation based on the difference between the strike price and the market price, for a period of 35 years from commissioning of each of both units.

From the unit's start date, if the reference price at which the producer sells electricity on the market is lower than the strike price set under the terms of the contract, the producer will receive an additional payment. If the reference price is higher than the strike price, the producer will be liable for the difference.

The key elements of the Contract for Difference are:

- the strike price for HPC is set at £$_{2012}$92.50/MWh. The strike price will be reduced to £$_{2012}$89.50/MWh if the Sizewell C project reaches a positive FID to take into account the benefit of series effect, with further compensation from Sizewell C to HPC in order to share first of a kind costs of EPR across both UK projects, payable on the later of 31 December 2025 and a positive FID for the Sizewell project;
- the strike price is fully indexed to UK inflation through the Consumer Price Index (CPI);
- the term of the exercise of the mechanism is 35 years; Given the delay to Unit 1 with a commercial commissioning likely to happen after 1 May 2029 and the delay of Unit 2 with a commercial commissioning likely to happen after 31 October 2029, the corresponding 35-year term of the exercise will be decreased commensurately with the deadline overrun beyond those dates;
- moreover, any delay in the commercial commissioning of Unit 2 exceeding 7 years after the deadline specified by the contract for Unit 2, known as the Longstop Date, authorises (but does not oblige) the UK Government to terminate the contract. In view of the impacts of Covid-19 on the project and the outcome of the UK Government' negotiations with CGN on its exit of the Sizewell C nuclear project, the Longstop Date was moved from 31 October 2033 to 31 October 2036;
- the project is protected against certain unfavourable regulatory and legislative changes; provision has also been made to review the costs (up or down depending on the assumptions used) in the fifteenth and twenty fifth years, and to review certain conditions for the costs corresponding to decommissioning and waste management operations (Funding Decommissioning Programme).

There is no explicit volume guarantee in the CfD, nor is there a yearly ceiling; however, the contract is protected against any curtailment by the Transport System Operator so that the project is contractually hedged for this event.

Exposure and management of foreign exchange, interest rate and inflation risks

Beyond the commissioning phase, the return of the euro investment is mainly dependent on fluctuations in sterling and UK inflation, as revenue is generated in sterling and linked to inflation.

HPC project is protected against power market price changes during the CfD period and is exposed to fluctuations in electricity prices beyond the CfD period.

In terms of foreign exchange, c. 1/3 of the project costs are denominated in Euro. This exposes both the project and EDF group to the GBP/EUR exchange rate. Should sterling fall against the euro, the Sterling cost of the project will go up and its return will therefore drop. A hedging strategy has been implemented at project level.

Nevertheless, at EDF group level, a Sterling devaluation will trigger a fall in euro funding requirements and therefore lower Group debt. Given the long-term investment horizon in the HPC project, EDF group has implemented a gradual strategy to cover the risk of an increase in sterling value for its HPC investment.

Funded Decommissioning Programme (FDP)

Contracts for the Funded Decommissioning Programme (FDP) of HPC were signed on 29 September 2016. For detailed explanation of statutory requirement for nuclear operators, see 1.4.5.1.2.2 "Nuclear generation".

Sizewell C

Sizewell C is a project to construct a nuclear power station with two EPR reactors at Sizewell in Suffolk, England. The Sizewell C power plant is expected to have a total capacity of 3.26GW, providing electricity to 6 million households for around 60 years.

This project is based on the HPC replication strategy, replicating as much as possible the HPC design and the HPC supply chain. Sizewell C will benefit from feedback and experience from HPC as well as a developed UK supply chain, which should provide more certainty over schedule and costs.

UK government's decision to back Sizewell C's development

The UK Government has expressed the intention to reach a Final Investment Decision on at least one large-scale nuclear power station this Parliament, *i.e.* before 28 January 2025, subject to value for money and all relevant approvals. This objective was first set out in the Energy White Paper in 2020 and was then included in the government's Net Zero Strategy in 2021, British Energy Security Strategy in 2022 and Civil Nuclear Roadmap to 2050 in January 2024.

In January 2024, the UK government has made an additional £1.3 billion investment available to support the construction of Sizewell C as it progresses towards a Final Investment Decision expected in 2024. This investment will consolidate the government's position as the majority shareholder in the project, it follows a £700 million funding pledge in November 2022 and a further £511 million approved in the summer 23.

(1) Terms of the contract are available on the UK government website: https://www.gov.uk/government/publications/hinkley-point-c-documents.

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EDF's financial commitment to fund the Sizewell C project is subject to a cap which has been reached end of 2023, without any obligation to fund the project beyond this funding cap.

As at 31 December 2023, the UK Government holds a 50.6% shareholding in the project, with EDF owning the remaining 49.4%. The UK Government's investment also led to China General Nuclear's (CGN) exit from the Sizewell C project. CGN held a c.20% shareholding in the project until November 2022 and remains a shareholder in the Hinkley Point C project.

Preparation of construction

As the project moves toward a Final Investment Decision expected in 2024, the project has transitioned from development to delivery and is actively preparing the start of construction. First commencement of DCO was triggered on 15 January 2024, releasing funding for initiatives for the local communities in support of the start of the construction phase. Acquisition of the main site is expected to be made in the first half of 2024. Civil works suppliers are mobilised and works on site are ramping up with the objective to start earthworks excavation mid-2024. Detailed design of off-site infrastructures (such as road and rail) and earthworks has significantly progressed. Contracts of critical components and equipment are finalised or being finalised and manufacturing of some critical equipment has started to secure the benefits of HPC replication, including the Reactor Pressure Vessels and Steam Generators.

Organisation and collaboration schemes with HPC are being implemented and tested to secure the benefits of the replication.

Regulation model and risk sharing mechanism

In March 2022, new legislation came into effect (Nuclear Energy (Financing) Act) introducing a Regulated Asset Base (RAB) model as an option to finance future nuclear projects. The RAB model is a tried and tested funding model that has already been used in the UK to finance other major infrastructure such as water, gas and electricity networks. Under this model a company receives a licence from an economic regulator to charge a regulated price in exchange for providing the infrastructure.

The Sizewell C project was designated in November 2022 as eligible to benefit from the RAB model. Under the RAB license granted to Sizewell C by Ofgem (Office of Gas and Electricity Markets), the project will receive an allowed revenue from the start of the construction phase, which will be funded by electricity suppliers being charged the cost of the project as users of the electricity system. In turn, electricity suppliers will charge the cost on to UK consumers.

The regulator will set an allowed revenue level for the project to recover costs (during both the construction and operation phases), provide a return on the capital investment, complemented with an incentive regulation framework to deliver the project. The development costs incurred until the entry into the RAB model are expected to be included in the RAB and recovered at the Revenue Collection Agreement signing to be signed between Sizewell C and the Low Carbon Contracts Company Ltd.

In addition to the RAB, the Sizewell C project will be granted a UK Government Support Package (GSP) protecting investors and debt holders from some low probability, high-impact risk events. The combination of the RAB and GSP aims to share the project's construction and operating risks between consumers, taxpayers and investors and to lower the cost of financing.

The terms of the RAB model and GSP for the Sizewell C project are being finalised with the UK Government and potential investors. A formal public consultation process was launched in November 2023 in respect of the terms of the RAB model for Sizewell C.

Financing of the construction of the power plant

In September 2023, the UK government launched a capital raise process to seek additional funding for the construction of the Sizewell C nuclear power plant from private investors. The financing terms of the project are being reviewed by potential investors and final terms are expected to be set out in 2024.

Consents, permits and licensing

In July 2022, the UK Government approved Development Consent Order (DCO), giving its go ahead to start building the power station. Legal action challenging that decision was dismissed in June and December 2023. In January 2024, an application for leave to appeal the Judgement has been filled and is being instructed. The project has fulfilled a series of obligations in the Development Consent Order (DCO) to enable full construction to begin in 2024.

The Office for Nuclear Regulation (ONR) concluded that the Sizewell C application to be granted a Nuclear Site Licence has met almost all the regulatory requirements set out in regulatory guidance, with a limited number of forward actions to be closed out. The Nuclear Site License is expected to be formally granted in the first half of 2024.

Final Investment Decision (FID)

The power plant's construction remains subject to a FID. Sizewell C and its shareholders, EDF and the UK Government, are working together to finalise the remaining steps leading to a Final Investment Decision expected in 2024, subject to conditions being satisfied for the Sizewell C project including:

- Securing the project financing through the finalisation of RAB and GSP and the completion of the capital raise
- An agreement with the UK government on the baseline schedule and costs at completion
- the granting of the remaining required consents, in particular subsidy control clearance

EDF's involvement after Final Investment Decision

EDF's contribution to the funding of the construction is subject to some conditions, including:

- The reduction of its shareholding to a level non exceeding 19.99% maximum
- The ability to deconsolidate the project from the Group's financial statements (including in the calculation of the economic indebtedness by the rating agencies)
- A return on capital expected by EDF, as an investor with shares not exceeding 19,99%, in line with its investment policy;

Failure to meet these conditions, without prejudice to an appropriate risk allocation, would result in the Group not making a Final Investment Decision (see section 2.2.1 "Risks related to operational performance", risk factor 1A – "Management of large and complex industrial projects, including EPR project").

In the event of a positive Final Investment Decision by EDF (refer to paragraph "Final Investment Decision (FID)"), its shareholding will be reduced to a level which will not exceed 19.99%. The amount and the timing of EDF capital injection as a shareholder after Final Investment Decision has not been approved yet.

EDF will supply the UK EPR design, some key nuclear equipment through Framatome, the steam turbines (in the context of GE Steam Power's Nuclear activities buyout by EDF), the fuel assemblies at minimum for the first fuel cycles as well as associated services to the Sizewell C project. The key supplier contracts with EDF entities are finalised and will come into force at Final Investment Decision date.

Bradwell B

There were no developments in the project in 2023.

1.4.5.2 Italy

1.4.5.2.1 EDF group market and footprint in Italy

Italy is one of the EDF group's four key markets in Europe alongside France, the United Kingdom and Belgium. The Group is mainly present in Italy through its 97.172% shareholding in Edison[1].

Edison is a leading energy company, with 140 years of history which makes it one of the oldest operator in the sector.

Today Edison employs over 6,000 people operating mainly in Italy and Spain in the fields of renewable and low-carbon production, natural gas procurement and sales on the wholesale market, sustainable mobility, and through Edison Energia and Edison Next in the sale of power, gas and value-added services for customers, companies, territories and Public Administration. The Group is at the forefront of the energy transition in Italy in line in particular with the UN Sustainable Development Goals and European decarbonisation policies.

1.4.5.2.2 Edison's strategy

In 2023 Edison turned 140 years old and is today a leader in the energy transition. Edison aims to contribute to the security, stability and autonomy of the energy systems it takes part to ensuring also economic and environmental sustainability.

Edison plans to invest 10 billion euros between 2023 and 2030 (85% of which will be in line with the United Nations' Sustainable Development Goals (SDGs) and approximately 75% aligned with EU taxonomy regulation) and achieve an EBITDA level of between 2 and 2.2 billion euros at the end of the plan, compared to 1.1 billion euros in 2022.

This will be achieved through a significant change in its industrial portfolio, which will result in direct zero or near-zero emission activities accounting for 70% of its EBITDA, compared to an average of 35% over the last three years. This development will be financed through operating cash flows and a debt level in line with an investment grade rating.

The company has the ambition to have 90% of its generation mix decarbonised by 2040 through the use of renewables and new technologies such as CO_2 capture and new nuclear power, if the conditions are met for its development in Italy.

The main axes of development are as follows:

- **Renewable energy and flexibility:** Edison aims to increase its renewable energy generation by promoting specific investments in hydro, wind and solar power projects to increase its electricity generation portfolio in Italy with a view to reach 5GW capacity by 2030 while reducing its carbon emissions. Simultaneously, Edison aims to develop tools for managing flexibility such as additional storage and pumped storage hydropower capacity to support the development of intermittent unscheduled renewable energies. Edison intends to focus on highly efficient and flexible thermoelectric plants and on CO_2 capture and storage (CCS) systems to decarbonise its gas-fired power generation portfolio. Looking ahead to 2040, Edison believes that nuclear energy will play a key role in achieving the EU's carbon neutrality targets. Small Modular Reactors (SMRs) technology in particular can be used to produce both electricity and heat, responding in a highly flexible way to the needs of energy-intensive industries and territories. In this regard it should be noted that EDF, Edison, Ansaldo Energia and Ansaldo Nucleare signed a letter of intent for the development of new nuclear plants in Europe.
- **Customers and services:** Edison's goal is to strengthen its position on the Italian market by increasing its portfolio of customers (from 2 to 4 million contracts/ more than 2,000 energy communities and over 100 Renewable Energy Communities) and to propose a portfolio of innovative products through the development of energy services designed for end customers, residential and industrial consumers and public administration. Edison aims to install up to 1GW of photovoltaics for self-consumption purposes of its clients. Edison also aims to increase its market share by helping customers and territories strengthen their competitiveness, efficiency, environmental sustainability and individual well-being. Edison promotes sustainable mobility, both with electric mobility solutions and by encouraging the development of facilities for the sale of LNG for heavy-duty land and sea transport.
- **Gas/green gas:** Edison will maintain its key role in the Country's energy security and independence with a flexible and increasingly decarbonised gas portfolio, thanks to green gases such as hydrogen and biomethane. Edison's goal for 2030 is to continue to meet 20% of Italian's gas demand with green gases accounting for about 5% of its portfolio. Edison aims to build a second small-scale storage facility (SSLNG) for natural gas in the South of the Country, serving the decarbonisation of heavy duty maritime and land transport (hard to abate).

In October 2023 Edison completed the sale of its 11.25% stake in the Reggane Nord licence, in Algeria, to Repsol (6.75%) and Wintershall Dea (4.50%). With this transaction, Edison brings to completion the disposal of all Exploration and Production (E&P) activities following the company's strategic realignment towards its energy transition businesses.

Edison is committed to social responsibility: EOS Foundation - Edison Orizzonte Sociale ETS was established in 2021, with the aim of creating value and social innovation in the territory.

Edison is also the EDF group's gas platform. Since 2017 the company has had a service agreement with EDF enabling it to provide integrated management of all EDF group's assets and to develop EDF's long term gas sourcing business (in particular, the procurement of gas and LNG, contract management, medium to long-term optimisation, transport and storage). The Group also benefits from short term to medium optimisation skills of EDF Trading in particular *via* its access to physical and financial wholesale market worldwide.

In June 2023, Moody's affirmed Edison's long-term issuer rating Baa3 and changed the outlook to stable from negative following an equivalent change in the outlook of EDF's rating. In December 2022, S&P confirmed its "BBB with stable outlook" rating and removed the negative outlook following similar action on EDF's rating. Standard & Poor's and Moody's both noted Edison's strong underlying operating performance, its solid credit metrics, its improved business risk profile and the progresses made in Edison's strategic repositioning.

In a context of high market volatility, Edison further strengthened its financial flexibility with a new revolving credit facility of 1 billion euro which became effective in June 2023 to finance working capital requirements. The facility has been granted by a pool of banks including BNL BNP Paribas, BPER Banca S.p.A., Intesa Sanpaolo S.p.A. and UniCredit S.p.A. and it is guaranteed by the Italian export credit agency SACE S.p.A. ("SACE") for 70% of its amount.

Finally in December 2023 Edison's ESG risk exposure was rated for the first time by Sustainalytics with a value of 24.9 (MEDIUM RISK) confirming a strong quality of ESG risk management. This puts Edison in the first third of the rated utilities across the world based on Sustainalytics's methodology.

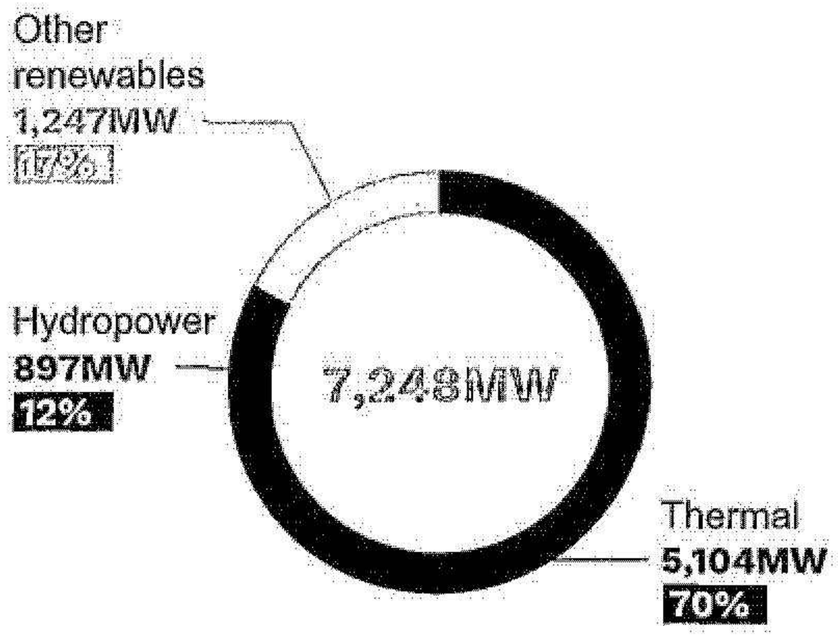
(1) Equity stake; 99.473% share of voting rights.

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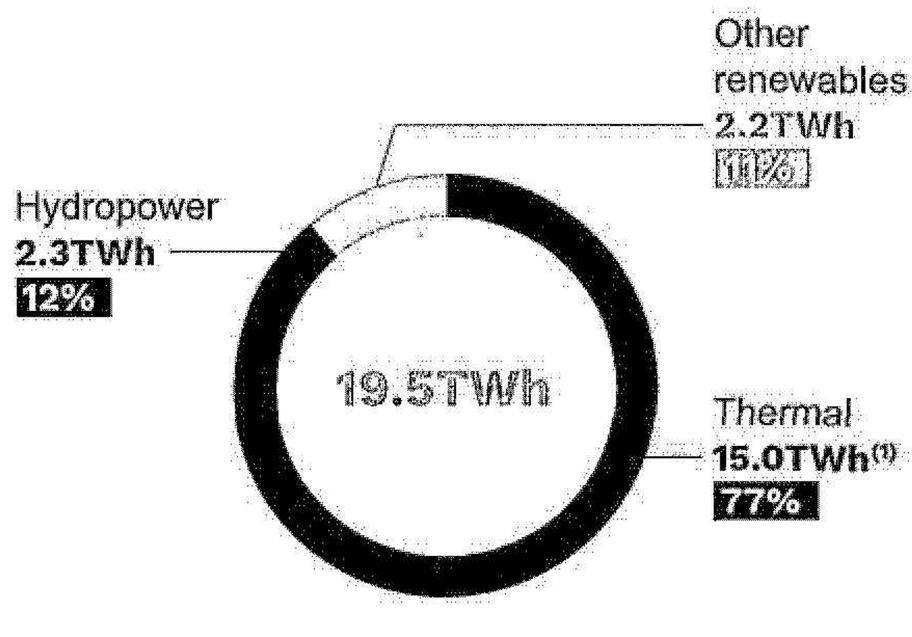
1.4.5.2.3 Edison's business

Installed capacity and output of Edison[1] – 2023

Installed capacity



Electricity output



(1) On a consolidated basis, customer energy efficiency services included.

NB: The values expressed are rounded.

(1) Including EESM: 0.8TWh.

1.4.5.2.3.1 Electricity generation

Power generation in 2023

With 7.2GW of installed capacity distributed across the country, Edison covers 7.5% of the Italian electricity production.

It is an integrated operator along the electricity value chain: from power generation to plant operation & maintenance and sales to end customers.

In 2023, Edison produced 19.5TWh of electricity (-0,9% compared to last year). The decrease in Edison's power generation in 2023 was mainly due to the decrease in thermal generation (14.2TWh, excluding EESM[1], *i.e.* -9.3% compared to 2022) mainly due to a less favourable price scenario. This decrease is partly offset by higher hydroelectric production. In 2023, Edison's hydro power output totalled 2.3TWh a 63% increase versus 2022. This increase was mainly due to higher rainfall. Wind power and other renewable energy production amounted to 2.2TWh in 2023 (up 14.7% on 2022). This increase referred mainly to changes in scope due to the acquisitions of Winbis Srl and Cerbis Srl in July 2022, as well as the commissioning of the Mazara 2 plant in August 2022.

The generation fleet

Edison's generation fleet (excluding EESM) is currently made up of 123 hydropower plants, 13 thermal power plants (CCGT), 53 wind farms and 56 photovoltaic plants. Combined-Cycle Gas Turbines account for 77% of electricity generated in volumes (including EESM), while hydropower accounts for 12% and combined wind and other renewable energies 11%.

In order to guarantee the flexibility and security of the national electricity system, in 2023 Marghera Levante CCGT plant (780MW) started operations and Presenzano CCGT plant is being started up (760MW). Their construction started in 2019 and 2020 respectively. These two installations are highly flexible and efficient (with energy efficiency of up to 63%), have a lower environmental impact (with CO_2 emissions 40% lower than the national average and 70% fewer NOx emissions). The two power plants benefit from the fixed contribution of €75,000/MW for 15 years linked to the capacity market, with a positive impact on the volatility of Edison's margins. This is an important milestone for the security of the Italian energy system, ensuring a highly flexible, lower-carbon production that balances the intermittent nature of renewable sources, thus contributing to the achievement of the country's decarbonisation targets set by the PNIEC[2].

Edison aims to continue its expansion in renewables through both organic growth and partnerships with third-party developers, including options to acquire projects for new facilities.

In 2023, Quassolo mini hydro plant was inaugurated confirming Edison's interest in hydro generation.

Edison acquired a portfolio of 10 mini-hydro power plants in Piedmont and 4 in Valle D'Aosta for a total installed power of 11MW and 2MW respectively.

In the last quarter of 2023, the company further strengthened its position in the photovoltaic industry thanks to the COD of 6 solar plants in Piedmont and 2 in Sicily for a total of 80MW. In the first quarter of 2024 new construction sites will be opened for 210MW of renewable energy throughout Italy.

Internationally, Edison is well-established in Greece, where it owns a 50% stake in ElpEdison SA, one of the country's main electricity operators. ElpEdison owns two CCGT plants: one in Thessaloniki (426MW) and the other in Thisvi (410MW) and is gradually expanding its marketing activity, in particular in the residential market.

Lastly, Edison holds a 20% stake in Kraftwerke Hinterrhein AG, which operates 626MW of hydropower in Switzerland and a 49% stake in Dolomiti Edison Energy, with hydro plants in Trentino.

Edison shows its interest in renewables not only through its important investment plan but also through offtake Power Purchase Agreements (PPAs). Offtake PPAs are an important stimulus for the market to build new renewable megawatts and accelerate the path to decarbonisation.

In 2023 Edison signed five PPAs for purchasing power from third parties at a fixed price on a long-term basis for a total value of 500GWh per year. Two of these agreements are preparatory to the construction of two photovoltaic plants in Lazio with an installed capacity respectively of 87MW and 150MW. These will be ones of the largest photovoltaic plants in Italy.

(1) *Energy & Environmental Services Market.*
(2) *Piano Nazionale Integrato per l'Energia e il Clima.*

1.4.5.2.3.2 Gas business

For the implementation of its gas strategy, the EDF group, through Edison, benefits from experience along the entire value chain of natural gas.

Edison is Italy's second largest importer of natural gas and most important long-term importer of LNG with *circa* 21% market share. Edison aims to maintain its position in Italy's natural gas value chain with activities ranging from import and storage to the sale of the commodity. Edison's Italian gas sourcing portfolio is based on a series of long-term agreements. As of the end of 2023, Edison's sources were:

- approximately 13 billion m^3 almost entirely *via* gas pipelines imports from Libya, Azerbaijan and Algeria and LNG from Qatar;
- 1.9 billion m^3 bought on the market, through short-term contracts, or produced in Algeria (until disposal).

In 2023, total sales of gas amounted to 14.9 billion m^3 (compared with 21.1 billion m^3 in 2022). Edison delivered 4.5 billion m^3 of gas to the industrial sector, 0.7 billion m^3 to the residential sector, 3.8 billion m^3 to the thermoelectric sector (including Edison's own requirements), 5.8 billion m^3 on the wholesale market, and 0.1 billion m^3 of sales of production abroad.

In 2023, no gas was imported from Russia.

Gas infrastructures

Edison contributes to the development of gas import infrastructure projects through IGI Poseidon in which Edison owns a 50% stake [1]. IGI Poseidon is promoting the following three projects:

- Eastmed, an interconnection project between Greece and the eastern Mediterranean which will provide direct access to gas resources in the eastern Mediterranean (Israel, Cyprus), connecting them to the Greek, Italian and other European markets. The project is based on a 10bcm/year offshore/onshore line, expandable up to 20bcm/year, whose viability and sustainability have been demonstrated from a technological and economic point of view by engineering surveys carried out since 2014. The pipeline would also be suitable for hydrogen transport, meeting the needs of ecological transition. The project is included in the EU's VI list of Projects of Common Interest (PCI);
- Poseidon, an interconnection between Greece and Italy, which would allow available gas resources to be transferred from Greece to Italy by connecting to Eastmed. The project is a mature asset with finalised engineering activities and has obtained the required permits in Greece and Italy. In May 2020, it was declared a project of national importance for Greece;
- IGB, a 182km gas pipeline linking Greece and Bulgaria, which is operated by ICGB and is jointly owned by BEH [2] and IGI-Poseidon. This infrastructure has a capacity of 3 billion m^3 of gas and was commercially launched in October 2022. Its commissioning opens up a new strategic supply route for the countries of Southeast Europe in terms of security and provides a diversification alternative to Russian gas. The gas pipeline received funding of €110 million from the European Investment Bank (EIB).

Edison also has the right of use for 80% of the Rovigo long-term offshore regasification terminal's capacity (6.4 billion m^3 per year) where LNG imported from Qatar with Ras Laffan Liquified Natural Gas Company Limited II (RasGas II) is regasified.

For Edison, LNG is a strategic vector not only for meeting the demand of the Italian gas network, but also for its role in the decarbonisation of truck and maritime transport. In 2021 Edison created the first integrated logistics chain dedicated to small scale LNG, through the construction and commissioning of a 20,000 m^3 small-scale depot in Ravenna (in partnership with PIR and Scale Gas) and an LNG carrier dedicated to its supply.

Furthermore, Edison plans to build additional facilities in southern Italy, including a facility in Brindisi, which has already received a building permit and can benefit of funds tied to the Italian recovery and resilience plan PNRR (*Piano Nazionale di Ripresa e Resilienza*). They will be key components in the development of a logistics chain for sustainable heavy duty land and maritime mobility in the south of the Country.

1.4.5.2.3.3 Sales and marketing

In 2023, Edison sold 37.1TWh of electricity in Italy (compared with 37.7TWh[3] in 2022, *i.e.* down 1.5%), of which 19.5TWh were generated[4] and 17.6TWh were purchased on the markets. Sales to end customers totalled 13.7TWh, down 3.1% compared to 2022 due to a decrease in consumption by business customers Gas sales decreased to 14.9 billion m^3, particularly for thermoelectric uses (-29.8%) and on the wholesale market (-35.3%). Sales for industrial (-8.8%) and civil (-59.3%) purposes fell too.

Edison Energia is the main company in Edison Group active in the sale of electricity and gas to residential, small businesses and large industrial customers. It also offers value-added services through a wide range of repair, installation, maintenance and insurance products for the protection of domestic installations.

In 2023, Edison Energia reached more than 2 million industrial, residential, SME and Value Added Services contract (+11% vs 31.12.2022). It made a concrete contribution to the energy transition through solutions that lower carbon footprints and environmental impacts, such as electric charging stations, solar panels, heat pumps, air conditioners and boilers.

In 2023 Edison Energia launched the offer "My Sun Business", a unique solution on the market that offers to SME companies the design, supply, installation and maintenance of photovoltaic systems and smart power.

To sell its electricity, gas and value-added service products to consumers and small businesses, Edison has adopted a multi-channel marketing approach that focuses on both physical and digital approaches:

- Edison uses a network of technical partners and installers throughout the country, as well as its own shops and those of its partners. The physical channel is a source of new power and gas contract and a relevant service provider for Value Added Services.
- Edison has increased the number of digital interactions, allowing the customer to be aware of its consumption and self-manage its contracts (through digital private area and app): moreover, digital channels have increased the number of sales, reaching 34% Edison commodities sales.

(1) See also section 1.4.6.2.2.2 "Gas assets and projects - Infrastructures".
(2) Bulgarian Energy Holding.
(3) 2023 and 2022 data including optimisation volumes.
(4) Production data calculated in line with consolidation criteria

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- Edison has also a strong focus on after-sales management through telephone channels, with high quality customer care and a dedicated service & delivery contact centres to provide Value added Service support.

Edison Energia has also launched an ambitious development plan of condominium energy communities that has the goal of reaching 2,000 communities by 2030. These communities are associations of users who share the energy they produce from renewable sources to cover their own consumption.

Furthermore, it is also committed in sustainable mobility: it supports electric mobility and encourages the switch from traditional fuels to more sustainable ones.

1.4.5.2.3.4 Energy services

Edison manages energy and environmental services to B2B and B2G customers through Edison NEXT.

Edison NEXT is strongly committed to support its customers (industrial, tertiary, public administration) on their ecological transition journey, leveraging on a unique platform of innovative services and solutions. It is active in Italy, Spain and Poland.

Main services include the design, installation and management of sustainable self-generation units, including co/trigeneration plants, solar power plants, substations, thermal power plants for industrial heat generation, A/C plants, compressed air plants, fluid distribution systems (electricity, gas, hot and refrigerated air, compressed air, industrial gas, water) and industrial water treatment plants. The range of services is completed by a consulting activity in terms of energy usage optimisation, management of environmental securities and internal and external training for customers and partners.

The business models are designed based on customer needs, projects are developed with customers often in the form of industrial partnerships or performance agreements.

Below some examples of how Edison NEXT supports companies on their path to energy transition.

- 20-year on-site PPA (Power Purchase Agreement) with Berco, a Thyssenkrupp Group company: Edison NEXT is responsible for the design, construction, management and maintenance of a ground-mounted photovoltaic plant.
- 10-year contract with Barilla: revamping (modernization with latest-generation technology) of the trigeneration plant, on which the production of Barilla's entire Campania hub in Marcianise is based. According to the project, the installed equipment (supplying electrical, thermal and cooling energy) will be modernized, mainly by working on the recovery boiler and the alternator.
- JV with Iris Ceramica Group for the launch of the first project for the decarbonisation of the ceramics industry using green hydrogen powered by renewable energy.
- 15-year contract with Aenova for the design, installation, maintenance and management of a new solar tracking photovoltaic plant with a capacity of 1.135MW, to be installed on the ground within the production perimeter of the Latina site.

To strengthen its capabilities in offering sustainable solutions to industrial clients, in 2023 Edison NEXT has created a JV with Polytec Group, called NYOX: the company is active in the design and construction of photovoltaic systems and will enable Edison NEXT to offer to its industrial customers competitive PV solutions to decarbonise industrial processes and reduce energy costs.

It also offers to communities, local areas and public authorities a complete range of solutions from urban regeneration and public lighting to energy services for buildings with the aim to improve energy efficiency, reduce environmental impacts and create value for local areas.

Main example is the commitment of Edison NEXT in Apulia to support Public Administrations in the decarbonisation of public buildings, ports, public lighting and in the development of sustainable mobility. The project started in Foggia and Ruvo di Puglia with long term projects for energy and technological upgrading and maintenance.

Similar projects are also in pipeline in the Abruzzo region.

As part of the commitment to support local communities on their decarbonization path, Edison NEXT is also involved in the development of renewables district heating systems: during 2023 Edison NEXT has acquired 100% Prometheus Energia srl, a biomass district heating with the aim to optimise production, expand the catchment area and enable development of smart services for the community.

Edison NEXT is committed to support the development of biomethane and hydrogen markets. In 2023 Edison has started the production of Biomethane from 2 production plants, 1 in Lombardia region and 1 in Campania.

Edison takes part to Puglia Green Hydrogen Valley which is one of the first initiatives for the production of green hydrogen on large scale in Europe. It consists in the construction of two plants in Brindisi and Taranto, for an electrolysis capacity of 160MW. It is expected that, once fully operational, the plants will be able to produce about 250 million cubic meters of green hydrogen per year. In particular, the project of Brindisi, which will be built in a SIN area (Site of National Interest) is in an advanced phase of the authorization procedure. Puglia Green Hydrogen Valley project is also positively participating in the call for European funding IPCEI (Important Projects of Common European Interest). Shareholding of Puglia Green Hydrogen Valley Srl has been recently modified with the entrance of Sosteneo SGR SpA (40%) and DRI D'Italia SpA (once received all Ministerial authorizations – 5%). Other shareholders are Edison at 45% and Saipem at 10%.

In Poland, Stellantis exercised its right to terminate the existing contract and announced the intention to exercise the "call option" for the purchase of ex Fenice's equipment. FCA(1) also submitted the Operational Plan, which included planned dates until which Edison should continue to provide services (end of 2024 for electricity an heat). Edison Next is currently in discussion to negotiate the transfer of activities in a way that protect its interests and those of its existing customers.

1.4.5.2.3.5 Regulated activities – Gas storage

Edison contributes to the security of Italy's gas system through regulated storage activities: the Group, through its subsidiary Edison Stoccaggio Spa, is the second largest operator in the sector in Italy with about 1 billion m^3 of natural gas stored in reservoirs. Edison Stoccaggio has three storage sites (depleted gas fields): Cellino (since 1984), Collalto (since 1994) and San Potito & Cotignola (since 2013).

In 2023 a strategic review process was initiated in order to assess the opportunity of a potential sale of this asset.

(1) Fiat Chrysler Automobiles.

1.4.5.3 Other International

1.4.5.3.1 Northern Europe

Belgium

The Benelux area includes interfaces with the Franco-German electricity grid and Great Britain. Benelux constitutes an important node in the European gas market because of its numerous import and transit infrastructures, such as the Zeebrugge hub and the Dunkerque methane terminal nearby.

EDF Belgium

As part of a long-term nuclear energy cooperation agreement with Electrabel, EDF holds 50% in undivided co-ownership of the Tihange 1 nuclear power plant, through its wholly-owned Belgian subsidiary, EDF Belgium. The capacity attributed to EDF represents 481MW (or 2% of Belgian generation capacity). Tihange 1 output, which is attributed to EDF Belgium is sold to EDF (*via* a long-term contract renewed at the end of 2015 for 10 additional years), which, in turn, resells the electricity to Luminus at a market price. The Tihange 1 nuclear power plant is scheduled to continue to operate until 2025.

Luminus

At the end of 2023, the EDF group held 68.63% of the Luminus company through its subsidiary EDF Belgium. Luminus is the second largest player in the Belgian energy market and holds a balanced upstream/downstream portfolio. The company, whose market share is close to 25%, possesses almost 10% of total Belgian generation capacity with 2,213MW installed at the end of 2023. The electricity generation of Luminus reached 5.0TWh in 2023. The company employs around 2,500 people.

Luminus has the ambition of developing its wind power fleet and accelerating the rollout of its energy services in order to provide its customers with innovative and sustainable solutions, whilst pursuing its objective of reducing costs and rationalising its thermo-electrical generation fleet.

Luminus owns 10.2% (419MW) of Belgium's Tihange 2 and 3 nuclear power plants (commissioned in 1983 and 1985 respectively) and the Doel 3 and 4 plants (commissioned in 1982 and 1985 respectively), which have a lifespan of 40 years. The Doel 3 nuclear power plant was permanently decommissioned on 23 September 2022, with Tihange 2 decommissioned on 31 January 2023. In the second half of 2023, Engie and the Belgian government signed a letter of intent setting out the terms governing a 10-year extension of the operation of the Doel 4 and Tihange 3 reactors from November 2025.

In addition, Luminus has a generation allocation contract for 100MW relating to the two units of the Chooz B power plant.

Luminus also possesses a thermal fleet comprising several power plants (combined cycles and open cycles) for an installed capacity of 1,208MW. In April 2022, the Belgian federal government selected the project for a new CCGT plant in Seraing under the CRM (Capacity Remuneration Mechanism). This project involves the construction of a gas-steam turbine (GST) power plant with total capacity of approximately 870MW. This new generation unit will be located next to the existing plant in the Val business park in Seraing. The project also includes the conversion of the existing power plant to operate alongside the new unit. Work started in autumn 2022 and the new unit is scheduled to be commissioned in the second half of 2025.

Luminus also operates in renewable energy. The company runs seven hydropower plants. At year-end 2023, Luminus owned 90 onshore wind farms with a total of 280 turbines across Wallonia and Flanders. Since the end of 2015, the company has been the leader in onshore wind farms in Belgium and had an installed capacity of 725MW at the end of 2023. In 2023, Luminus erected nine wind turbines for a total capacity of 27MW.

Under its "Luminus" brand, EDF supplies electricity and gas to around 2.2 million residential and business customers[1] in Belgium (representing a market share of roughly 23%).

The company is involved in the energy services segment for residential customers through its subsidiaries Rami Services, Dauvister, and Insaver, mainly by providing boiler installation and maintenance, installing solar panels, and providing "Home Assistance" services in the event of unexpected damage at home. At the end of 2023, the B2C portfolio for these last three services reached approximately 200,000 contracts thanks to bundle sales[2] through the Luminus website.

Luminus, together with its partners[3], offers comprehensive integrated electricity and heating solutions to its industrial customers. Its subsidiary Luminus Solutions (in which Luminus and Dalkia own a 51% and 49% stake respectively) provides energy efficiency services for administrative buildings, hospitals, schools, sports facilities, swimming pools and apartment complexes on the basis of an energy performance contract.

In 2023, Luminus maintained its expansion strategy by strengthening its regional divisions, particularly around its subsidiary ATS.

Luminus Cities (formerly Citelum Belgique) completed renovation work on the LED lights on Wallonia's motorway network, which began in 2020. The 20-year PPP agreement for the design, modernisation, funding, management, and maintenance of 100,000 lights was awarded to the LuWa consortium (comprising Luminus Cities [lead contractor], Luminus, CFE, and DIF) in 2019. It is expected to achieve energy savings of 76% by the end of the construction period. In total, the operation will avoid the equivalent of 166,000 tonnes of CO_2 emissions between 2020 and 2040.

Germany

EDF has had operations in Germany for over 25 years. With around 3,800 employees and over 100 researchers, the EDF group engages in a large number of activities, particularly in the fields of renewable energies, low-carbon hydrogen, batteries, nuclear engineering and energy services.

EDF group entities operating in Germany

- EDF Deutschland GmbH, a wholly-owned subsidiary of EDF International SAS based in Berlin, is in charge of the Group's activities in Germany. It focuses on the promotion and development of the Group's business, in particular new business models for energy and innovative solutions to support energy transition in Germany (*Energiewende*). EDF Deutschland also represents the Group in leading German political and economic circles.
- In 2020 Hynamics, a subsidiary in the Group in charge of putting forward an effective low-carbon hydrogen offering for industry and mobility, set up its German subsidiary, Hynamics Deutschland GmbH. In addition, Hynamics Deutschland is developing a number of industrial hydrogen use projects.
- EDF Renewables had 164MW of gross installed onshore wind power capacity as of 31 December 2023, and operated 274MW of onshore wind power capacity. Currently under construction is a further 24MW of onshore wind capacity. EDF Renewables offers battery storage and solar electricity sales (onsite PPAs - Power Purchase Agreement) for industrial and commercial sites in Germany only. This subsidiary owns and operates a portfolio of 3.6MW of electricity storage systems, divided between four industrial sites. It has 14 new sites under construction with a total capacity of 11.4MW of electricity storage and 7.1MW$_p$ of solar electricity.
- The EDF group owns 100% of the share capital of the German company Energy2market (e2m), based in Leipzig. e2m specialises in the aggregation of renewable production and local flexibility and operates a Virtual Power Plant (VPP) of over 5,000 decentralised sites, which represent a total installed capacity of over 4GW. See section 1.4.6.1.3 "Other service activities of the EDF group".

(1) In delivery points.
(2) Bundled offers.
(3) With ATS, Vanparijs, Dauvister and Newelec.

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- EDF Energiewende & Neue Ressourcen GmbH is a wholly owned subsidiary of the EDF group with headquarters in Berlin and operations throughout Germany. Its business model is the supply, maintenance and supervision of energy management and optimisation products and services for commercial and industrial companies, public services and renewable energy development companies.
- Based in Erlangen (Bavaria), Framatome GmbH has 3,000 employees, making the subsidiary Framatome's second largest engineering concern. Its main business is maintaining, prolonging and upgrading nuclear plants all over the world (especially Instrumentation & Control systems). It is also involved in the building of EPRs in France, Finland, China and the United Kingdom. Framatome is active in electricity and hydrogen storage in Germany. Framatome's other German subsidiary, Advanced Nuclear Fuels GmbH (ANF), makes fuel assemblies for PWRs (pressurised water reactors) and BWRs (boiling water reactors) for the European market and has 440 employees in Lingen (head office) and Karlstein.
- Metroscope, a subsidiary of EDF Pulse Holding with an office in Berlin, develops AI for industrial asset.
- EDF Trading is the wholesale trading branch for the entire EDF group. It operates in Germany in the electricity, gas, CO_2 and green certificate markets. It is also active in the green energy markets for short-, medium- and long-term products and PPAs.
- EIFER (Europäisches Institut für Energieforschung EDF-KIT EWIV), a Franco-German energy research institute, was founded by EDF and KIT[1] in 2002. It aims to strengthen collaboration through joint projects focusing on industrial issues. EIFER offers innovative low-carbon energy solutions to support the sustainable development of cities, local communities and industries. EIFER is based in Karlsruhe and has more than 100 employees.

Main interests

- EDF Deutschland holds a 25% stake in HYPION GmbH, a company that originates and develops hydrogen-related projects in the north of Germany.
- EDF Deutschland also holds a 50% stake in HYPION Motion Neumünster GmbH & Co. KG, a company that designs and operates hydrogen-based service stations in northern Germany. HYPION Neumünster GmbH & Co. KG has a hydrogen station in Neumünster.
- The Group owns 50% of a run-of-river hydropower plant located in Iffezheim on the Rhine River (148MW, five turbines).
- The EDF group also has storage for natural gas in salt cavities located in Etzel in Lower Saxony. The aboveground facilities are operated through a 50/50 joint venture with EnBW (see section 1.4.6.2.2 "Gas assets and projects"). Through its subsidiary EDF Gas Deutschland, EDF also holds a 16% stake in BEP gas pipeline (Bunde-Etzel-Pipelinegesellschaft).

Denmark

In May 2022, EDF International acquired Citelum Denmark, whose business was to operate and maintain the public lighting networks of Danish municipalities as well as, to a lesser extent, road signs.

Following this acquisition, Citelum Denmark became EDF Danmark. Its portfolio of activities has been enriched with offers focused on the decarbonisation and digitisation of infrastructures.

In particular, EDF Denmark has positioned itself in electric mobility to install and operate charging stations. In 2023, the company was successful in multiple calls for tenders, adding a total of 600 charging stations to its portfolio.

1.4.5.3.2 Europe and Central Asia

Central Asia

The Group's engineering Divisions (thermal, hydraulic, networks and systems) are active in this region to provide services.

In Uzbekistan, at the end of 2021, a consortium formed by EDF, Nebras (Qatar) and Sojitz (Japan) was selected by the Uzbek authorities to finance, build and operate for 25 years a 1,600MW combined-cycle gas turbine power plant at the Syrdarya site. Kyuden (Japan) also joined the consortium at the end of 2021. The project benefits from a shaping contract with the state-owned NEGU (National Electric Grid of Uzbekistan), which supplies the gas and receives the electricity in return. This contract is backed by a guarantee from the Uzbek government. Construction began in December 2023, with commissioning is expected some time in 2026.

In late 2022, EDF created its subsidiary EDF – ICA (EDF In Central Asia) in Uzbekistan and is also developing other projects to support the country's energy transition, particularly in the field of hydropower and distribution.

1.4.5.3.3 Southern Europe

Spain

EDF International SAS held 31.48% of the share capital of the Elcogas company, which owned a 320MW ICCG (Integrated Combined-Cycle Gasification) power plant. Elcogas is currently in the process of being wound up.

The Group is also present through Edison Next Spain's local subsidiary specialising in energy and environmental services for companies and local authorities.

EDF Trading operates in this market from its trading platform in London.

Framatome Spain is active in Spain through various engineering and maintenance contracts with firms that own nuclear reactors.

EDF also operates through its Madrid-based representation office EDF Peninsula Iberica, and is in charge of the promotion and development of the Group's business and new activities in energy transition in Spain and Portugal.

1.4.5.3.4 North America

The EDF group operates throughout the North American continent, with a strong presence in the United States.

EDF's activities in North America mainly include:

- Renewable energies, with a gross installed capacity of 6.6GW, mainly located in the United States through EDF Renewables North America, a wholly-owned American subsidiary of EDF Renewables. Equally, EDF Renewables Services (a wholly-owned subsidiary of EDF Renewables North America) manages close to 14.6GW in North America through operation and maintenance contracts on its own account or on behalf of third parties;
- Trading throughout the entire value chain in North American gas and electricity markets through EDF Trading North America. Also see section 1.4.6.4 "Optimisation and trading: EDF Trading;
- Energy services, local management of energy and energy efficiency, and public lighting under the management of Dalkia and its subsidiaries Dalkia Energy Solutions, Aegis Energy Services and Dalkia US Chiller Services NY. Also see section 1.4.6.1.1 "Dalkia";

(1) Karlsruhe Institute of Technology.

- R&D and Innovation, as part of EDF Innovation Lab. Also see section 1.5.1.5 "EDF's R&D scientific partnerships internationally";
- Nuclear energy has been providing clean, reliable, low-carbon electricity in the North America for the last 60 years. Framatome's mission is to maintain and modernize North America's operating nuclear power plants, supply them with the fuel they need, and support the potential construction of new plants. Framatome holds a large share of this market, and is thus a stakeholder in nuclear power generation, which reached 772TWh in 2022(1). Also see section 1.4.1.1.4 "Activities related to nuclear generation: Framatome".

New activities are carried out by subsidiaries of EDF Pulse Holding:

- Exaion offers an eco-responsible, competitive and sovereign cloud offering of blockchain and high-performance computing solutions. It has a subsidiary in Canada, created in July 2022;
- Metroscope develops artificial intelligence for the operational maintenance of industrial assets. It has a subsidiary in the United States, set up in September 2023.

1.4.5.3.5 South America

In South America, the EDF group is present in the Brazilian, Colombian, Peruvian and Chilean markets and is extending its ambitions in certain countries in the region, in which it is prospecting for development opportunities.

Brazil

Since April 2014, the Group has held 100% of EDF Norte Fluminense SA (EDF NF). EDF NF built and has operated, since the end of 2004, the Combined-Cycle Gas plant of Norte Fluminense, with installed capacity of 827MW, located in the region of Macaé, State of Rio de Janeiro. A 20-year Power Purchase Agreement (PPA) for 725MW is in place with Light, the distribution company for the city of Rio de Janeiro. EDF NF supplies the equivalent of almost 25% of the electricity energy consumed in the Rio de Janeiro metropolitan area (2,5 million of clients).

In addition, on December 2014, through EDF Norte Fluminense, EDF acquired a 51% stake in Sinop Energia, responsible for building, maintaining and operating the Sinop hydropower plant. Located in Mato Grosso and 70km away from the city of Sinop, it has an extension of 342km², built on the Teles Pires River. The plant began operations in 2019 with an installed capacity of 401.9MW supplying the equivalent of 50% of the State of Mato Grosso (1.6 million clients). EDF NF has signed a contract for the operation and maintenance of the plant, which since October 2021 has been operated remotely by EDF NF teams located at CCGT Norte Fluminense, 2500km away.

In 2021 EDF NF signed a contract for the construction assistance, operation, and maintenance of the Marlim Azul CCGT plant for a 10-year term.

In 2022, EDF Norte Fluminense won the auction for its first project in the energy transmission segment, expanding its operations in the sector and reinforcing its contribution to the country's energy security. The project includes the construction of 1.6km of transmission lines and a 345/138 kV substation.

In the renewable energy field, the EDF Renewables subsidiary has a portfolio of:

- 400MWp gross of solar energy from Pirapora power plant (one of the largest solar power plant of South America located at Minas Gerais State);
- 950,5MW gross of wind energy in operation and 499MW gross under construction in the states of Paraiba and Bahia.

In June 2022, Edison sold 50% of its subsidiary Ibiritermo, referring to a 226MW CCGT in the state of Minas Gerais.

In 2023, Framatome continued to deliver electro-mechanical equipment to its customer Electrobrás Termonuclear Electronuclear (ETN) for the construction of the Angra3 reactor in the state of Rio de Janeiro.

Chile

Via its subsidiary EDF Chile, created in 2014, the Group has a 50% shareholding of GM Holdings(2)]. GM Holdings operates 3 thermal generation assets, totalling 750MW.

In September 2021, EDF and AME finalized the financing of the Chacao+ project, which includes the construction of CEME 1, Chile's largest solar plant with a capacity of 480MW and the conversion of one of the thermal generation assets (132MW) from diesel to gas. The conversion of Los Vientos from diesel to gas was successfully completed in 2023 and the commissioning of CEME 1 is expected during the first semester of 2024.

Moreover, EDF has been prospecting for development opportunities and working on the predevelopment phase of energy storage assets and green hydrogen projects in the south of Chile.

The EDF group is also present in Chile through EDF Renewables which has two projects in operation and several other under development:

- the Santiago Solar photovoltaic project (115MWp) which is jointly held with AME which started operation in January 2018;
- the Cabo Leones 1 wind farm, a joint project with Grupo Ibereólica Renovables which came online in June 2018 with a capacity of 115MW, which was expanded up to 175MW in 2022.

The Bolero solar plant (146MWp) in the Atacama Desert, a joint project with Marubeni which started operation in March 2017, was sold to AES in July 2023.

Peru

Since 2018, the Group is present in Peru *via* its subsidiary EDF Peru SAC which is prospecting for development opportunities and working on the development phase of power generation assets, especially from photovoltaic, hydraulic sources and gas.

A first realization took place in 2021 with the award of several PPAs to supply, through our joint company Amazonas Energía Solar with our partner Novum Solar, electricity based on hybrid solar-diesel plants to some off grid cities of Loreto Region in the Peruvian Amazon Area, those cities being currently supplied only by diesel generators, with a high cost of generation and a very high level of CO_2 emissions.

At the end of 2023, 3 plants are already operating: Purus, Atalaya and San Lorenzo and two other plants are currently under construction. The 5 remaining projects are moving forward with a progressive set up planning speed out on 2023-2025.

EDF Peru SAC also signed in the end of 2022 the Shareholders Agreement with a local partner to step-into Electro Araza, a SPV dedicated to develop a Greenfield – 195MW run of river hydro plant.

In addition, EDF RE is also present in Peru through Naupac Generación Renovable Peru SAC, its SPV in the country:

- In 2021, Naupac won an auction to replace up to 200GWh/y of generation based on heavy fuels with renewable energy in the city of Iquitos (largest isolated city in the world) and will build and operate a hybrid plant whose commissioning is planned in 2026.
- It is also developing the Pescadores project, a wind farm located in the Arequipa region whose commissioning is planned in 2027. The project is currently undergoing its environmental permit approval process.

(1) *For sourcing information, this link may be referenced from DOE.: 5 Fast Facts About Nuclear Energy | Department of Energy*
(2) *Alongside BiobioGenera (50%) of which AME is the controlling shareholder.*

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Colombia

Since 2020, the Group is present in Colombia *via* EDF Renewables Colombia SAS and EDF Colombia SAS which have prospected for development opportunities and worked on the development stage of power generation assets, especially of unconventional renewable energy (solar and biomass), and of green hydrogen generation facilities.

In 2022, an agreement was signed between Colombia Reforestadora de la Costa SAS ("Refocosta"), a 100% subsidiary of Valorem SAS, and EDF Colombia SAS for the construction of a 28MW biomass plant held through their joint subsidiary Refoenergy Villanueva SAS. The construction activities started in March 2023 and have reached a progress of circa 50% at the end of 2023, in line with a Commencement Operation Date (COD) expected by 2025. Further plants are under development.

Finally, EDF Colombia started to be active in the development of a medium-scale green hydrogen production project with Ecopetrol SA, originated in 2022, and was awarded a consultancy contract by CENIT, a company of the Ecopetrol Group, in relation to the blending of green hydrogen with natural gas in their gas pipelines.

1.4.5.3.6 Asia-Pacific

The EDF group's activities in the Asia-Pacific region are focused on China and fast developing countries. The presence in the sectors of electricity generation, networks and services constitutes an industrial challenge for the Group. In nuclear power, in addition to the EPR project in Taishan, the Group is also pursuing new projects.

1.4.5.3.6.1 Activities in China

The EDF group has had operations in China for over 40 years, and is now one of the largest foreign investors in electricity generation and energy services. EDF operates around 3.64GW of net installed capacity(1), in particular *via* stakes in the Taishan EPR power plant, the Dongtai IV and V offshore wind farms, coal-fired thermal power plants and operation of heating and cooling networks.

52% of electricity from assets held by EDF in China was CO_2-free in 2023, higher than the Chinese national average (49.6%).

The EDF group has been developing partnerships with leading Chinese electric energy companies, which open up new prospects for investment in the nuclear industry, renewable energies, energy services, storage and, more generally, innovation.

For the risks to which the Group is exposed, see section 2.2.1 "Risks related to operational performance" – risk factors 1A and 1E.

Partnership agreements

EDF is developing partnerships with key players in the Chinese nuclear industry, in particular its peers CGN and CNNC, to the benefit of the Group's business lines. The General Partnership Agreement between EDF and CGN was signed in 2007 and complemented in 2014 by implementation agreements concerning operations & maintenance, engineering, suppliers and R&D. This agreement was renewed in April 2023 on the occasion of the visit of French President Emmanuel Macron to China.

The partnership with CGN resulted in the signature by EDF and CGN of the final contracts for the Hinkley Point C power plant in the United Kingdom on 29 September 2016. An agreement covering the development of the UK Hualong technology was also signed at that time.

The EDF group has set up a facility based in Beijing and Shenzhen (the Group's front office for China's nuclear industry) with the aim of promoting the EDF model of an integrated architect-assembler operator while acting as a flagship for French industry and positioning itself to support the Group's projects partnership with the Chinese nuclear sector. Experts in this facility are working, in particular, to further promote French codes and standards, as well as the Group's nuclear safety guidelines. They are also a source of technical exchanges benefiting the EDF group's nuclear projects and activities.

In addition, an agreement between AFCEN (chaired by EDF) and NEA (National Energy Administration) was signed in November 2017. Its objective is to promote mutual recognition of nuclear codes and standards and to establish a basis for cooperation between France and China enabling both countries to operate on the international nuclear market.

EDF also chairs the Partenariat France Chine Électricité (PFCE), made up of qualified suppliers of EDF which are seeking to develop in China.

In 2010, the Group concluded a partnership framework agreement with China National Nuclear Corporation (CNNC), extended in March 2014 and renewed in 2019, aimed at developing their cooperation along deeper, global lines. A specific sub-agreement was signed in September 2022 to establish a joint prospective study on the ways in which nuclear energy development in France and China has contributed to achieve decarbonisation objectives: the "Blue Book".

In 2022, the Group signed a framework cooperation agreement with State Power Investment Corporation (SPIC) to develop joint projects in the field of low-carbon energy. In April 2023, in application of the framework agreement, a cooperation agreement on low-carbon, concrete and innovative projects was signed by the Chairmen of the two groups.

Nuclear power generation activities

Daya Bay, Ling Ao and Taishan EPR power plants

EDF led the design, construction and commissioning in 1994 of the Daya Bay power plant (two nuclear reactors of 1,000MW each). EDF also assisted the Chinese group China General Nuclear Power Co. (CGN) for the construction of the Ling Ao plant, phase I (two reactors of 1,000MW each commissioned in 2002 and 2003) and phase II (two additional reactors of 1,000MW commissioned in 2010 and 2011).

EDF is currently providing assistance to the CGN group with the operation of its entire fleet. The performance recorded by these plants since they were commissioned is one of the Group's main references in China, bearing witness to the cooperation between the two countries.

EDF owns a 30% shareholding in Taishan Nuclear Power Joint Venture Company Ltd. The company's purpose is to fund, build and operate two EPR nuclear reactors in Taishan (1,750MW each), in the province of Guangdong. TNPJVC operates the power plant. Through this transaction, the Group represents the first foreign investor in Chinese nuclear power generation. Unit 1 came into commercial operation on 13 December 2018, and Unit 2 on 7 September 2019. After their first 18-month fuel cycle, each of the units carried out its first "initial comprehensive inspection" shutdown with reloading.

Feedback on the technical issue encountered on Taishan No. 1 reactor

Monitoring of the Taishan No. 1 reactor gradually revealed an atypical evolution of the radiochemical parameters leading to the suspicion that the fuel assembly rods had become unsealed(2). TNPJVC, which is in charge of the operation, shut down the reactor at the beginning of August 2021.

(1) Share in the capacity corresponding to EDF's stake.

(2) See EDF's press releases of 14 June 2021 "Information relating to reactor No. 1 of Taishan nuclear power plant" and of 22 July 2021 "EDF's communication regarding the Taishan Nuclear Power Plant's No. 1 reactor".

The analyses carried out following the inspection of the fuel assemblies and the reactor vessel showed that the origin of the sealing issue was due to damage to the cladding on the fuel rods. This damage, which was limited to the lower area of the cladding, was caused by mechanical wear due to the failure of small devices holding the rods in the assemblies[1]. Furthermore, the inspections carried out on the assemblies and the inside of the vessel also revealed a localised phenomenon between the assemblies and a component covering the core related to hydraulic exposure.

The analyses and investigations have enabled clear lessons to be drawn and technical provisions to be defined to avoid exposure to similar phenomena during the future operation of EPR reactors. After a thorough investigation, the Chinese safety authority approved the restart of the Taishan EPR No. 1 reactor. It was connected to the grid on 15 August 2022 and operated in a stable and safe manner until a new scheduled shutdown for refuelling and maintenance on 30 January 2023. During this shutdown, in accordance with an examination programme previously established by the operator TNPJVC, in-depth inspections of the fuel and the reactor were carried out. The unit was reconnected to the grid on 27 November 2023. On 15 November 2022, reactor number 2 started its third operating cycle, which continues in a stable and completely safe manner.

Concerning the impact of this feedback on the start-up of the Flamanville EPR, see section 1.4.1.1.3.1 "Flamanville 3 EPR project" – "Lessons learned from Taishan". See also section 2.2.1 "Risks related to operational performance", in risk 1A, paragraph b2 on the Taishan EPR.

Output of the Taishan EPR

Since 15 November 2022, reactor number 2 has been carrying out its third operating cycle, in both a stable and safe manner. Unit 1 was shut down for the second time on 30 January 2023 for refilling and maintenance. It was safely reconnected to the grid on 27 November 2023.

Tariff conditions applicable to nuclear power plants

On 20 March 2019, the NDRC (National Development and Reform Commission) had set a temporary tariff of RMB435/MWh until the end of 2021. It was extended on 22 December 2021 pending publication of the new tariff mechanism for China's third-generation nuclear power plants, in particular Taishan. At the end of 2023, there had been no further publications by the authorities (see also in section 2.2.1, risk 1A, paragraph b2 on the Taishan EPR).

Framatome

Framatome has had operations in China for over 35 years. It is the designer of units 1 and 2 of the Taishan power plants. Framatome is supplying some equipment and technology building blocks for the Hualong project (RCP, I&C, etc.) along with the fuel. Framatome operates in China *via* joint ventures with Dongfang Electric Corporation (FDJV) and China National Nuclear Corporation (CAST) and through its wholly-owned subsidiary Framatome Nuclear Services (FNS).

Renewable energies

Through the Chinese subsidiary of EDF Renewables, the EDF group holds a stake in several onshore and offshore wind power plants with gross total installed capacity of just over 1,200MW (812MW net) in operation. Its portfolio of projects under development also amounts to several hundred megawatts.

In 2018, EDF Renewables diversified its activities into distributed solar power with the creation of a subsidiary that aims to develop solar-roofing solutions for industrial customers. To date, 162MW of solar power is in operation or under construction.

In the sphere of offshore wind power, in March 2019, EDF concluded an agreement with the China Energy Investment electricity company for the construction of two projects (Dongtai IV and Dongtai V) off the shore of Jiangsu province. The two partners are building and operating these wind farms, with total capacity of 502MW.

Energy services

In the city of Sanmenxia (Henan province), EDF set up a joint venture (of which 65% is held by EDF) for the construction and operation of an urban heating network using the recovery of waste heat emitted by thermal power plants of its partner Datang. The 30-year concession agreement was signed on 9 August 2016

In the city of Lingbao (Henan province), EDF set up a joint venture (of which 65% is held by EDF) to build and operate a heating network powered by a 35MW biomass cogeneration power plant commissioned in March 2020.

In the city of Sanya (Hainan province), EDF and its local partner signed in 2017 a concession agreement with the municipal government to build and operate a cooling power plant, which was initiated in 2021 and provides air conditioning systems to hotels in this region.

In 2021, EDF and Jinan Heating Group signed a 25-year contract to develop an urban air-conditioning network in a new business district of Jinan (Shangdong province).

EDF is also present in this country for public lighting, through the 15-year contract signed in 2008 with Kunming city (the capital city of Yunnan province with 8.6 million inhabitants), where it manages 150,000 streetlights. Operations under the contract began in June 2009.

Coal-fired thermal power generation activities

Shandong Zhonghua Power Company, Ltd. (SZPC)

The EDF group holds 19.6% of SZPC, a company which owns three coal-fired power plants in the Shandong province. The other shareholders are China Energy Investment Group and the Hong Kong electricity producer CLP. These power plants were commissioned between 1987 and 2004, with a total capacity of 3,060MW. From 31 December 2021, SZPC started to progressively transfer its generation units to China Energy Investment Group, including the Shiheng I&II units (1,260MW), with the total divestment of the asset being completed by 31 December 2028.

Datang Sanmenxia Power Generation Company Ltd. (DSPC)

The EDF group holds 35% of DSPC, the company that owns the Sanmenxia 2 power plant in Henan province, commissioned in 2007, with an installed capacity of 2×600MW, using a technology known as "supercritical coal".

Fuzhou Power Generation Company (FZPC)

The EDF group holds 49% of FZPC, a joint-venture created in 2014 with a subsidiary of the Datang group to build and operate an "ultra-supercritical" power plant (2×1,000MW) in the Jiangxi province. This technology makes it possible to reach high levels of temperature and pressure in the boiler, assuring a better output (close to 44% for Fuzhou) than a traditional power plant, while decreasing fuel consumption and CO_2 per kilowatt-hour generated. The first unit was commissioned in December 2015, the second in April 2016.

Research & Development (R&D) activities

The R&D centre's activities in China involve the generation and storage of low-carbon electricity, renewable energies, hydrogen, innovative electricity grids, local multi-energy systems, energy engineering, electric mobility and open innovation. Benefiting from the highly dynamic and innovative Chinese ecosystem, EDF's R&D centre in China is working on applications of digital technology and artificial intelligence to energy business lines. The second edition of EDF Pulse China was organised in 2023 with the participation of over 200 Chinese start-ups.

(1) See EDF's press release of 12 January 2022 "Update on the Flamanville EPR".

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1.4.5.3.6.2 Asia-Pacific region, excluding China

The EDF group's activities in Asia-Pacific are focused on the development of the electricity sector, particularly through projects for the design, construction and operation of new thermal gas and hydropower generating plants in countries offering Independent Power Plant (IPP) type opportunities. EDF is also involved in the field of renewable energies, nuclear, storage, smart cities, grids, electric mobility, hydrogen and innovation.

Headquartered in Tokyo, the EDF International Division Asia Pacific ("EDF Asia Pacific") relies on two subsidiaries in Laos (one 1,070MW hydropower asset, jointly owned and operated with Lao and Thai partners) and Vietnam (one 715MW combined cycle power plant, jointly owned with Japanese partners), and development offices in India, Australia, Singapore, Vietnam, Indonesia and Japan.

Vietnam

At the end of 2023, EDF held 56.25% of Mekong Energy Company Ltd. (MECO). The company owns Phu My 2.2, a Combined Cycle Gas Turbine (CCGT) power plant with a capacity of 715MW[1]. This is the first IPP project financed exclusively by foreign investors in Vietnam. The BOT (Build, Operate, Transfer) contract has a term of 20 years. In 2005, EDF provided "turnkey" delivery of the power plant, and operations are now managed by MECO. The transfer of the BOT contract will be completed in February 2025. A transfer proposal file (Transfert Proposal Dossier) is being prepared.

The EDF group was chosen to head the consortium[2] tasked with studying the project. Once built, the high-efficiency and environmentally-optimised CCGT Son My1 plant with a capacity of 2,250MW in Binh Thuan province, situated north-east of Ho Chi Minh City will be operated by EDF for a period of 20 years. A memorandum of understanding setting out the general terms of the project was signed with Vietnam's Ministry of Industry and Trade (MOIT) in November 2018 and amended in December 2020. This establishes the general framework for the project's development. In 2021, the project was granted an "in-principle investment decision" from the Ministry of Industry and Trade. The working schedule for 2023/2024 will consist of obtaining final approval for this feasibility study from the MOIT and moving forward in the negotiation of a concession agreement, PPA and other contractual documents required for taking this investment decision. Commissioning of the first unit is estimated at the end of 2027.

Laos

At 31 December 2023, EDF Invest held 40% of Nam Theun 2 Power Company (NTPC). NTPC owns the Nam Theun 2 hydropower complex with an installed capacity of 1,070MW. Nam Theun 2 was built by the EDF group under a "turnkey" contract and commissioned in 2010[3]. NTPC company operates the power plant on a 25-year concession agreement concluded with the government of Laos.

A pumped storage project (500-1,000MW) using the existing Nam Theun 2 reservoir is being discussed with the Lao government.

India

In the field of nuclear energy, for details of the cooperation agreement for the project to construct six EPR reactors in Jaitapur, see section 1.4.1.1.3.2 "Other New Nuclear projects".

EDF continues to develop the smart metering business by participating in new smart metering tenders being launched across India. As of end-December 2023, over one and a half million smart meters have been successfully installed.

Other areas of focus for EDF in India involve developing hydropower projects and, in particular, pumped hydropower storage projects which will be a cornerstone of India path towards the low CO_2 energy transition.

EDF Renewables also continued its development in solar and wind power. At the end of 2023, it operated a gross capacity of 571MW (459MW net) of wind power and 663MWc (331.5MWp net) of solar power. In 2023, EDF Renewables commissioned the 112 turbines of the Kabini project (SECI V) in Gujarat for a total of 302MW. With regard to solar power, EDF Renewables is developing its activity through EDEN Renewables India, the subsidiary jointly owned with TotalEnergies. EDEN is continuing the development of solar projects, mainly in the state of Rajasthan.

Japan

EDF founded a Japanese subsidiary, EDF Japan KK, in July 2022. It operates in commercial development activities in Japan (import and downstream hydrogen applications, batteries). Low Carbon hydrogen-based projects will also be leveraged to support this kind of projects in Asia and globally.

Other initiatives, such as the development of pumped electricity storage systems and hydropower plants, are also being studied.

Australia

EDF opened a subsidiary in Australia in March 2023: EDF Australia Pacific Pty Ltd. The development will mainly focus on pumped electricity storage systems, transmission networks and other innovative projects to support the country's energy transition.

In particular, EDF acquired a 300MW pumped electricity storage project in New South Wales in the development phase, and entered into an agreement with the Australian company Vast to co-finance and co-develop green hydrogen and carbon-neutral fuel generation projects.

In Australia, EDF Renewables has a pipeline of around 4GW of onshore, offshore and solar power projects under development.

The pipeline includes the Banana Range wind project, with its first 230MW phase at an advanced stage of development, having obtained permits and authorisations. Construction is scheduled to begin in the first quarter of 2025.

The 1,400MW NSW Newcastle Offshore Wind (NOW) fleet has submitted a license application expected to be issued in the third quarter of 2025, with construction due to begin in 2029-2030.

Singapore

The Singapore subsidiary, "EDF HQ Singapore Pte. Ltd.") was established in 2018, and embed itself in the development and innovation ecosystem of smart grids, electric mobility, hydrogen and interconnections.

Besides, EDF HQ Singapore Pte. Ltd. gives support for project development for other subsidiaries in Asia (business development, finance and human resources).

EDF also opened his sixth International R&D centre in 2014, EDF Lab Singapore Pte. Ltd. (the "Asia-Pacific Lab"). It aims to support the development of international subsidiaries' projects in the region, anticipate future issues for the Group and contribute to building international recognition for the Group's R&D. The Asia-Pacific Lab is currently focusing on three core topics:

- smart grids (including MASERA, EDF R&D multi-energy platform in South-East Asia);
- electric mobility & hydrogen;
- energy markets.

(1) The other shareholders are TEPCO (JERA) and SGM2 (Sumitomo).
(2) Alongside local partner Pacific Corporation and Japanese partners Sojitz Corporation and Kyushu Electric Power Co. with stakes of 37.5%, 25%, 18.75% and 18.75%, respectively.
(3) The other shareholders are a Thai company, EGCO (Electricity Generating Public Company Limited), which holds 35%, and a Lao State company, LHSE (Lao Holding State Enterprise), which holds 25%.

As part of the strong links with academics, the Lab is involved in a "Digital Energy" research project, partially funded by the Singaporean authorities:

- "Descartes": this is a five-year research project led by the CNRS in conjunction with 25 university partners and five industrial pilots, including the Lab, in charge of the "Digital Energy" package. This project aims to develop a hybrid artificial intelligence platform to improve decision-making for critical urban systems (energy, air quality, transport, etc.).

Indonesia

Since 2017, the EDF group has had a representative office in Indonesia. EDF is developing an interconnection project linking Indonesia and Singapore as part of a call for tenders launched by the Singaporean regulator.

1.4.5.3.7 Africa

The Group is expanding on the African continent by supporting countries where energy demand is high. It operates selectively and adapted to each geographic area, while building long-term partnerships in multiple business lines.

EDF is also intensifying its action in the supply of competitive off-grid energy. The EDF group has more than 20 years' experience in off-grid power provision in Africa. Since 2017, the EDF group has joined forces with innovative start-ups to supply power and services to customers in rural areas and on urban outskirts in line with their income and needs. These solutions range from the sale of individual solar kits to mini-grids and solar pumps for farmers. These services enable more than 2 million people in South Africa, Ivory Coast, Cameroon, Ghana, Senegal, Kenya, Zambia and Togo to light and power their household appliances.

South Africa

- The EDF group has had operations in South Africa since 1978 with the construction of the Koeberg nuclear power plant. EDF has also been assisting the national electricity supplier Eskom with the operation and maintenance of this power plant. Framatome is also a major supplier to Eskom (general maintenance and fuel).
- The EDF group established an EDF Development South Africa subsidiary in 2007 in Johannesburg, with a view to preparing the relaunching of the South African nuclear programme. The South African subsidiary is also responsible for developing EDF's business activities in Southern Africa, particularly as regards generation projects as well as the sale of services relating to thermal and hydropower engineering, transmission and distribution. In December 2018, the company purchased 30% of the South African engineering company GIBB Power to support the development of its engineering activity in the Southern Africa Region.
- The EDF group's renewables activities in the country began in 2011 with the acquisition of Innowind, in which the Group now has an 84% stake, allowing it to respond to renewables calls for tender issued by the South African government. Three wind power projects were won in 2012 and one in 2015, totalling 142MW. All four projects are currently in operation.

  In 2021, EDF Renewables (South Africa) was awarded several significant contracts in these government tenders.

  In the first quarter of 2022, EDF took the final decision to invest in a hybrid wind, solar and battery project of 75MW (Umoyilanga), financial completion and construction of which took place in late November 2023.

  In October 2022, the legal closing of three wind projects totalling 420MW was finalised. It is expected to be commissioned at the end of 2024.

  EDF Renewables won a call for tenders by the mining company Anglo American for 100MW of solar power capacity to supply its Mogalakwena mine (final investment decision expected in 2024).

  In 2022, it announced the creation of a joint venture (Envusa Energy) with Anglo American to develop up to 5GW of renewable projects.
- In August 2022, the Group acquired a 50% stake in DPA Southern Africa to develop solar projects for commercial and industrial customers (C&I) in South Africa (project portfolio of over 80MW).
- In partnership with the South African developer Mulilo, EDF won three battery storage projects (Oasis) totalling 257MW/1,024MWh as part of the South African Battery Energy Storage Independent Power Producer Procurement Programme. The storage facilities will be used to strengthen the stability of the network. Construction work is expected to start in mid-2024.
- In the off-grid sector, KES (Kukhanya Energy Services [Pty] Limited), established in 2002 and 65% owned by EDF International, sells and operates solar power kits for low-income residential customers.

Mozambique

- The Group has been active in Mozambique since the end of the 1980s involving the provision of engineering services. It has established privileged partnerships with EDM (Electricidade de Moçambique), formalised by the signature of a memorandum of understanding (MoU) in 2017, which was renewed in November 2021 for three years.
- In July 2022, EDF IN was selected to execute a contract to reduce non-technical losses on the EDM distribution network (financed by the French Development Agency – AFD). The project officially launched in June 2023, and the contract will end in late 2025.
- The consortium composed of EDF, TotalEnergies and Sumitomo (Consortium) was selected as the successful bidder in May 2023 in the call for tenders for the Mphanda Nkuwa hydropower project (1,500MW). In December 2023, the consortium signed, with local stakeholders, the Joint Development Agreement and the Framework Agreement setting out the principles of the Concession Agreement, which will be signed with the State and whose negotiation will begin at the beginning of 2024. Initial recruitments to the project team will be launched at the same time (in particular for E&S). EDF also provides technical support to EDM for the development of the transmission line between the structure and Maputo (1,300km).
- EDF signed a FEXTE[1] in August 2022 with EDM concerning the AFD financing. The aim is to improve the performance of the network to prevent widespread blackouts, as occurred in 2020, with actions implemented in 2023 and to be finalised in 2024.
- In the first quarter of 2023, EDF CIST *(Centre Ingénierie Système Transport)* won a technical assistance contract for EDM to supervise project management assistance for the development of the new national dispatching facility. This is the second EDF CIST contract in the country, after the AMOA contract with Globelec for the construction of the Temane thermal power plant in the centre of the country (ongoing since 2022 and set to be completed 2025).

(1) FEXTE (Fund for Technical Expertise and Experience Exchange) finances technical cooperation programmes and project preparation studies in developing countries.

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Morocco

- The EDF group has been active in Morocco since the 1970s. To help support its development in the region, the Group created EDF Maroc in 1997, EDF Renewables Maroc in 2012 as well as EDF Fenice Maroc in 2016.
- The Group has formed preferred partnerships with National Office of Electricity and Drinking Water (ONEE) and Moroccan Agency for Sustainable Energy (MASEN), electricity distribution authorities, and industrial players. The Group operates in the areas of renewable, thermal and hydropower, as well as in networks and training.
- The Group also participates in the decarbonisation of the Moroccan energy mix, whether with public institutional contractor customers or private partners, particularly manufacturers.
- Projects carried out with public contractors:
  - > after having been selected by ONEE in a call for tenders for the development, financing, construction and operation-maintenance of the Taza wind farm (150MW), the consortium led by EDF Renewables[1] commissioned phase 1 of this project (87MW) in July 2022. The consortium has started discussions on phase 2 with MASEN and ONEE with the goal of commissioning this second phase in 2025;
  - > at the end of a call for tenders launched by MASEN, EDF Renewables, as part of a consortium[2], was chosen in 2018 to design, build, operate and maintain the first phase of the Noor Midelt solar complex. This 800MW capacity project is an innovative hybrid power plant combining concentrated solar power and solar photovoltaic power, a world first. The power purchase agreement was signed between the consortium and MASEN in 2020;
  - > EDF Renewables Maroc, in partnership with MASEN, began construction of the new Koudia Al Baïda wind farm (100MW) in July 2022. This project will "repower" the existing wind farm in the north of the country (50MW), the first of its kind project in Africa. The wind farm is expected to be commissioned in the second quarter of 2024.
- Projects carried out with private contractors:
  - > EDF Maroc has been developing solar photovoltaic self-production solutions for the Moroccan C&I Market since 2021. In 2023, four projects were signed, representing a total capacity of approximately 5MW.

Senegal

The Group is also present in Senegal, through the wholly-owned company ERA, the operator of the rural electrification concession in Kaffrine-Tambacounda-Kédougou. In an electricity sector that is undergoing institutional evolutions (a new electricity code was adopted in July 2021), the question of the economic sustainability of the rural electrification concession model remains relevant through issues of tariff revision. ERA submitted a request to the regulator for an exceptional tariff review, which is still pending.

Cameroon

- The EDF group began doing business in Cameroon in 2014 through the construction of the Nachtigal hydroelectric dam. Created in July 2016, Nachtigal Hydro Power Company (NHPC) is 40% owned by EDF International[3]. NHPC is in charge of the design, financing and construction of the Nachtigal hydroelectric facility (420MW) located on the Sanaga river north of Yaoundé, as well as the transmission line between Nachtigal and Yaoundé. were finalised in 2021. In April 2017, NHPC signed a power generation concession agreement for a term of 35 years from commercial commissioning in 2024. EDF signed a project owner assistance contract with NHPC to ensure successful completion of the project. The Nachtigal hydropower facility is a sizeable project for the country and will, on commissioning, be the most important generation resource in Cameroon. It aims at providing around one-third of the electricity needs and generating numerous economic benefits for the local economy. At the end of 2023, the reservoir had been impounded and the project was 90% complete. Initial generation is expected in March 2024 when the first group will be connected to the grid; commercial commissioning will occur in December 2024.
- Following the MoU signed with the Government of Cameroon awarding EDF exclusive development of the Kikot hydroelectric project on the Sanaga River, discussions between the Republic of Cameroon and EDF enabled an agreement to be signed, in June 2021, on the joint development of this project. 25 September 2023 marked a new milestone for the Kikot project with the creation of the Kikot-Mbebe Hydro Power Company (KHPC), with ownership evenly split between EDF International and the government of Cameroon. KHPC will be responsible for the development, construction and operation of the Kikot hydropower facility. With an installed capacity of 500MW, this renewable energy infrastructure using the abundant water of the Sanaga will be the largest dam in the country, just above the Nachtigal dam. The Kikot construction site is expected to begin in 2025 with commissioning scheduled for 2030.
- The EDF group continues to act as consultant to Eneo, the incumbent electricity operator in the distribution sector.
- In December 2023, the EDF group acquired and took control of the company UPOWA, specialised in the marketing of solar kits, in order to develop its off-grid activities in Cameroon.

Egypt

- The two Benban 65MW solar power plants, developed on a parity basis with Egyptian company Elsewedy Electric, were commissioned in August 2019. The PPA (Power Purchase Agreement) is for 25 years.
- In 2019, EDF Renewables took out a strategic stake in KarmSolar, a major player on the emerging market for privately-produced and distributed solar power in Egypt. The company also operates microgrid projects that include storage. KarmSolar has a portfolio of 39MW of operational solar power plants and 200MW of plants under development.
- The EDF group is also assisting Egypt with its energy transition in a consultancy capacity. In the field of transmission with EETC (Egyptian Electricity Transmission Company), the EDF group is supervising the engineering and construction of the dispatcher in the Delta and the new national dispatcher to be located in Egypt's new administrative capital.
- To support the EIB, the Group is pursuing its consultancy activity with EETC for the development of its transmission network.
- In April 2022, an alliance was formed under the name "Green Fuel Alliance" between EDF Renewables and Zero Waste, a local partner. A memorandum of understanding was signed with the Egyptian government for the production of green ammonia. The alliance is negotiating the terms and framework of the agreement with the Egyptian sovereign wealth fund.

(1) In partnership with the Japanese group Mitsui & Co.
(2) With Masdar and Green of Africa.
(3) Jointly owned by IFC (20%), the Republic of Cameroon (15%), Africa50 (15%) and STOA (10%).

Ivory Coast

- The EDF group is jointly developing[1] the "Biovéa" project for a biomass electricity power plant of 46MW. An agreement on the transmission price for electricity was entered into with the State of Ivory Coast in November 2017. The concession agreement with the State was signed in December 2019. The financial closing and beginning of construction work on the plant took place at the end of 2022, and commissioning is scheduled for 2025.
- EDF International is a 49% shareholder of Conergies Group. This company has considerable expertise in development and innovation in the fields of heating, ventilation and industrial and solar cooling in West Africa.
- In 2016, the Group created a local subsidiary to support its development strategy in the Ivory Coast and in the subregion. ZECI, renamed TEVIA in 2023, a joint venture[2], was created in October 2016 to deploy an off-grid project to install and maintain solar kits for households in rural areas and on urban outskirts. In January 2023, in order to supplement its off grid offerings in the field of solar pumps, the Group co-created the company Greeno, in which with its partner Kenyan Sunculture have equal ownership.

Ghana

Since December 2017, EDF International has held a 30% stake in ZEGHA, a company that markets solar kits, and whose development was stopped in 2020. The liquidation process for the company began in December 2023.

Togo

- The Group is present in the country through Bboxx EDF Togo, a joint venture created with the British company Bboxx. The company undertakes the sale, installation and maintenance of solar kits for rural households. In addition, a partnership to deploy solar pumps was set up in 2020 with the Kenyan company SunCulture (owned by EDF International *via* an indirect stake) and the Togolese government.
- In early 2020, the EDF group created a branch to support its development strategy and ensure the continued provision of engineering services.
- In consortium with Meridiam, EDF was awarded the Scaling Solar Togo project, for the financing, construction, operation and maintenance of a 64MWp solar power plant. The project was signed during COP 28 and construction is expected to start in 2024.

Kenya

- Since July 2018, the EDF group has been contributing to the development of Kenyan company SunCulture to support the sale, installation, and maintenance of solar pumps for farmers, mainly in Kenya. EDF assists SunCulture with its international development through a 16.9% stake held in Savant Group, the parent company of SunCulture.
- In 2021, the EDF group acquired an indirect interest in Bboxx Capital Kenya Limited. The company undertakes the sale, installation and maintenance of solar kits for rural households.
- Since February 2021, the EDF group has owned 50% of DPA Kenya[3]. The company specialises in distributed solar power for the business market. DPA Kenya develops solutions ranging from design to maintenance and financing. In March 2023, the first joint 4MW project for the cement manufacturer DEVKI was commissioned.
- As Kenya revives its nuclear project ambitions, the Group has expressed its interest to the government.

Malawi

In August 2022, the government of Malawi, IFC[4] and the consortium between EDF and SCATEC signed a Relationship Agreement that gives the consortium a 55% stake in the 350MW Mpatamanga hydropower project in Malawi. In September 2022, the consortium was officially appointed Strategic Sponsor of the project. When commissioned, expected in 2029, Mpatamanga will provide electricity to around 2 million people and avoid 520,000 tonnes of CO_2 emissions per year. EDF and SCATEC will lead the development, construction and operation phases.

Eswatini (formerly Swaziland)

The EDF group, in partnership[5], responded at the end of 2023 to the Eswatini government's call for tenders for the development of a 25MW biomass power plant. The announcement of successful bidders is scheduled for mid-2024.

Zambia

In order to develop its offer in mini-grids, in 2020 EDF International took out a 12% stake in Standard Microgrid Initiatives Limited. This start-up develops and installs mini-grids using a solution with standardised containers and smart meters, enabling the sale of energy blocks on demand.

1.4.5.3.8 Middle East

The EDF group is present in the Middle East through project development and monitoring activities. It has a regional presence based in the United Arab Emirates which covers its activities in the area. The Group has locations in Qatar (Doha), Saudi Arabia (Riyadh), Lebanon (Beirut), Bahrain and the United Arab Emirates (Abu Dhabi and Dubai).

These offices manage commercial activities and projects in these different countries. The main challenge for the coming years will be to support them in their energy transition process.

The major projects in the zone are located notably in the United Arab Emirates with, in 2023, in Abu Dhabi:

- the implementation of the $3.8 billion Lightning project. The project consists in building and operating a high-voltage, direct current (HVDC-VSC) subsea transmission system. This is a first in the Middle East and North Africa region. This major project, in partnership with KEPCO and KYUSHU, consists of connecting ADNOC[6] offshore oil and gas production facilities to a cleaner and more efficient energy source provided by the Abu Dhabi land-based electricity grid. The project will reduce ADNOC's offshore carbon footprint on these sites by more than 30%, while supporting the UAE's "Net Zero by 2050 Strategic Initiative";
- the securing by Emerge of several contracts totalling 181MW of distributed solar projects (including 95MW in operation or under construction). This joint venture, created in 2021 by EDF and Masdar, is currently developing a project portfolio of nearly 500MW. Two other sectors have been developed within this joint venture: energy efficiency and public lighting. Emerge's offer is primarily intended for commercial and industrial customers in the Emirates and Saudi Arabia. It is thus contributing to the ambitious objectives of these countries in terms of energy transition;

(1) In partnership with SIFCA, an Ivorian agro-industrial group in West Africa, and Meridiam, an investment firm.
(2) ZECI is 50% owned by EDF International and 50% by Meridiam, which acquired a stake in late 2021.
(3) Formerly Econet Energy Kenya.
(4) IFC: International Finance Corporation.
(5) Partnership with the Montigny group.
(6) Abu Dhabi National Oil Company.

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- commissioning and operation, in consortium[1], the Al Dhafra PV2 solar photovoltaic project. With an installed capacity of 2.1GW, the solar power plant, which came on stream in June 2023, is currently the most powerful in the world. It should enable the avoidance of 2.4 million tonnes of CO_2 per year;
- the launch of the project (phase 2) for the design, installation and management of public lighting in Abu Dhabi (130,000 light points) in consortium with Engie. The project is sequenced in five phases and the first phase is ongoing.

Other major projects are located in Dubai with the customer DEWA:

- a development contract for a solar power plant, called "DEWA III". EDF Renewables developed this project alongside Masdar and the customer DEWA (in charge of water and electricity in the Emirate). This power plant was the largest solar plant in the world at the time of its opening in 2020, with an installed capacity of 1,066MW. In August 2021, EDF Renewables and its partner Masdar created Energize O&M Co to operate and maintain the plant. Thanks to the production of DEWA III, 240,000 households in Dubai will be supplied with carbon-free electricity;
- an assistance agreement for the management of a 250MW pumping station dam planned for the Hatta mountains in the Emirate of Dubai, the construction of which has already started, for the customer DEWA. The end of construction is planned for the first half of 2024;
- an engineering consultancy project for the construction of a 3x233MWe thermal power plant in Al Aweer.

Other projects:

- in the UAE, the EDF group has sought to establish a long-term relationship with NAWAH, the operator of the Barakah nuclear power plant and subsidiary of Emirates Nuclear Energy Corporation (ENEC). In 2018, EDF and NAWAH signed a long-term master agreement under which EDF will assist NAWAH with the operation and maintenance of the Barakah plant through various services such as safety, radiation protection, fuel cycle management and environmental monitoring. A second agreement was signed in June 2021 between Framatome and NAWAH for the provision of maintenance services;
- another major engineering consultancy project for the customer Kahramaa (water and electricity in Qatar) is currently being conducted in Doha. It involves the construction of electrical substations and high-voltage cable networks, in particular the evacuation substations for Al Kharsaa, the largest solar power plant in Qatar, which was commissioned in 2022. Several projects of high technical and strategic value including the development of renewable energies and the improvement of the performance of the transmission network have been successfully carried out with this customer;
- continuing its growth momentum in the region, in June 2022 Dalkia acquired US Chiller Services, a company based mainly in the Middle East (UAE, Qatar and Bahrain) and the United States. This company has 330 employees and specialises in the operation and maintenance of large refrigeration production facilities. At the same time, Dalkia is continuing its development in energy efficiency and decarbonisation in the United Arab Emirates with several projects won and has recently brought together all its teams in the United Arab Emirates within a single office based in Dubai;
- in general, EDF's transmission and thermal engineering departments, which have been present in the Middle East since 1995 (first in the UAE, then in Qatar, Bahrain and Egypt and more recently KSA), provide project management assistance to local electricity companies. Currently, the departments' portfolio of services to third parties in the Middle East includes around 15 active projects with an average annual order intake of €8 million. The flagship projects are project management assistance projects for the construction of three combustion turbines (Aweer project), for the reinforcement of a very high-voltage cable link in a ventilated tunnel in the United Arab Emirates, the project of strengthening of the electricity interconnection between the United Arab Emirates and Saudi Arabia.

The main projects in Saudi Arabia include the following:

- EDF signed, in partnership[2], a 25-year concession agreement with Red Sea Global, the developer of the Amaala project, to develop, design, finance, supply, install, operate and maintain the water and electricity facilities of the hotel complex under construction along the Red Sea coast. This project includes a solar power plant (250MWp) and its battery energy storage (770MWh), substations, transmission lines (50km) and underground cabling;
- EDF Renewables continues to develop, in partnership[3], a portfolio of renewable projects in the Kingdom (including development, financing, construction and operation) which has reached 2GW to date. Three projects, which were awarded through calls for tenders organised by the Ministry of Energy, are already in operation or under development: the Dumat Al Jandal wind farm project which, with an installed capacity of 400MW, is the largest wind farm in the Middle East and whose commercial operation began in July 2022; South Jeddah solar photovoltaic project, with an installed capacity of 388MW and whose commercial operation began in July 2022; Al Henakiyah solar photovoltaic project, with an installed capacity of 1.1GW and the construction of which will begin in early 2024;
- Dalkia opened its first company in the region in Saudi Arabia at the beginning of 2021 and is very active there, with a 10-year contract to operate the refrigeration plant in the new district of Riyadh MISK City, an operation and maintenance contract with the Kingdom Centre site, where its Dalkia Energy Savings Centre (DESC) is located and several energy efficiency contracts with Tarshid (PIF) totalling $25 million on government sites in the Kingdom;
- Emerge is continuing its development in the Kingdom with a portfolio of 60MW of solar power projects under development;
- In partnership[4] EDF won two decarbonised combined cycle power plant projects, Taiba-2 and Qassim-2, with a combined capacity of 3.6GW, in October 2023.
- In 2014, the EDF group signed a partnership agreement with the Saudi Electricity Company (SEC), the country's leading electricity operator. It allows for very broad cooperation, including training services.
- A consortium comprising EDF, Tractebel Engineering, and Artelia was selected in late 2023 through a tender process to carry out all preliminary studies for the construction of a Pumped Storage Energy Transfer station (STEP) named "NESTOR". Following the award of this contract to the consortium, a service agreement was signed with Neom Energy & Water Company in January 2024[5].

The main projects located in Oman are as follows:

- in 2023, EDF Renewables was awarded the Manah 1 project in partnership as part of a call for tenders organised by Nama PWP, a public body in charge of developing water and electricity production facilities in the Sultanate. This project includes the development, financing, construction and operation of a photovoltaic solar power plant with a capacity of 500MW. The project, which should come on stream in March 2025, will be EDF Renewables' first renewable infrastructure in Oman;

(1) Consortium made up of EDF Renewables and Jinko Power (China). At the financial closing, the two developers were joined by local partners Taqa and Masdar.
(2) Consortium comprising EDF, Masdar, Korea East-West Power (EWP) and Suez.
(3) Consortium consisting of EDF Renewables, Masdar and Nesma Renewables.
(4) Consortium comprising EDF, Al Jomaih Energy and Water Co. and Buhur for Investment Company.
(5) See also section 3.5.3.1.1 "The Global Social Responsability Agreement".

- as part of the Hydrom call for tenders, EDF was appointed to develop a green hydrogen project of 150ktpa in the Salalah region of Oman. The tender will take place in the first quarter of 2024.

Activity in Israel

The EDF group has been present in Israel since 2010 through its subsidiary EDF Renewables. At the end of 2023, it operated solar power projects connected to the grid with total gross capacity of 590MWp (including 36MW of floating projects and one 11MWp solar project coupled for the first time with 19MWh of batteries). It is building additional solar projects with a net capacity of 34MWp, including 45MWh of storage, 67MW of wind projects and 19MWh of stand-alone batteries. The subsidiary is preparing for the construction in 2024 of around 28MW of floating photovoltaic projects, 15MW of solar roofs and shades and 90MW of ground-mounted photovoltaic projects associated with storage. These projects have been won through tenders organised by the State or by local authorities.

Furthermore, EDF Hydro's Hydraulic engineering centre supplies services to the first Israeli project for the storage of electricity through pumping, on Mount Gilboa.

1.4.6 Energy services and other activities

In a regulatory and societal environment which places the fight against climate change at centre stage, and in line with its *raison d'être*, the EDF group aspires to significant growth in energy services in order to deliver high-performance, innovative and sustainable solutions to its customers.

These services address the issues raised by local authorities, businesses and residential customers in a wide variety of fields: decentralised energy generation, low-carbon heating networks, green hydrogen, smart lighting, electric mobility, smart building management, energy saving advice, and energy efficiency. The range of solutions offered by the Group is innovative and meets customers' emerging requirements: reducing carbon emissions and improving energy performance.

1.4.6.1 Energy services

The services proposed draw on the Group's expertise, in particular in R&D, and are implemented through its various subsidiaries and departments.

1.4.6.1.1 Dalkia

The EDF group has held a 99.94% equity interest in Dalkia since July 2014. Dalkia is a leading player in the European energy services market that provides a full range of services and has a strong commercial presence in France. The company is expanding internationally in four geographical areas (Great Britain, United States, Poland and the Middle East).

Dalkia provides its customers with expertise to develop, produce, and manage more environmentally-friendly and economical energy systems. Thanks to its nearly 80 years of experience in managing heating and cooling networks, optimising industrial utilities, improving the energy performance of buildings, and using local and renewable energies, Dalkia offers its customers tailor-made solutions to support them in their energy transition: these solutions aim to reduce their energy consumption and improve their energy efficency.

Dalkia (including its subsidiaries) manages approximately 330 heating and cooling networks and over 90,000 energy facilities in France and abroad.

The company enabled its customers to avoid the emission of 4.3 million tonnes[1] of CO_2 in 2023.

Dalkia and the development of renewable energy

Dalkia's core business is to make the best use of local energy sources for heating and cooling networks or in industrial processes. Dalkia uses local sources of energy to provide its customers – both businesses and local authorities – with sustainable energy solutions:

- the development of renewable energies is a key priority for Dalkia, particularly through the use of renewable and recovered energy sources, such as biomass, biogas, geothermal and recovered energies;
- Dalkia promotes the production of energy from waste recovery through a circular economy-type approach, which limits the use of fossil fuels and contributes to the achievement of its customers' decarbonisation goals.

Dalkia and energy savings

Dalkia's second business line is "energy savings", in particular through Energy Performance Contracts:

- Dalkia develops energy saving solutions, through smart buildings that consume less and less, and energy renovation works to make buildings more efficient;
- Dalkia also optimises its customers' consumption by processing their data using "Dalkia Energy Savings Centres", which are energy performance management centres that combine digital and human intelligence.
- Dalkia develops energy performance contracts that combine energy efficiency actions, renewable heat, heat pumps and solar power, and integrate digital solutions to manage multi-energy ecosystems.

Main subsidiaries of Dalkia in France

Dalkia Froid Solutions

Dalkia Froid Solutions, a wholly-owned subsidiary of the Dalkia Group, specialises in industrial and commercial refrigeration and HVAC. Its aim is to supply its customers with controlled temperatures, by optimising energy consumption and protecting the environment through innovative end-to-end management of the process: consultancy, design, installation, and maintenance.

Dalkia Air Solutions

Dalkia Air Solutions, a wholly-owned subsidiary of the Dalkia group, provides a complete range of services: auditing, design, installation and power plant maintenance services with compressed air, nitrogen, and breathing air systems aimed at all sectors of industry. Compressed air is an energy intensive utility that requires a significant amount of electricity, and thus has a potential for energy savings.

Dalkia EN

Dalkia EN (Énergie Nucléaire, Nuclear Energy) is a wholly-owned subsidiary of the Dalkia group that is dedicated to the nuclear environment. The entity has a headcount of nearly 800 employees working in two business lines:

- maintenance of backup means of electricity generation, and cold generation and ventilation systems for nuclear power plants;
- coordinating providers and building maintenance for nuclear and thermal power plants.

(1) 4 million tonnes excluding CO_2 emissions avoided by gas co-generation.

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Dalkia Electrotechnics Holding

Dalkia Electrotechnics Holding has three subsidiaries operating in electrical engineering:

- Dalkia Electrotechnics IG, which mainly serves the subsidiaries of the EDF group in the High Voltage B (HVB), High Voltage A (HVA) transformers and rotating machinery businesses;
- Dalkia Electrotechnics Fab, which manufactures and leases HVA substations (in concrete and metal enclosures);
- Dalkia Electrotechnics, which carries out the "services & works" activities HVA substations, HVA loops, Low Voltage (LV) distribution, automation, electric mobility, motors, VFDs, HVA substations, HVA loops, public lighting, traffic lights, video protection) for private and public customers.

CRAM

CRAM is a wholly-owned subsidiary of Dalkia, located primarily in north-western France (Normandy, Picardy and Île-de-France). It provides services, and designs and implements projects in the field of operations and maintenance, management and construction of heating and climate control facilities. The company has a workforce of 700 employees and manages over 7,600 installations.

Main subsidiaries of Dalkia abroad

Dalkia Polska, Dalkia Polska Solutions and Dalkia Polska Energia (Poland)

- Dalkia Polska offers a full range of energy services, from the management and optimisation of heating and cooling networks to the use of local energy resources, as well as energy efficiency services for buildings and industrial facilities.
- Dalkia Polska Solutions builds and maintains technical facilities (ventilation, heating, air conditioning, fire protection, etc.) for commercial buildings and industrial sites. It also provides innovative solutions for the building's energy performance management.
- Dalkia Polska Energia is mainly specialised in the generation and distribution of heat in the region of Katowice in Poland (Upper Silesia). It has recognised expertise in the energy recovery of mine gas as an alternative to coal to be used by heating networks and electricity distribution facilities.

Dalkia UK (United Kingdom)

Dalkia UK (United Kingdom), formerly known as Imtech, is jointly owned by Dalkia and EDF Energy and specialises in major HVAC and electrical engineering works, technical facility maintenance, and data acquisition and control systems integration. Dalkia UK provides its services to the construction, industry and tertiary sectors, and public authorities. Dalkia UK comprises five entities (Dalkia Engineering, Dalkia Facilities, Dalkia Energy Services, Capula and Scotland) and nearly 4,000 employees.

Dalkia Energy Solutions (United States)

- Based in Massachusetts, Dalkia Energy Solutions provides companies and industrial customers with a comprehensive approach to consultancy, project management and the performance of energy efficiency work, with nationwide coverage in the United States.
- Dalkia Energy bought out the entire stock of US company Chiller Services LLC on 21 June 2022[1].
- Dalkia Aegis (United States), which is based in Massachusetts, specialises in small gas cogeneration power plants and facilities, which it designs, builds, commissions and maintains.

Dalkia Middle East (Middle East)

- Dalkia Middle East Energy Company Limited (KSA) was incorporated in 2021 and is active in the field of power plants and cooling networks, energy performance contracts and multi-technical maintenance.
- Dalkia Middle East (French holding company) holds 100% of the shares of the following companies: Dalkia US Chiller Services (Dubai) and Dalkia US Chiller Services WLL (Qatar). These companies specialise in the operation, maintenance and performance of work and repairs on chillers and Heating, Ventilation and Air conditioning (HVAC) equipment.

1.4.6.1.2 EDF Pulse Holding

The Innovation and Pulse Programmes Department

The EDF group's Innovation Division, called DIPP (*Direction de l'Innovation et des Programmes Pulse*) is structured around three core functions:

- strategic framework for innovation: elaborate an annual strategic framework for innovation, applicable to the scope of the EDF group[2], that identifies priority areas for innovation and key projects, as well as their associated action plans. This framework is prepared in close collaboration with R&D and the EDF group's business lines;
- performance and development: consolidating expertise around innovation tools and methods to support Group business lines *via* Pulse programmes and defining value creation indicators for innovation activities. See also section 3.3.3.6.6 "Developing a culture of innovation: the EDF Pulse ecosystem";
- new business: identify and develop new growth levers for the EDF group through the following three programmes:
  - > the EDF Pulse Incubation programme, for the development of intrapreneurship projects,
  - > the EDF Pulse Ventures programme, for investment in start-ups and in funds that are dedicated to innovation,
  - > the Major Innovative Industrial Projects team whose goal is to position the Group on industrial projects that are not mature enough for the Group's business lines, but that are potentially strategic for the Group.

Stakes in start-ups and investment funds are managed by EDF Pulse Holding, a dedicated wholly-owned subsidiary of EDF. The development of the EDF Pulse Holding portfolio is directly linked to the activities of the EDF Pulse Incubation and EDF Pulse Ventures programmes which are detailed below.

EDF Pulse Incubation

The EDF Pulse Incubation programme draws on the ideas and know-how of the Group's employees to design and develop new business and services. The incubator programme offers bespoke support for employees and enlists in-house and third-party experts to test, create, and develop business models, as well as foster the professional development of intrapreneur employees. This support helps intrapreneur employees, as well as the EDF group as a whole, since it contributes to the Group's evolution and the upskilling of its employees. Due to the close proximity of EDF Pulse Incubation's teams to those of EDF Pulse Ventures, incubated projects benefit from an "investment"-driven vision, while continually monitoring market trends and needs.

Intrapreneurial projects may lead to the incorporation of a new EDF group subsidiary. This was the case, for example, of:

- **Exaion**, which provides environmentally-friendly, competitive and sovereign cloud-based blockchain and high-performance computing solutions;
- **Urbanomy**, which provides public and private-sector companies with energy and carbon consultancy services;
- **Yxir**, which develops and markets a service offering based on artificial intelligence, allowing industrial players to control product and service quality.

(1) See Dalkia's press release of 21 June 2022 "Dalkia reaches a major milestone in its development in the Middle East with the acquisition of U.S. Chillers Services".
(2) Excluding Enedis and RTE.

In 2023, the EDF Pulse Incubation programme supported the creation of the Oklima subsidiary (see below).

EDF Pulse Ventures

The mission of the EDF Pulse Ventures programme is to identify new business and innovative solutions outside the EDF group. It is a vector for developing EDF Pulse Holding's investment portfolio in start-ups and venture capital funds through investment, usually involving minority stakes.

The goal of the programme is to explore new business for the Group, de-risk it and create synergies between EDF Pulse Holding start-ups and the Group's business lines.

Since 2017, around €500 million has been invested through the EDF Pulse Incubation and EDF Pulse Ventures programmes, in 33 in-house and external start-ups and in 21 investment funds, primarily in France, but also in Europe and North America.

New additions to the EDF Pulse Holding portfolio in 2023

Oklima

Oklima is the new subsidiary of the EDF group specialising in carbon contribution. It develops projects that contribute to carbon sequestration (for example through reforestation efforts) and to the reduction of greenhouse gas emissions. In France, these projects are certified with the "Low Carbon Label". Oklima also offers carbon credits from projects carried out outside France, which are certified by international labels. Oklima offers its customers the opportunity to finance these projects as part of their strategies for reducing their own greenhouse gas emissions.

Sweetch Energy

Sweetch Energy is a start-up specialising in osmotic energy, which is a renewable energy generated naturally by the difference in salinity that occurs where freshwater from rivers and salt water from the sea meet. It has developed a proprietary *INOD*® technology based on a new generation of membranes. EDF Pulse Holding bought a stake in this start-up during a €25 million round of fund-raising.

SportR

SpotR is a Dutch start-up specialising in automated building inspections. It has developed a platform providing instant access to the physical and energy characteristics of buildings by using artificial intelligence to aggregate and process data from different sources. EDF Pulse Holding acquired a stake in this start-up during a €4.5 million round of fund-raising.

1.4.6.1.3 Other service activities of the EDF group

Other entities and subsidiaries of the EDF group complete the range of energy services that EDF offers. They are active in specific areas, and target various categories of customers (residential, professional, business and local government). They cover a wide range of activities including research, build, equipment maintenance, use management, investment financing and assistance with obtaining permits and subsidies.

Datanumia

To help customers manage their energy and utilities consumption, the EDF group provides facility monitoring and management solutions. A wholly-owned subsidiary of the EDF group, Datanumia provides innovative digital solutions so that each type of customer (residential, business and local government) can optimise their energy consumption and their carbon footprint by leveraging the energy data.

Datanumia specialises in energy intelligence for buildings and industrial processes. The company assists companies and local government in the energy transition throughout the energy management value chain. This is achieved through its range of bespoke solutions (including energy performance control, energy audits and support to address the French Service Sector Decree [*Décret Tertiaire*]). Datanumia processes almost 10 million data units daily for a total of more than 70,000 sites, and specialises in the IoT (*Internet of Things*). It collects data from 60,000 smart objects every day, and provides energy management for total building space of over 120 million square metres.

Datanumia also designs and implements solutions for individuals to monitor and control their energy consumption. Datanumia thus provides a digital platform so that EDF customers can benefit from a range of innovative digital solutions in order to monitor and obtain a granular understanding of their energy consumption (electricity and gas). This platform currently has over 8 million active residential customers. In 2022, Datanumia also developed a solution allowing residential customers to monitor their power consumption in real time.

Sowee

Sowee is a wholly-owned subsidiary of the EDF group that was founded in 2016. Its goal is to give each customer the means to achieve more efficient energy consumption. Sowee provides residential customers with solutions and services for managing energy consumption, which can be separate from the energy supply contract. All Sowee customers are able to monitor their consumption and their invoices in their mobile application. They can also receive warnings if their consumption exceeds certain limits. For a customer, understanding their energy consumption is the first step towards planning and controlling their expenses.

For customers who have a gas boiler or electric radiators, Sowee provides the Sowee Smart Station as an additional tool. This provides remote, smart management services for customers' heating systems, without them having to change their installation. The Smart Station also facilitates access to services that help with daily life such as the indoor (CO_2 and humidity) and outdoor air quality, weather forecasts, ephemeris, chance of rain, etc. Lastly, Sowee also launched a "managed load shedding" option in 2021 for its customers who own the Smart Station. In February 2023, Sowee also launched a new version of its Smart Station that is more compact, simpler and more affordable.

IZIVIA

IZIVIA, a wholly-owned subsidiary of the EDF group, is a flagship player in the electric mobility market in France. IZIVIA provides charging solutions for electric vehicles targeted at local authorities, and businesses. It sells turnkey electric vehicle charging infrastructure systems (IRVE) including design, supply, operation, maintenance, and charging services for drivers and invests in its own charging networks with financial partners.

IZIVIA is a leader in public and in-company charging solutions in France. The company operates 24,000 charging stations and has the best quality of service on the market.

IZI Confort

IZI Confort is a wholly-owned subsidiary of the EDF group, specialising in the installation, maintenance, and repair of domestic electric heating, ventilation and air conditioning equipment: heat pumps, gas and oil-fired boilers, air conditioners, thermodynamic tanks, CMV, etc.

With over 1,200 employees across France, IZI Confort completes more than 800,000 call-outs a year, meeting the needs of homeowners, private and public collective housing, and businesses.

IZI Confort relies on 70 local offices and its digital channels in order to win over and serve customers. IZI Confort continues to expand its portfolio of heat pump sales and maintenance in order to assist its customers in their decarbonisation efforts, pursuant to EDF's *raison d'être*.

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IZI by EDF

IZI by EDF was launched in February 2019. It is EDF's brand that provides services in France for residential customers and very small businesses, irrespective of whether they are EDF customers.

In five years, IZI by EDF has become a leader across its markets: low-carbon heating with heat pumps, multi-unit energy renovation of housing and home charging of electric vehicles (in single-family homes and blocks).

IZI by EDF has also released a full-service offering for sustainable homes and electric mobility:

- a leading position in the sale and installation of air-water heat pumps;
- the development of a complete range of offerings for the energy renovation of housing, including the replacement of openings, insulation of attics and floors, ventilation and external walls thermal insulation, thanks to the acquisition of "Les ECO-Isolateurs" at the end of 2022;
- a leading position in the installation of charging stations for electric cars in single-family homes, and the roll out of charging stations for residential blocks.

In 2023, IZI by EDF continued to expand all its offerings, with an excellent commercial start to the residential block charging station for electric cars activity, and the organisation of the multi-unit energy renovation offer in anticipation of the overhaul of aid planned for 2024.

Through IZI by EDF, EDF can act as a general and lead contractor for its customers. It assumes liability, guarantees successful services and issues the 10-year warranty itself. It thus makes serious commitments to the quality of work and customer relations, with the support of carefully selected and qualified contractors.

EDF ENR

EDF ENR is a wholly-owned subsidiary of the EDF group that was founded in 2007. It develops decentralised solar power solutions for companies and individuals that include production, management and storage of solar electricity. EDF ENR is currently the leader in its market, with a market share of more than 15% and over 80,000 installations in private homes. In 2022, EDF ENR also launched an ambitious organic growth plan for the professional market; it has since completed more than 4,000 installations for professionals and local authorities.

It also contributes to the Group's Solar Plan and is targeting 10GWp of projects developed in 2035. The subsidiary is part of a strong development of synergies with the other Group entities and the Customers, Services and Regions division.

In order to ensure proximity with its residential and professional customers, technical and commercial teams are spread throughout the country, with branches located in Arras, Nancy, Massy, Nantes, Bordeaux, Toulouse, Montpellier, Aix-en-Provence, Grenoble and Lyon as well as in all the French overseas departments and regions through its 50%-owned subsidiary Sunzil. Today, EDF ENR employs nearly 1,100 people, including 200 in the French overseas departments.

Local Energy Management

In 2019, the EDF group created the Local Energy Management (LEM) entity to speed up the development of innovative offers relating to decentralised energy management. LEM provides coordination for companies that are expanding through intrapreneurship or acquisition-based growth (Agregio Solutions, DREEV and e2m), in a range of business lines:

- aggregating, managing, and promoting local flexibility, both upstream (intermittent production from wind and solar farms, flexible storage or generation facilities) and downstream (consumer load shedding capacities);
- marketing renewable energy production through new supply models such as Power Purchase Agreements (providing renewable energy from renewables producers), Virtual Power Plant platforms, and peer-to-peer sales, through which residential customers can buy from producers using blockchain;
- smart charging solutions for electric mobility;
- software solutions for energy optimisation of local electricity systems through energy forecasting and storage;
- the supply of turnkey storage infrastructure (the Storebox) and their Energy Management System (EMS).

Agregio Solutions

The subsidiary Agregio Solutions, resulting from the merger between Agregio and EDF Store&Forecast and wholly owned by EDF, is an aggregator that targets three types of customers:

- producers of renewable electricity (wind and solar power, *etc.*) to which Agregio Solutions offers tailored solutions, to optimise and sell/deliver their production, capacity and origin guarantees, on the electricity markets or to consumers, thereby securing their long-term revenues;
- electricity consumers (industries, companies, *etc.*): Agregio Solutions is aimed at consumers who are willing to load shed or modulate their consumption in exchange for remuneration, according to the needs of the electricity system;
- managers of storage facilities. Agregio Solutions offers centralised storage infrastructure and optimises storage systems for the energy market.

Energy2market (e2m)

Energy2market (e2m), is a company specialising in the aggregation of renewable production and local flexibilities. It manages and operates over 5,000 smart, decentralised energy generation and flexibility sites in Germany (wind farms, solar farms, cogeneration sites, biomass plants, storage batteries, *etc.*), which represent a total installed capacity of over 4.5GW.

At the end of 2023, the EDF group was one of the European leaders on these new markets, with a portfolio of over 10GW of decentralised assets.

1.4.6.2 Gas business

The EDF group's gas strategy aims to ensure the security of gas supply for its 6.6 million customers[1], its cogeneration plants and its gas power plants.

Thus, the EDF group is present on the natural gas market in France and across Europe, mainly through Edison, EDF Energy, and Luminus. Since August 2017, Edison has become the EDF group's gas platform under a service agreement to manage the assets of the Group[2].

EDF also relies on EDF Trading for its short-term operations relating to transactions in the EU, US and United Kingdom wholesale markets, and for Dalkia (for supply to its cogeneration plants).

The optimisation of EDF's LNG asset portfolio flexibility is managed by JERA Global Markets, a joint venture between EDF Trading Limited (33.33%) and JERA Trading International Pte (66.67%).

(1) Customers are broken down by number of delivery points at end 2023.
(2) See section 1.4.5.2.2 "Edison's strategy".

1.4.6.2.1 Natural gas end-market

In Europe, on 31 December 2023, the downstream customer portfolios were as follows:

- France (EDF and Électricité de Strasbourg): around 2.6 million customers (ranging from retail to key accounts), with a total volume sold of around 46.3TWh;
- Italy (Edison): around 1.0 million customers, with a total volume sold of around 56TWh of gas;
- United Kingdom (EDF Energy[1]): around 2.2 million customers, with a volume sold of around 27.5TWh;
- Belgium (Luminus): around 0.8 million customers, with a total volume sold of around 13.2TWh.

1.4.6.2.2 Gas assets and projects

Supply sources

In Europe, the Group's gas and LNG supply comes from:

- short- and medium-term wholesale gas markets; and
- a diversified portfolio of long-term contracts, originating from Qatar, the United States, the North Sea, North Africa and Azerbaijan.

In the United States, the supply mainly originates from the wholesale gas markets and is exported in the form of LNG *via* long-term liquefaction and transport contracts. In the rest of the world, specific contracts have been signed to ensure the supply of the Group's gas power plants.

With the aim of maintaining its position on the end market, the Group optimises and diversifies its portfolio of medium and long-term sources of gas. For LNG, EDF has entered into medium and long-term contracts, primarily with the goal of diversification of its portfolio and of optimising its available regasification capacity at the Dunkerque LNG terminal.

Edison's contract for the supply of Russian gas was not renewed in 2023.

In May 2023, Edison initiated an arbitration proceeding against Venture Global at the London Court of International Arbitration in London, for the failure of LNG deliveries from the U.S.A.

Infrastructures

Gas pipelines and Liquefied natural gas (LNG) regasification terminals

Apart from its various rights to transport capacity in the European network, the EDF group participates, through its subsidiary, Edison, in infrastructure projects for gas importation[2].

In line with the Group's Gas strategy, EDF is the main long term shipper at the Dunkerque LNG terminal.

Through Edison, EDF has available 80% of the regasification capacity at the Rovigo offshore terminal's, *i.e.* 6.4 billion m³ per year[4]. After the development of the Adriatic LNG in 2008, the world's first offshore regasification plant and the largest in service in Italy, Edison now uses 80% of its capacity.

The Group also holds regasification capacities in Zeebrugge terminal (Belgium).

Small scale LNG supply chain

Since 2018, Edison has been overseeing the small scale LNG project, the aim of which is to develop a supply chain to sell LNG in Italy, as well as helping reduce CO_2 emissions for heavy duty road and sea transport. Edison has completed construction of the first coastal storage facility in Ravenna which became commercially available in 2021, with capacity of over 1 million m³ of LNG per year (with Edison entitled to use 85% of it). Supply of LNG to the deposit is *via* a small-scale LNG carrier.

Furthermore, Edison plans to build an additional facility in Brindisi which has already received a building permit and can benefit of funds tied to the Italian recovery and resilience plan PNRR (*Piano Nazionale di Ripresa e Resilienza*). This facility will be a key components in the development of a logistics chain for sustainable heavy duty mobility also in the south of the country.

Storage

In Germany, the EDF group has storage for natural gas in salt cavities located in Etzel. EDF has around 180 million m³ of volume capacity. The aboveground facilities are operated through a 50/50 joint venture with EnBW.

With respect to storage activities of the Group in Italy and in the United Kingdom, see respectively, sections 1.4.5.2.3.5 "Regulated activities - gas storage" and 1.4.5.1.2.3 "Thermal generation and gas storage".

The Group also holds storage rights in the Netherlands, Belgium and France.

Exploration and Production

In October 2023 Edison completed the sale of its 11.25% stake in the Reggane Nord licence, in Algeria, to Repsol (6.75%) and Wintershall Dea (4.50%). With this transaction, Edison brings to completion the disposal of all Exploration and Production (E&P) activities following its strategic realignment towards energy transition businesses.

1.4.6.3 EDF's Hydrogen Plan

In April 2022, EDF launched its fifth industrial plan, the Hydrogen Plan, with the aim of positioning itself as one of the European leaders in low-carbon electrolytic hydrogen (using renewable or nuclear electricity, and low-carbon grid)[3].

Production of low-carbon hydrogen to help with the decarbonisation of industry and transportation

The fifth industrial plan seeks to support decarbonisation in industry and transportation and forms part of the EDF group's strategy. Indeed, the development of low-carbon hydrogen alongside direct electrification will play a key role in achieving carbon neutrality, in particular through the in-depth decarbonisation of industrial processes such as chemistry (production of ammonia and methanol), refining and steelmaking.

Low-carbon hydrogen produced by water electrolysis also has a major role to play in the decarbonisation of heavy-duty mobility. It can already contribute to the decarbonisation of local ecosystems (buses, refuse collection vehicles, trucks, trains in non-electrified areas, etc.). In future, hydrogen derivatives such as e-fuels will allow for the decarbonisation of air and sea transport.

(1) Excluding Northern Ireland.
(2) See section 1.4.5.2.3.2 "Gas business".
(3) Currently, 95% of hydrogen is manufactured using fossil fuels; since this process generates CO_2, it is referred to as "grey" hydrogen. Hydrogen (H_2) can either be created from methane by means of steam reforming, or by splitting a water molecule (H_2O) by electrolysis, *i.e.* by means of an electric current. Hydrogen is considered to be "green" if the electrolysis in question is produced by renewable energy, or low-carbon energy if it is produced using nuclear electricity. "Green" or "low-carbon" hydrogen is thus an attractive way of decarbonising sectors in which direct electrification is not possible. Such sectors include refining, chemicals, and heavy-duty transport.

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The EDF group is well-placed to take a strong position on the hydrogen value chain

• Expertise

EDF can draw on its expertise in electrolytic hydrogen, developed for many years by EDF R&D as part of its innovation policy. The first research in this field by R&D dates back to the 1970s. Moreover, since 2003 electrolytic hydrogen has been at the heart of the know-how developed by EIFER[1] and at the electrolyser test platform commissioned in 2020 at EDF R&D's facility EDF Lab Les Renardières.

In 2018, EDF took out a stake in French electrolyser manufacturer McPhy to strengthen the Group's industrial expertise in this area.

In 2019, EDF set up Hynamics. This wholly-owned subsidiary markets hydrogen decarbonisation solutions for industry and heavy-duty transportation. Based on its investor and operating & maintenance model, it offers turnkey solutions to its customers in France and more generally in Europe.

In 2021, EDF bought into the Hy24 investment fund dedicated to hydrogen.

• Positioning on the value chain

Upstream, the EDF group can draw on its low-carbon electricity generation fleet (nuclear and renewable fleets with assets in over twenty countries), its know-how in contract and energy management and its ability to put together integrated projects, for instance by optimising the coupling of hydrogen production and renewable electricity production in the most favourable areas.

In respect of the production of hydrogen and its derivatives[2], the Group already has expertise and operational know-how thanks to the first projects developed and commissioned by Hynamics. It can also draw on the expertise of Group engineering for the integration of major industrial projects and its experience in terms of industrial safety management and project development, all in line with its CSR commitments.

The Group is already developing projects, with a significant pipeline of some sixty electrolytic hydrogen projects corresponding to total potential in excess of 1GW

Hydrogen projects in France

Projects for industry

In partnership with the cement group Vicat, the Hynovi project is aiming to create France's first decarbonized methanol production system using captured CO_2 combined with hydrogen produced by water electrolysis. The project was pre-notified by the French State to the European Commission as part of the IPCEI-H2[3] call for projects. The EDF group also made public the development of the "Take Kair" project to produce low-carbon synthetic kerosene in partnership with Holcim, IFPEN and Axens in Loire-Atlantique.

Two other Hynamics projects have also been selected for IPCEI and pre-notified to the European Commission. One is a project with fertilizer manufacturer LAT Nitrogen and a project with Domo Chemicals, two of the largest fossil hydrogen consumer sites in France, located respectively within the Ottmarsheim-Chalampé chemical platform and in the heart of Lyon's "chemical valley".

Mobility projects

Hynamics also successfully bid on mobility-related ADEME calls for projects[4] to supply hydrogen for buses for the Auxerrois and Grand Belfort Urban Districts.

As a result, Hynamics and Transdev have launched one of the largest renewable hydrogen generation and distribution sites in France, in Auxerre. Dubbed AuxHYGen, the facility has a capacity of 1MW and can produce up to 400kg of green hydrogen per day *via* water electrolysis, thus avoiding 2,200 tons of CO_2 emissions every year. The aim is to extend the production capacities of these installations from 1 to 3MW by 2025. The Grand Belfort production and distribution station of 1MW – and 2MW from 2025 – will be commissioned in early 2024.

On 13 September 2022, the Mob'HyZEE project was one of the winners of the European Commission's 'Connecting Europe Facility Transport' funding programme. The hydrogen station project managed by Hynamics will receive subsidies worth €10.2 million, with total investment amounting to almost €40 million. This will help further the development of low-carbon hydrogen distribution infrastructures along a north-to-south trajectory in France, with a station located in Dunkerque, two in the Paris region and one in Cannes.

Hydrogen projects in Germany

The Hyscale100 project for the production of synthetic fuels was pre-notified in 2022 by the German State to the European Commission as part of the IPCEI-H2 call for projects. It involves deploying several hundred MW of electrolysis capacity by 2030 to address the renewable fuel needs of the shipping sector.

Hydrogen projects in United Kingdom

In 2022, EDF Renewables UK and Hynamics announced their intention of making major investments in the Teesside project. This supports the ambitions of local and national governments to regenerate the Tees Valley by investing in decarbonisation. "Tees Green Hydrogen" is a pioneering project that will provide local industry and mobility with hydrogen to support decarbonisation efforts. "Tees Green Hydrogen" received grant under the Hydrogen Production Business Model, a program launched by the British State as part of its Net Zero Hydrogen Fund. In its initial phase, the electrolyser will be 7.5MW in size, but it is designed to be able to scale up to 300MW by 2030. Also awaiting the allocation of subsidies at the national level, the other Hynamics generation and distribution station in the United Kingdom, "Holyhead Hydrogen Hub", with a capacity of 5MW, was awarded financial support from Wales.

Hydrogen projects in Belgium

With the support of Hynamics, Luminus positioned itself on several projects to develop, finance, construct, and operate hydrogen production facilities in Belgium.

Luminus had already entered into an agreement with Terranova as part of the European Commission's "Green Octopus" programme. The aim is to make the port of Ghent one of the suppliers of green hydrogen in Belgium, in order to achieve decarbonisation of industrial uses, heavy-duty mobility, and the supply chain. The project involves connecting Luminus wind turbines and Terranova's solar power plants to an electrolyser to produce green hydrogen starting in 2023.

Hydrogen projects in Italy

Edison is developing several electrolytic hydrogen generation projects in Italy (see section 1.4.5.2 "Italy").

(1) EIFER is the joint research centre for EDF and the Karlsruhe Institute of Technology (*Karlsruher Institut für Technologie*, KIT) in Germany.
(2) Synthetic fuels (also known as e-fuels) such as e-methanol, e-ammonia and e-kerosene can be produced from hydrogen; their increasingly wider use is being envisaged to help with the decarbonisation of sea and air transport.
(3) IPCEI: Important Projects of ordinary European Interest.
(4) ADEME: French Environmental and Energy Management Agency.

Hydrogen projects outside Europe

With major engagement on the part of EDF Renewables and the International Relations Department, the Group is also making progress with ambitious projects outside Europe combining renewable energy and hydrogen production internationally, in particular in North America, South America, and the Middle East. These geographies offer major development potential, with particularly favourable conditions for renewable energy.

1.4.6.4 Optimisation and trading: EDF Trading

EDF Trading (EDFT) is the EDF group's interface to the wholesale energy markets providing market, optimisation and risk management services to EDF group as well as third parties. The company operates across Europe, North America and Asia in the wholesale markets for electricity, natural gas and LPG. EDFT also provides counterparties and customers with access to financial oil and environmental products. EDFT carries out LNG, coal and related freight activities, through JERA Global Markets in partnership with JERA of Japan.

EDF Trading's registered office is located in London. The company has around 800 employees globally and its regulated activities are authorized by the UK's financial market regulator, the Financial Conduct Authority.

Among other things, EDFT provides a full range of wholesale market services to EDF DOAAT (see section 1.4.3 "Optimisation activities in France") and EDF Customers Division in France and serves as a route to market for other entities of EDF group.

European Electricity market

EDF Trading is a leading participant in the European electricity wholesale market trading over 2,000TWh annually. The company provides a full range of risk management services to EDF group's asset operators and to third parties. It has a wide geographic footprint and scale of activity which makes it able to adapt quickly to changes in the market and to develop new business and to take advantage of market opportunities where appropriate.

Japanese Power market

EDF Trading commenced physical trading of Japanese Power in 2023 after setting up an office in Tokyo and plans to continue developing its physical and financial Japanese power business as the Japanese power market evolves.

European Gas market

EDF Trading is a leading participant in the European gas wholesale market trading 958bcm annually[1]. It optimises EDF entities' gas assets including transmission rights, long-term supply contracts and re-gasification and storage capacities. This enables EDFT to support the EDF group and third parties with complete gas wholesale market solutions.

North American wholesale markets

EDF Trading North America is a leader in the wholesale energy markets in North America, where it benefits from broad geographical coverage, offering solutions to customers across the entire North American energy value chain. It provides energy management solutions, natural gas supply, and real-time services for electricity producers in the USA. As one of the leading suppliers of generation services for power plants in the USA, EDF Trading North America manages 26GW for over 80 facilities owned by third party power generators[1]. For retail energy aggregators, it provides supply services on the wholesale market, as well as services to interface with Independent System Operators (ISOs) in various states in North America.

Environmental products

EDF Trading is committed to the environmental products marketplace and, in line with the EDF *raison d'être*, it offers a broad range of multi-commodity hedging solutions that support the EDF group and third parties decarbonization targets around the world. EDF Trading is active in the compliance and voluntary carbon markets, guarantees of origin certificates in Europe, Renewable Energy Certificates in the US, and International Renewable Energy Certificates in the rest of the world. In addition, it is a recognised provider of risk management products in the European weather market EDF Trading is also active in the green fuels traded market.

International markets

Following the sale of its coal and freight business to JERA in April 2017 and the merging of their LNG optimisation and trading activities into JERA Global Markets in 2019, EDFT holds a 33% financial stake in JERA Global Markets, a leading seaborne energy trader.

1.4.6.5 Equity interests

EDF Trading Logistics

EDF Trading Logistics acts as EDF's vehicle for fuel oil and liquid biomass purchases. It organises fuel oil, solid and liquid biomass and coal supply logistics operations for all of the EDF group's thermal plants in mainland France, Corsica and France's overseas departments, in close collaboration with DOAAT, EDF PEI and SEI. It controls the coal terminals in the ports of Le Havre and Montoir de Bretagne. In 2023, it supplied almost 1 million tonnes of fuel oil, 207,500 tonnes of coal, 137,000 tonnes of liquid biomass and 5,500 tonnes of solid biomass.

In addition, EDF Trading Logistics provides the Group with its expertise in regard to managing risks related to the transportation of fuel oil (hazardous materials), an activity which received ISO 14001 certification that was renewed on 4 November 2022, with a follow-up audit on 5 October 2023. It is also active in the management of the environmental crises associated with this line of business.

(1) 2022 data.

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1.5 Research & development, patents and licences

The EDF group's Research & Development (R&D) activities are carried out by the Research & Development Division of EDF (EDF R&D), as well as by certain Group subsidiaries. These activities are complementary and are in line with the Group's "raison d'être" and the strategic orientations of the company project, in particular those of relaunching the nuclear industry and achieving carbon neutrality by 2050. A system for coordinating activities ("R&D Charter") has been established at Group level.

The EDF group's R&D is both integrated and cross-disciplinary, in order to facilitate synergies and method transfers between the different Divisions. Skills cover all the Group's field of activities. They are disciplinary activities, business-oriented, project-based, and integrative for large-scale systems.

EDF R&D has a headcount of 1,799 in France, plus 129 PhD students and 94 students in work-study programmes. It also employs 282 people representing 44 nationalities worldwide on local contracts, as well as 17 expatriates.

EDF R&D is organised on a multi-site basis, with several sites located in France and abroad, mainly in Germany, the United Kingdom, China, the United States, Singapore and Italy. EDF R&D's main centre is located in Palaiseau on the Paris-Saclay campus.

The main mission of the EDF group's R&D is to support the Group's businesses and subsidiaries on a daily basis by providing its high-level expertise and efficient practices. It also helps to build the Group's future by anticipating the major changes and challenges it faces.

Its research focuses on four main priorities:

- decarbonising customers' uses thanks to electricity;
- strengthening the performance of means of generation;
- inventing tomorrow's energy systems;
- accelerating digital transformation.

In 2023, the EDF group's total R&D budget was €706 million. It comprises EDF's R&D budget of €512 million, as well as the R&D carried out by certain wholly-owned subsidiaries, mainly Framatome, EDF Energy and Edison. This is one of the largest R&D budgets of any major electricity company. 99% of EDF R&D's operating budget in France is dedicated to decarbonisation and energy systems transition.

1.5.1 R&D programmes

EDF R&D's work serves all the Group's business lines. It offers technological solutions designed to improve their performance, and prepare the Group's future in the longer term. It contributes to making EDF a world leading industrial group in low-carbon electricity systems.

Research on the networks on behalf of Enedis is carried out under a service agreement. It sets out the obligations guaranteeing the protection of commercially sensitive information and compliance with the principle of the distributor's management independence. Enedis also runs its own R&D programme, independently of EDF.

1.5.1.1 Decarbonising customers' uses thanks to electricity

The objective of achieving carbon neutrality by 2050 and, more recently, the energy crisis that we experienced in 2022 related to the Ukrainian conflict, has led to strengthening work to reinforce customers' "energy sobriety" efforts and leverage sources of flexibility to the fullest.

EDF's R&D supports the entities in charge of residential customers, businesses, industries and local authorities to:

- contribute to the electrification of uses and develop energy efficiency services for industry, the service sector and residential;
- develop electric, battery and hydrogen mobility services;
- anticipate the impacts of the massive integration of new technologies (new uses, decentralised means of generation) on electricity systems;
- support changes in the Group's business lines in the face of transformations in the electricity sector and market organisation.

1.5.1.2 Strengthening the performance of generation means

In the field of nuclear, hydropower and fossil-fired power generation, EDF R&D is developing tools and methods to:

- improve the safety of means of generation;
- optimise their operating lifespan;
- increase their performance in terms of output and environmental impact.

1.5.1.2.1 Strengthening and maintaining the Group's low-carbon nuclear generation

EDF

R&D is working to protect EDF's assets through actions in line with its policy to improve the safety of facilities, particularly with regard to enhanced performance and extending their operating lifespan beyond 60 years.

The EDF group (EDF and Framatome) conducts R&D in partnership with the CEA as part of the Tripartite Institute and is developing the Nuclear Plant of Tomorrow Initiatives, which is structured in technological blocks for existing plants and nuclear new build.

To support these programmes, R&D is developing digital simulation tools and experimental test resources, as well as tools that are capable of handling the fresh challenges raised by the increase in large sets of digital data, IT security, and new information and communication technologies.

R&D is pursuing the development of digital initiatives, while continuing to give priority to strong partnership-based relationships with the other stakeholders in the nuclear industry. It thus launched two new projects, which are supported by the *France Relance* plan:

- the ICAREX project, to build rapid prototypes of control rooms for nuclear power plants and SMRs (Small Modular Reactors) in particular; and
- the MECANUM project, to be able to benefit from an industry platform for mechanical engineering calculations.

In addition, EDF R&D develops high-value nuclear design calculation methods.

Framatome

Framatome R&D aims to master the most advanced technologies, in order to attain the highest standards of safety and performance for its activities as a designer and supplier of nuclear steam supply systems, nuclear equipment and services, as well as fuel.

This R&D activity is primarily carried out within Framatome's development teams and Technical Centres, in partnership with EDF R&D. International partnerships have also been set up.

1.5.1.2.2 Supporting the development of renewable energies, storage, and hydrogen

A major avenue of research for EDF R&D concerns support for the development of renewable energies in France and internationally. For renewable energies, storage and hydrogen, its goal is to:

- identify technological breakthroughs that offer a significant competitive advantage; and
- help the most promising technologies emerge industrially, working in partnership with academics, the industry and start-ups.

EDF is investigating a wide range of renewable energies, low carbon hydrogen technologies and storage solutions: hydropower, solar power, onshore and offshore wind power, biomass, electrochemical batteries, etc.

In the field of offshore wind power, R&D has developed specific modelling tools for the hydrodynamic and mechanical sizing of fixed and floating offshore wind turbines.

R&D is also working to develop tools and methods to enhance operational performance and optimise the cost of projects on electricity generation systems that are based on renewable energies, projects on storage and systems for hydrogen generation by electrolysis power by EDF group low carbon electricity.

1.5.1.2.3 Environmental performance of facilities

Climate change, the marked decline in biodiversity and Earth's limited resources make developing a low carbon energy mix absolutely necessary. EDF R&D endeavours:

- to contribute to determining the ways in which changes to the regulatory environment are implemented;
- to provide justification for our production facilities being on par with the best available techniques (BAT), at an economically acceptable cost, and to leverage these best available techniques in new projects;
- to acknowledge and manage our impact on terrestrial and aquatic environments;
- to know how to anticipate and adapt to the impacts of climate change, for example foresee changes in the availability and quality of local water resources and assess the robustness of the heat sinks for power plants in light of future climate change;
- to contribute to leveraging our positive actions with regard to stakeholders, including locally.

Since early 2022, R&D has also been contributing to the Group's project to adapt nuclear units in the face of climate change.

1.5.1.3 Inventing tomorrow's energy systems

Energy transition towards a low-carbon economy in Europe hinges on strong integration of variable and decentralised renewable energies, in particular on the distribution network. This integration requires more intelligent electricity systems, or smart grids, to be developed, in order to have the capacity to manage a more decentralised electricity systems, with a much higher number of stakeholders. The major issues are technical, economic and regulatory, and this will involve taking on new challenges such as:

- developing transmission grids and grids to connect to European coverage, and reinforcing links between the European wholesale markets in order to optimise flows of electricity;
- managing the intermittence of production sources that use renewable energies and pushing back the limits of their inclusion in electricity systems, both for the management of local energy flows and electricity grid;
- integrating new uses of electricity by optimising the generation mix and grid requirements, and by exploring flexibility levers and how they are structured;
- optimising decentralised energy systems (demand-side management, decentralised generation and storage, etc.) by integrating them into larger scale energy management systems;
- adapting the coordination of electricity systems in order to address a reduction in inertia of the electricity system in a context of increasing use of power electronics in order to factor in patterns of use and new production sources.

These challenges require work on the transmission and distribution grid materials, generation and storage means, their communication functionalities and protocols, on control materials and methods, and also on the economy of consumption, electricity services and the related markets.

1.5.1.4 Accelerating digital transformation

The digital transition impacts the entire electricity system. The digital transition is a key driver of the electric and climate transitions described above. Information technology research focuses on:

- understanding and anticipating the impacts on the Group's businesses and the possible disruptions that may be caused by booming technologies such as artificial intelligence, quantum computing, the internet of things (IoT), mobile networks including 5G networks, cyber security of industrial systems, blockchains, virtual reality, etc.;
- maintaining and developing a cross-disciplinary ecosystem of scientific computing to support the studies conducted by EDF R&D and engineering.

1.5.1.5 EDF's R&D scientific partnerships internationally

To conduct its research and development programmes, EDF R&D nurtures a large number of partnerships both in France and internationally. The goals are to attain the highest international levels in the disciplines at the heart of the EDF group's key challenges and to supplement its in-house skills and direct academic research towards R&D that is relevant for the EDF group.

R&D's partnership policy is embodied in a variety of ways, both nationally and internationally.

France

R&D has entered into framework agreements with major public research organisations. The main academic partners are the CEA (French Alternative Energies and Atomic Energy Commission) and the CNRS (the French national research agency).

Over the past few years, R&D has also set up about twenty laboratories and teams on a joint basis with academic partners and technical or industrial centres. These include FiME (Energy Finance and Markets, *Finances et marchés énergies*) and SEIDO (Laboratory dedicated to the Internet of Things).

Furthermore, partnership framework agreements exist with various industrial and academic stakeholders.

Other developments include several partnerships within the Paris-Saclay campus ecosystem, such as:

- the SEISM Scientific Interest Group on earthquakes (GIS SEISM), which brings together CentraleSupélec, ENS Paris-Saclay, CNRS, BRGM (Bureau de Recherches Géologiques et Minières) and EDF;

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- the Institute of Mechanical Science and Industrial Applications (Institut des sciences de la mécanique et applications industrielles, IMSIA) joint research unit, which brings together ENSTA (National School of Advanced Engineering), CNRS, CEA, and EDF.

R&D is also present within the Energy Transition Institutes (ITE) which were set up as part of France's "Investments for the Future" initiative: the Ile-de-France Photovoltaic Institute (IPVF), France Énergies Marines, which focuses on marine energies and offshore wind power, Efficacity, which works on energy efficiency, Supergrid Institute, which specialises in electricity networks of the future, as well as in the IRT SystemX, which is located in the heart of the Paris-Saclay research hub.

EDF R&D has also set up the Materials Ageing Institute (MAI), an international research centre on materials ageing that brings together, alongside EDF, most of the world's major nuclear operators.

EDF is also a founding member of several European associations recognised at the EU level, such as Nugenia (Nuclear generation II & III alliance) and the SNETP (Sustainable nuclear energy technology platform) for nuclear power and EASE (European association for storage of energy) for storage.

Germany

In the early 2000s, EDF set up a European Economic Interest Group in Germany with the Karlsruhe Institute of Technology (KIT) known as EIFER. EIFER is a benchmark centre in the field of hydrogen. EIFER teams are also fully engaged with topics relating to local decentralised energy systems.

United Kingdom

EDF R&D UK consolidates the Group's positions in the British research eco-system, particularly through Strathclyde University in the field of renewables, as well as with Manchester University, Imperial College, the National Nuclear Laboratory (NNL) and the University of Bristol in the field of nuclear energy.

The centre provides direct support to the activities of EDF business units, be it:

- in the existing nuclear field (extension of AGR (Advanced gas cooled reactor) reactor lifespans, and decommissioning following EDF UK's announcement of the planned shutdown of several reactors); or
- new projects such as the Hinkley Point C project.

The centre is also fully committed to digital solutions for customers, blockchain and offshore wind farm projects, for which it is the reference centre for all the Group's projects in France and abroad.

Italy

In Italy, Edison's Research, Development & Technological Innovation Division (RD&TI) provides medium to long-term support for strategy and, in the shorter term, informs the development of new services and offerings from Edison. Staff and laboratories are located mainly in innovation spaces in the two Italian *Politecnici* (polytechnical institutes in Milan and Turin), thus nurturing cooperation and embedding Edison RD&TI in the world of innovation and research in Italy.

Asia

The centre based in Beijing is a valuable asset for taking part in partners' large-scale Chinese demonstrators (such as those of CGN [China General Nuclear Power Corporation], CNNC [China National Nuclear Corporation], and State Grid [transmission and distribution network player]) for smart grids and nuclear facilities. It also benefits from China's highly advanced additive manufacturing ecosystem(1). The centre also actively supports EDF China's commercial activities on the field of local multi-energy projects combining electricity, biomass, and heating and cooling networks.

Singapore's R&D centre focuses more especially on the industrialisation of microgrid solutions at competitive prices using renewable energy, which is developed and tested with its demonstrator on Semakau Island off the coast of Singapore. The centre is also engaged alongside academic partners and local industry on a range of projects:

- feasibility studies for electricity interconnections in the Southeast Asia sub-region;
- electric mobility projects in Singapore;
- green hydrogen generation projects for an industrial hub.

United States

The EDF group has had an R&D centre in Silicon Valley for several years. The centre supports its development in the USA and contributes to innovation in the Group. This laboratory's research areas include:

- direct support to the North America EDF Renewables subsidiary;
- market design to inform the selection of development projects for the Group's business units in the USA;
- assessment of new business models for the Group in the USA.

1.5.2 Intellectual property policy

Intellectual property plays a major role in protecting the EDF group's technologies and know-how from competition, and in leveraging these assets through licensing agreements. Expanding the patent portfolio is thus a priority, with a view to making the best use of its capacity for innovation and its technology expertise. The portfolio consists of both patents and court-certified software and know-how.

At the end of 2023, the portfolio of EDF and Enedis comprised 747 patented innovations, protected by 2,178 property titles in France and abroad. Framatome's portfolio held 574 patented innovations protected by approximately 3,000 titles. In 2023, EDF submitted 60 patent applications (53 in 2022) and Framatome submitted 32 (18 in 2022).

(1) Additive manufacturing, more ordinarily known as "3-D printing", refers to all the processes involved in manufacturing a physical object from a digital object by adding materials.

1. The Group, its strategy and activities



2. Risk factors and control framework

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2.1 Risk management and control of activities

This section presents the business control and risk management systems applicable to the entire Group for 2023. These systems, developed and implemented with due respect for the management independence of network infrastructure managers, are in line with the framework defined by the corpus of the Group's policies. They also comply with the general principles set out in the AMF risk management and internal control system reference framework (published on 22 July 2010). They are also based on developments in the main international reference frameworks, in particular COSO-2013.

2.1.1 Control environment

Framework and objectives

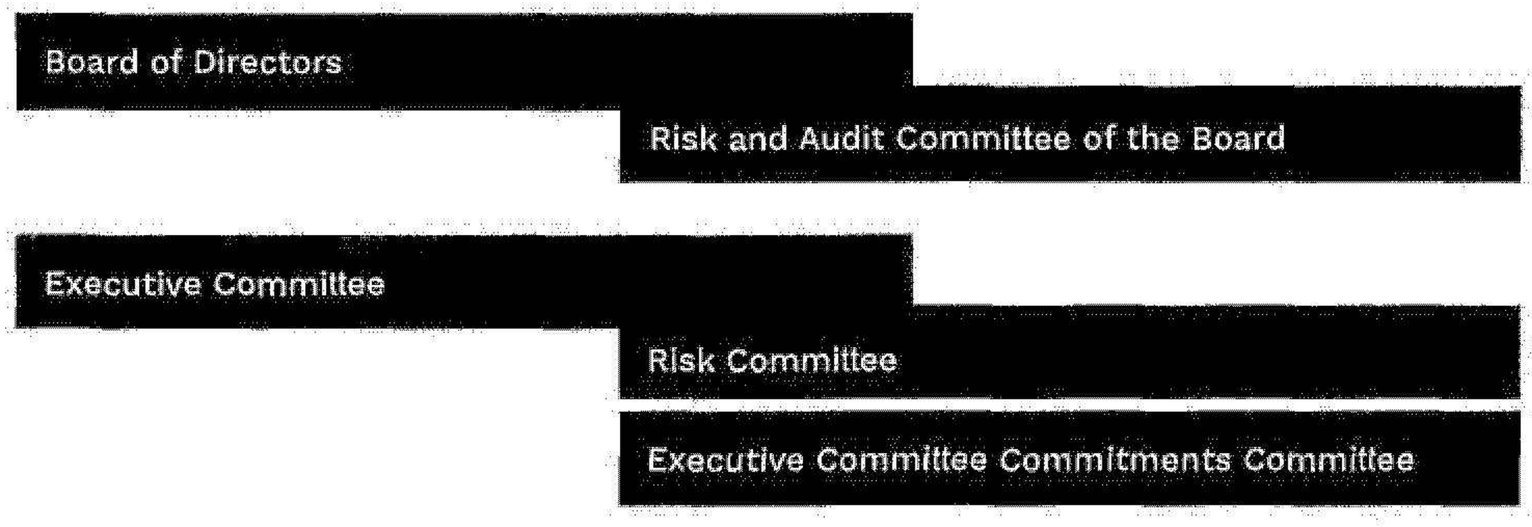
The EDF group organises the control of activities and risks in the form of 40 Group policies, validated and signed by the Executive Committee. This corpus defines all of the long-term and cross-functional requirements to be implemented in all of the Group's entities and subsidiaries. Regular updates make it possible to adapt requirements to regulatory changes and strategic policy orientations. They are fully in line with the Group's *raison d'être*.

The objectives of the system for controlling the Group's risks and activities, defined in the Group "Functioning Principles/Risk Management and Internal Control" policy are:

- **identify and periodically reassess the significant risks and opportunities** likely to impact the Group's targets, in order to ensure the existence of relevant and effective action plans;
- **constantly ensure:**
  - > compliance with laws and regulations, including those relating to the management independence of network infrastructure managers,
  - > the smooth running of processes and projects,
  - > the reliability of financial and non-financial information,
  - > compliance with Group policies,
  - > the control of risks and activities of any kind.

Organisation

The organisation of EDF's Executive Management is described in section 4.3.1. "Members of the Executive Committee". Each member of the Executive Committee is responsible for implementing all actions necessary for controlling the risks within their scope.



Board of Directors

The Board of Directors regularly examines, in connection with the strategy defined by it, opportunities and risks as well as the measures taken as a consequence.

Board's Risk and Audit Committee

The mission of the Audit and Risk Committee is to monitor, under the responsibility of the Board of Directors, the effectiveness of the internal control, risk management and internal audit systems. Note: the risks related to the long-term nuclear commitments are specifically monitored by the Nuclear Commitments Monitoring Committee.

Executive Committee Commitments Committee

The Group Executive Committee Commitments Committee (CECEG) closely examines the most significant projects in terms of the scale of the commitments and/or the risks incurred before the Executive Committee makes a decision (see section 2.1.3.4 "Approval of capital commitments").

Executive Committee Risk Committee

The Executive Committee meets at least twice a year as a Risk Committee. It reviews, notably, the Group's risk mapping, the results of internal control activities, and audit activities (annual programme, results). It identifies the priority risks for the Group, shares the related strategy for mitigation and designates the members of the Executive Committee who are its sponsors.

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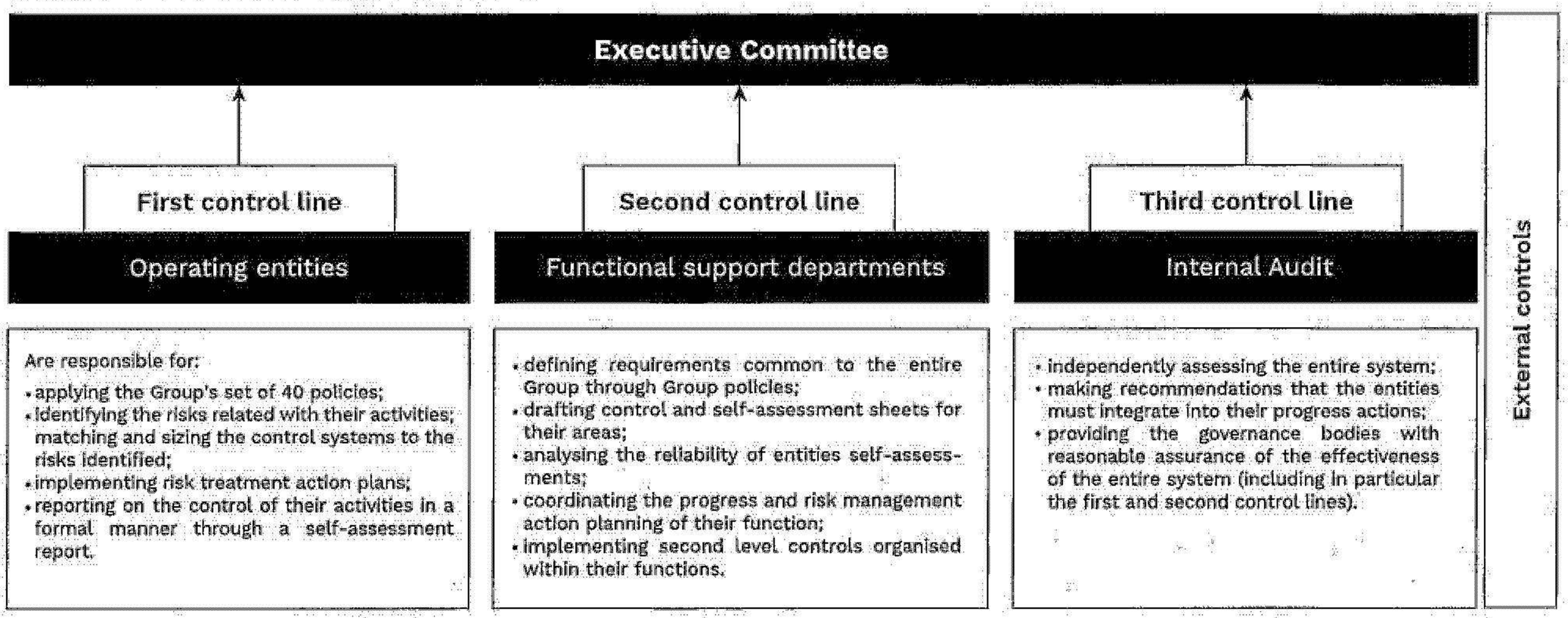
Scope

Regarding the scope of control (excluding subsidiaries managing regulated infrastructures), these purposes and principles are implemented by the entities or subsidiaries, which themselves ensure their implementation in the entities or subsidiaries they control.

Regarding the Group's other subsidiaries (subsidiaries that are operators of regulated infrastructure and significant shareholdings), EDF representatives within the governing bodies make sure that a system for controlling activities and risks is put in place. They provide regular information on risk mapping, internal control and audit activities (programme and main results). They can also check the effectiveness and appropriateness of each of these measures through a periodic audit of the respective entities. The applicable principles are adapted for the operators of regulated infrastructures to ensure compliance with obligations related to their management independence.

2.1.2 Principles of execution

All of the measures based on the three control lines provide the managers and governing bodies of the Group with a warranty appropriate for the identification and coverage of the main risks.



First line of control: management of operations

Report on the control of the activities and risks of the entities

Each Group entity (49 entities in 2023 covering the scope of EDF and controlled subsidiaries) prepares an annual report on the control of its activities and risks, which includes a self-assessment, and a response to the "Group's essential improvement actions". Each report gives rise to a commitment signed by the Director of the entity on the level of control achieved and an action plan.

Entity self-assessments report on the control of all the entity's "business line" activities and all the requirements of the other cross-functional areas identified in Group policies, in line with their risk mapping. The report particularly includes self-assessments on the control of the requirements relating to accounting and financial internal control, in line with the AMF framework (see section 2.1.3.5 "Reliability of financial information – internal accounting and financial controls").

Entities risks mapping

The entities and subsidiaries produce an annual risk map based on a common Group methodology. The process of constructing the risk map for the entities is based on:

- the principle of management accountability;
- a typology of risks, including internal or external risks and operational or strategic risks, as well as opportunities;
- a qualitative evaluation method for the impact, the probability and the level of control of each risk;
- action plans for dealing with risks and the evaluation of their effectiveness.

Numerous discussions take place between the Group Risk Department and the entities and subsidiaries to review the relevance of risks and the soundness of the control actions undertaken.

Methods and tools: Several methodological documents and tools are made available to the entities and affiliates to support those processes:

- a risk analysis methodological guide;
- an internal control guide and a detailed self-assessment framework;
- a software package called ICAR (based on the Acuredge tool from Devoteam) to report on their risk mapping, internal control self-assessment, and the monitoring of their action plans.

Second line of control: risk management and control of activities

The second line comprises Group support functions which are responsible for leading and coordinating the implementation of Group policies for which they are responsible.

GROUP POLICIES

- **Management and operation**
  - > Operating principles/Risk management & Internal control
  - > Governance of subsidiaries and minority shareholdings
  - > EDF group project management
  - > Crisis management and business continuity
- **Ethics & Compliance policy** and related instructions (control of integrity in business relationships, the fight against fraud, REMIT, GDPR, stock-market compliance)
- **Safety & Security**
  - > Nuclear safety
  - > Security of assets against malicious acts
- **Corporate social responsibility policy**
- ***Human Resources***
  - > Health and safety
  - > Remuneration & social security benefits
  - > Talent
  - > Experts
  - > Skills Development in France
  - > Group Mobility
- **Supplier policy** and related instruction
- **Real Estate & General Services**
  - > Group travel
  - > France service-sector real estate
- **Group Legal risk management policy** and related instructions
- **Finance & Markets**
  - > Business and financial performance management
  - > Financing, cash management, and financial risk control
  - > Capital Commitments
  - > Energy market risk
  - > Tax and customs
  - > Insurance
  - > Financial & accounting reporting, and related instruction
- **Communication**
  - > Communication/Institutional relations/Partnerships
  - > Financial communication
- **Information systems & Digital Transformation**
  - > IS governance
  - > Data management
  - > Security of information systems

Group risk mapping

The Group risk mapping comprises:

- risks associated with the political and regulatory context, and legal and compliance issues;
- financial risks;
- strategic risks, risks related to the transformation of the Group, including in particular risks related to climate issues;
- risks related to the Group's operating activities and its supply chains, as well as to the Group's major projects, in all its business lines, particularly nuclear. These risks also relate to health, personal safety, asset protection and IS security.

These risks are described in section 2.2 "Risks to which the Group is exposed". Some risks are also detailed in chapter 3, in particular risks related to climate and environmental issues, duty of vigilance, and personal health and safety.

On the basis of the risk maps and activity control reports drawn up by the Group's entities and subsidiaries (first line of control), supplemented by cross-reviews with the second line of control and with the Internal Audit Department, the Group Risk Department draws up a consolidated map of major risks. This map, supplemented by an overall assessment of internal control, provides Management and the governance bodies with a consolidated, prioritised and regularly updated view of the major risks, and their level of control. This mapping is validated by the Risk Committee and is presented to the Board of Directors after examination by the Board's Risk and Audit Committee.

Third line of control: the Group's audit unit

The Group's audit unit is composed of all of the Group's internal audit resources. Pursuant to a decision of the Chairman and Chief Executive Officer, this unit is led by the Group Audit Director. It includes the Internal Audit Department ("IAD", reporting to the General Secretary) and audit teams specific to each of the main French and foreign subsidiaries. The relationship between the IAD and audit teams of the operators of regulated infrastructure, and also their respective prerogatives, have been defined to ensure compliance with the principle of management independence. The IAD is responsible for the functional coordination of the sector. At the end of 2023, the Group audit unit consisted of 70 FTE employees.

Operating standards for EDF and controlled subsidiaries

The IAD applies the international standards defined by the Institute of Internal Auditors and monitors their compliance.

The remits, powers and responsibilities of the auditors as well as the rights andduties of the audited parties are defined in a charter. It sets out the fundamental principles governing audits, the procedures for drawing up the programme, the types of assurance assignments entrusted to it, and the duties of the audited parties and auditors. It includes a code of ethics applicable to the sector, which aims to promote an ethical culture, and reminds auditors that they must respect and apply certain fundamental principles relevant to the profession and the practice of internal auditing.

The Internal Audit Department has direct access to the Chairman and Chief Executive Officer. It reports on assignments to the Board's Risk and Audit Committee, which issues an opinion on the risk-based internal audit, reviews the performance of audits and verifies the matching of the resources dedicated to internal audits with the workload.

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Auditors are trained in the same methodology, in line with international standards and are evaluated at the end of each assignment. The IAD's processes for all the above-mentioned activities (from the definition of the audit programme to the monitoring of action plans) are outlined and managed. The audit unit regularly submits voluntarily to assessment by IFACI[1]. The last assessment, in 2018, stated as previously that the audit practices complied with the international standards of the profession.

Operating procedures

The Group's audit unit conducts audits of the entities and controlled subsidiaries, Business Units, projects and cross-functional functions. These audits include a review of the robustness of internal control and are carried out every three to five years depending on their level of significance. The IAD is the sole entity with powers to conduct corporate cross-functional BU/project audits, whereas the Audit Departments of the subsidiaries only conduct audits within their scope.

The audit programme is developed on the basis of the Group risks.

All audits give rise to recommendations which, after validation by the audited parties and their management, are the subject of action plans on their part. These action plans are forwarded to the IAD for its opinion, which then monitors them, starting no later than six months after the audit report is published.

A half-yearly summary report presents, in particular, the main findings of the corporate audit and the follow-up to the action plans. It also provides an audit overview of the Group's level of risk control. This report is presented by the IAD to the Chairman and Chief Executive Officer, the Executive Committee, and then to the Board's Risk and Audit Committee and the Board of Directors.

External controls

The EDF group is subject to the supervision of the AMF. As a company majority-owned by the French State, EDF is also subject to control by the Cour des Comptes (French Court of Auditors), the economic and financial controllers of the Inspectorate of Finance, the Economic Affairs Committees or *ad hoc* Committees of Enquiry of the French National Assembly and Senate.

In accordance with the law, the Statutory Auditors certify the annual financial statements (corporate financial statements and consolidated financial statements) and perform a limited review of the Group's half-yearly condensed consolidated financial statements. Their report on the annual financial statements includes checks on the corporate governance information required by the Articles L. 225-37-6 of the French Commercial Code.

In view of its business activities, EDF is also subject to control, in France, by the Energy Regulation Commission (CRE) and the French Nuclear Safety Authority (ASN).

2.1.3 The main programmes for controlling activities

The activity control programmes are implemented to ensure that the requirements set out in the Group's policies, validated by the Executive Committee (see box in section 2.1.2), are met and are selected according to the major risks.

2.1.3.1 The Group Ethics and Compliance programme

The Group Ethics and Compliance Department implements the Group Ethics and Compliance programme on the basis of the following reference frameworks (see section 3.1 "Carbon neutrality and the climate"):

- the Group Ethics and Compliance Policy (PECG) lays down the main rules of which Managers must be aware, and with which they must comply with and ensure compliance within their entities, in strict accordance with the risks of their respective entities. The PECG is backed up by instruction memoranda and support guides designed to assist its deployment, including in particular monitoring the integrity of business relations, financial ethics, protection of personal data, the combating of fraud, the management of gifts and invitations, the prevention of conflicts of interest and the duty of vigilance. The PECG is the supra-reference to the Group Ethics Charter and the Ethics and Compliance code of conduct, which can be updated according to new applicable regulations, and which is subject to audit;
- the Group Ethics Charter built around the Group's three values (Respect, Solidarity, Responsibility), defines the requirements that should guide the actions and conduct of the Group employees on a daily basis;
- the ethics and compliance code of conduct, reviewed in 2023, is reflected in the internal regulations of the entities and is the reference document for the prevention of corruption. It applies to all employees (requirements of the Sapin II Act);
- the EDF group's ethics, compliance and duty of vigilance whistleblowing procedure enables Group employees and external or occasional employees, as well as third parties, to report irregularities under the "Sapin II" law of 9 December 2016 on transparency, the fight against corruption and the modernisation of economic life, and under the "Duty of Vigilance" law of 27 March 2017 on the corporate duty of vigilance law, or governed by the French Labour Code (see section 3.3.2.4 "The EDF group whistleblowing procedure").

2.1.3.2 The Information Systems and Assets Security programme

Cyber security risk is one of the EDF group's main risks. For several years now, the EDF group has had an Information and Information Systems Security programme covered by the policies on Asset Security against Malicious Acts, Information Systems Security, and IS Governance and Digital Transformation. These policies aim to prevent the risk of aggression and limit its impacts, and are supplemented by an instruction in relation to the protection of personal data.

The main strategic orientations for controlling activities aim to:

- legitimise and strengthen governance and management;
- generalise the culture of safety throughout the Group;
- secure the most critical functions in close collaboration with the business lines;
- anticipate, strengthen and maintain the uniformity of monitoring and the ability to react in the event of an incident.

A charter governing the use of IT resources sets out IT best practices, and is annexed to EDFs internal regulations. IS security training and awareness-raising courses adapted to different profiles (users, project managers, IS security managers, etc.) are offered on a regular basis to employees.

The Executive Committee and the Board's Risk and Audit Committee receive reports on cyber security risk management. Several dozen security audits are carried out each year by external IS security audit companies (IS security audit providers), which are PASSI qualified by the ANSSI (French National Agency for Information Systems Security), both on IT infrastructures and on business information systems. In addition, IS security incidents are identified by EDF's Group SOC (Security Operational Centre), a part of which was classified as a PDIS (security incidents detection service provider) by ANSSI in 2021.

Lastly, cyber security crisis exercises are conducted on a regular basis, at the level of a business line or more broadly during a major Group crisis exercise, with a view to testing the various systems in place and assessing the Group's ability to respond to a large-scale cyber attack.

The main actions for cyber security risk control that were implemented in 2023 are set out in section 2.2.1 - 1C "Attacks against assets, including cyber attacks".

(1) Institut français de l'audit et du contrôle interne (French Institute of Audit and Internal Control).

2.1.3.3 The health and safety programme

The EDF group's health and safety programme is described in section 3.3.1.3.1 "Health and safety policy".

2.1.3.4 Approval of capital commitments

The EDF group's Capital Commitments policy sets the framework for decisions on commitments in terms of management, governance and control. This policy applies to all capital-commitment projects, regardless of their amount, for all EDF entities and subsidiaries, excluding regulated subsidiaries while adhering to the governance principles applying to listed companies. Before each commitment decision, the proposed projects undergo a risk analysis according to a methodological reference framework made available to the entire Group. Capital commitment projects are reviewed, where applicable, by the Board of Directors as described in sections 4.2.2.3 "Powers and duties of the Board of Directors" and 4.2.2.9 "Activity of the Board of Directors in 2023".

Strategic projects (beyond the thresholds defined in the Commitments policy) are reviewed by the Group Executive Committee Commitments Committee (CECEG).

Strategic disposal projects are subject to a separate instruction and are supervised by the Disposals Committee to ensure confidentiality and responsiveness.

2.1.3.5 Reliability of financial information – internal accounting and financial controls

The EDF group has organised its financial risk management around the following functions:

performance management, reporting, with the following main tasks:

- contributing to steering the performance of the Group's entities;
- contributing to monitoring the budgets of the departments and subsidiaries controlled;
- developing and disseminating financial management methods and processes, contributing to the dissemination of a management culture within the Group;
- managing the management cycle processes, summarising them and suggesting decisions to management and subsidiaries;
- developing medium- and long-term financial trajectories, in order to contribute to the due allocation of resources.

accounting:

- preparing EDF's corporate financial statements and the Group's consolidated financial statements;
- ensuring accounting compliance;
- coordinating the Group's internal accounting and financial control system.

taxation:

- ensuring the consistency of tax practices, the requirements of which are listed in the Group's Tax policy. The precise provisions in this area are discussed in section 3.4.2.2 "Contribution to development through taxation";
- ensuring the due execution of legal and reporting obligations;
- ensuring the accounting follow-up of the deferred tax position and the periodic review of evidence justifying the accounts;
- identifying and controlling the Group's tax risks.

finance and investments:

- coordinating the actions inherent in the Group's balance sheet and financial result, with the aim in particular of controlling the exposure of the Group's hedging assets, debt and the Group's overall balance sheet to financial risks;
- managing investments and acquisition and disposal transactions, as well as listed and unlisted dedicated assets. The Group Risk Department prepares an annual risk mandate and specific work management frameworks which define the principles for managing risks and the risk limits that are acceptable for this portfolio;
- appraising the investment projects presented to the CECEG meetings to anticipate impacts and improve the reliability of the financial trajectories relative to the Group's balance sheet and profit and loss accounts, as defined by the Commitments policy;
- contributing to portfolio reviews and economic and financial optimisation analyses;
- ensuring that the Group is financed in accordance with the Financing, Treasury and Financial Risk Management policy;
- verifying the due implementation of the principles of the policy. The positions of the trading room in charge of cash management are monitored by the Group Risk Department.

The Financing, Treasury and Financial Risk Management policy requires the Group entities to continuously and systematically identify financial risks (particularly those pertaining to liquidity, interest rates, foreign exchange and counterparty). The Group Risk Department exercises second level control of these risks:

- verifying the due implementation of the principles of the policy;
- controlling the positions of the trading room in charge of cash management. For these activities, a system is in place of indicators and risk limits, which are checked on a daily basis. The Markets Committee verifies and examines, on a quarterly basis, where applicable, requests for exemptions from the work frameworks, as well as requests for investment in new financial products.

The policy on the constitution, management and control of the financial risks involving EDF's Dedicated Assets applies to the portfolio of Dedicated Assets managed by the Finance Department. The Group Risk Department prepares an annual risk mandate and specific work management frameworks which define the principles for managing risks and the risk limits that are acceptable for this portfolio.

Reference frameworks

The accounting standards used by the EDF group comply with international standards as published by the International Accounting Standards Board (IASB) and approved by the European Union. These international standards include the IAS (International Accounting Standards), IFRS (International Financial Reporting Standards) and the SIC and IFRIC interpretations. The accounting rules and methods are specified in the Group's accounting principles manual and summarised in the notes to the consolidated financial statements for the financial year ended on 31 December 2023.

The principles applicable to the preparation and reporting of accounting and financial information to the Group's Finance Department are defined in the Accounting and Financial Reporting policy. The specific internal control provisions are described in the Group guideline entitled "Internal Accounting and Financial Control". The control objectives to be implemented at the entities are specified and updated each year in the Group's Internal Control Guide, and are assessed by the entities in their internal control self-assessment reports.

The Financial Management Directors of the Departments of the Business Lines and Subsidiaries sit on the Management Committee of the entities to which they belong. With the exception of regulated infrastructure managers, they are appointed and assessed jointly by operational management and the management of the Finance unit. A network of correspondents from the Operational Departments and subsidiaries facilitates dissemination of the instructions and harmonised implementation throughout the various Group entities.

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Each operational and functional Director of EDF makes a commitment each year with regard to the quality of the Accounting and Financial Internal Control system, the improvement goals for the coming period and the truthfulness and exhaustiveness of the accounting information for which they are responsible by drafting a commitment letter sent to the Group Accounting, Tax and Insurance Director. In return, each Director receives a letter assessing the accounting and tax quality of the Group Accounting, Tax and Insurance Director, based on various evaluation criteria.

In terms of accounting quality, a set of indicators is prescribed to EDF's Departments. It measures areas of conformity of the accounting information for each process. As regards subsidiaries, each entity is responsible for implementing the Group's Internal Accounting and Financial Control guideline.

Procedures for preparing and auditing the consolidated financial statements

The consolidated financial statements are prepared by the Consolidation Department of the Consolidation Accounting Division based on data entered locally by each entity (parent-company and subsidiary entities) in accordance with Group standards and closing instructions.

The scope of consolidation is closed after identifying all companies of significance that are controlled, jointly-controlled or under significant influence. The non-significant nature of entities in which EDF holds an interest and which may fall within the consolidation scope is examined regularly and submitted annually for assessment by the Statutory Auditors. The scope of the Group's consolidated financial statements is shown in the notes to the consolidated financial statements for the financial year ended on 31 December 2023 (see chapter 6 "Financial statements").

The half-year consolidated financial statements are presented to the Board's Risk and Audit Committee and then approved by the Board of Directors. The annual consolidated financial statements are reviewed by the Board's Risk and Audit Committee, then closed at 31 December of the financial year by the Board of Directors and, lastly, approved by the General Meeting.

Instructions are drawn up at the end of each half-yearly and annual reporting period, setting out the main deliverables expected.

Management forecasts and outturns are generated using a single reference framework and tools shared between accounting and management. This system contributes to the consistency of the Group's management. It facilitates dialogue at all levels of the organisation, and contributes to the quality of the information produced.

Procedures for preparing and auditing the corporate financial statements

The corporate financial statements are prepared annually and semi-annually by the Parent Company Financial Statements Department of the Accounting Consolidation Division. The annual corporate financial statements are closed on 31 December of the financial year, approved by the Board of Directors of EDF, and then approved by the General Meeting.

The condensed half-year corporate financial statements are closed on 30 June of the financial year, and then approved by the Board of Directors. EDF's transactional accounting is mainly entrusted to the Shared Accounting & Consulting Services Centre (CSP2C) of the Tertiary Services Department[1]. "Governance pacts" set out the respective responsibilities of the Departments, the Consolidation Accounting Division and the CSP2C or, where applicable, the accounting operators other than the CSP2C.

Preparatory meetings are organised with EDF management to anticipate certain accounting procedures and to improve the reliability of the accounting and financial information published.

2.1.3.6 Crisis management and business continuity

In the event of an exceptional event, the measures taken to manage crises can be costly, over and above the costs of repairing the damage caused by the disaster and the loss of earnings due to the stoppage of plant and the services supplied by the Group.

EDF has a Crisis Management and Business Continuity policy for dealing with this risk, which defines the organisational principles and the system required to apply it. This policy notably consists of:

- ensuring the existence of structures to manage crises and permanent systems for reporting alerts;
- checking the existence and regular updating of relevant crisis management procedures, having regard to the risks involved;
- defining, for periods of crisis, coordination procedures with all stakeholders;
- ensuring that business continuity plans exist and are updated at each entity, ensuring that feedback from crises and crisis exercises is systematically taken into account, to avoid or limit the consequences of similar crises and thus enhance the Business Continuity Plans (BCPs);
- checking the implementation of professional development actions for all parties in the crisis.

Successive and overlapping crises with local impacts (storm Ciarán), international impacts (continuing sanctions in relation to the Russo-Ukrainian conflict, the Israeli-Palestinian conflict) put the application of this policy to the test, and have so far confirmed its robustness. A programme of crisis exercises regularly tests the effectiveness of these measures and their overall consistency.

An increased preparation for crises coupled with the integration of feedback from successive crises has made it possible to strengthen the body of documents, notably on the comprehensiveness of subjects and their level of detail as addressed in the Business Continuity Plans, with:

- a new version of the Pandemic Plan in 2022 integrating COVID feedback;
- coordination work on the Information Systems component in 2021 to ensure consistency and mutual understanding between the IS part of the business BCPs and the IS BCP, with a cyber exercise conducted in 2023;
- the activation of levers to generate margins in a strained electricity system coupled with preparation for a temporary unavailability of electricity in 2022 or 2023, in a context of very tight electricity markets;
- the analysis of specific contexts likely to impact business continuity, such as the 2024 Olympic and Paralympic Games.

2.1.3.7 Insurance

In order to protect its assets and limit the impact of certain events on its financial position, the EDF group has dedicated insurance programmes that cover its major risks relating to property damage, civil liability and personal insurance. Note that nuclear risks are subject to the specific civil liability regime described below.

(1) Excluding the Nuclear Fuel Division, the Island Energy Systems Department, the Deconstruction and Waste Projects Department and the Talent Manager Training Department for the payroll accounting portion.

Organisation

The Group Insurance Division is responsible, while upholding the management independence of the regulated infrastructure operators, for preparing the EDF group policy covering insurance, steering and tracking its implementation throughout the Group, in order to optimise the overall costs of its insurable risks[1].

The Insurance Managers of entities and controlled subsidiaries that are included in the Group's programmes are notably responsible for:

- ensuring that all risks are insured;
- scheduling prevention inspections and overseeing implementation of the resulting recommendations;
- updating the reported values and activities;
- analysing losses and participating in claims handling.

This work, carried out in close collaboration with the Group Insurance Division, allows for continuous improvement of the quality of information on insurable risks in step with programme renewals prevention inspections (evaluation of maximum possible losses, "MPL"). In connection with prevention actions, the Group Insurance Division establishes and oversees implementation of the site inspection programmes.

Group Insurance Policies

Purpose: the Insurance policy specifies the risks that the Group chooses to transfer to the market, and the general principles for optimising these transfers:

- mass purchasing through the implementation of Group insurance programmes;
- distribution between traditional markets and other types of hedging;
- individual and Group deductibles;
- optimisation of intermediation expenses.

Principles of execution:

A Strategic Insurance Policy Committee (COSA) provides an opportunity for the business lines and the Insurance Division to discuss changes to the insurance policy and how they should be implemented, notably as regards the main features of the programmes.

The Group Insurance Division and the Group Risk Department perform an annual analysis of the risk mapping at Group level, supplemented by the insurance cover system in place. Based on this shared view, EDF is in a position to improve, and, where applicable, extend the cover of insurable risks in accordance with the principles established by the Group in this area.

The goal of the Group's insurance programmes is to integrate the controlled subsidiaries as broadly as possible, in order first, to homogenise risk cover and streamline its management, and secondly, to control the corresponding insurance costs.

Insurance contracts, according to market practice, include exclusions, limits and sub-limits.

Use of captive insurance companies and mutual insurance companies

Like all major French and international groups, EDF uses captive insurance companies and mutual insurance companies to supplement cover provided by the traditional insurance markets.

The EDF group's[2] captive insurance companies are:

- Wagram Insurance Company DAC, an insurance company founded in 2003 in Dublin, which is involved in the majority of the Group's insurance programmes;
- Océane Re, a reinsurance company created in 2003 in Luxembourg, which participates in most of the Group's insurance programmes;
- furthermore, EDF is a member of the Everen mutual insurance company in order to deal with the risks of damage (excluding overhead networks) to the property owned by or under concession to the Group (EDF and its consolidated subsidiaries). Everen is a mutual insurance company dedicated to the needs of companies in the energy sector which provides its members with cover for property damage. The scope covered includes inter alia nuclear power plants (the conventional portion), fossil-fuel-fired power plants, hydropower facilities, network substations, and exploration and production assets.

The Group's damage insurance programmes combine this cover provided by Everen and cover provided by captive insurance companies and market insurers.

The EDF group is also a member of the European Liability Insurance for the Nuclear Industry (ELINI), the European Mutual Association for Nuclear Insurance (EMANI), the Nuclear Industry Reinsurance Association (NIRA) and Blue Re, which are mutual insurance companies that manage cover in this field for European nuclear power operators.

Captive and mutual insurance companies enable the EDF group to reduce the cost of its insurance programmes and benefit from additional guarantees.

Civil liability insurance (not including nuclear civil liability)

EDF has taken out general civil liability insurance covering EDF, Enedis and their controlled subsidiaries against the financial consequences of civil liability, excluding nuclear damage that may be incurred by the entities in the course of their activities due to damage caused to third parties. The actions and measures implemented to prevent industrial and environmental risks and mitigate their effects are described in particular at the beginning of this section in the paragraph titled "Second line of control: risk management and control of activities".

This cover is purchased to the extent of available capacity at acceptable financial terms, on the insurance and reinsurance markets. Maximum cover is €1 billion. Subsidiaries generally opt for lower deductibles that are more consistent with their financial capacity.

Civil liability insurance for corporate officers

EDF has a civil liability insurance programme covering corporate officers and executives of EDF, Enedis and their controlled subsidiaries against the financial consequences of their civil liability incurred in performing their management functions.

Damage insurance (excluding nuclear assets)

Conventional damage programme

The scope of the conventional damage programme includes virtually all EDF subsidiaries, in particular EDF Energy, Edison, Dalkia, and the distribution network operator Enedis.

Wagram Insurance Company DAC, together with other insurers and reinsurers, provide extensions of cover (property damage and business interruption) in addition to the cover provided by Everen increasing the maximum to €1 billion.

This programme provides business interruption cover for most of the subsidiaries in the event of property damage, but not for EDF, which does not benefit from this cover. The actions and measures implemented to prevent industrial and environmental risks and mitigate their effects are described in particular at the beginning of this section in the paragraph titled "Second line of control: risk management and control of activities".

(1) Risks transferable to the insurance markets.
(2) Framatome and EDF Energy have their own captive insurance companies to meet their own coverage needs.

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Framatome set up an insurance programme for damages and resulting operating losses affecting all its facilities, excluding those involved in fuel production, up to a limit of €505 million, with a deductible not exceeding €0.5 million for damages and €1 million for operating losses.

EDF Renewables set up insurance programmes dedicated to its assets, covering the risks of damage and operating losses.

Cover for "construction" risks

EDF has taken out insurance policies covering specific construction risks (construction all-risk, and erection/testing all-risk policies). These policies are not included in any Group programme but are purchased on an *od hoc* basis for major construction projects such as the EPRs of Flamanville 3 and Hinkley Point C, the construction of combined cycle power plants, dams, *etc.*

Cyber risk cover

Since 1 July 2017, cyber risk cover has been put in place. This €80 million cover protects EDF and the Group's subsidiaries for the expenses incurred in handling major disruptions caused by a cyber attack on the Group's information systems.

Specific insurance for nuclear facility operations

Several international conventions govern the civil liability of nuclear facility operators, in particular the Paris Convention of 29 July 1960 on Third-Party Liability in the Field of Nuclear Energy and the Brussels Convention of 31 January 1963, which supplements the Paris Convention (hereinafter the "Conventions"). The Paris Convention introduced a special liability regime for nuclear damage, which is strict (even in the absence of fault), limited as to amount[1] and duration, and is exclusively focused on the nuclear facility operator. These Conventions apply to the signatory countries that have ratified them, including France and the United Kingdom.

Protocols to amend the Paris and Brussels Conventions were signed on 12 February 2004 and entered into force on 1 January 2022. They require higher amounts of compensation than the original conventions, in order to cover a greater number of victims and types of damage that are eligible for indemnification. The State, in which is located the nuclear facility of the operator that is liable for causing the damage, is liable for amounts above the €700 million for which the operator is liable, up to €1,200 million (provided that such State is a Contracting Party to the Brussels Convention). Above this amount, the Member States that are Contracting Parties to the Brussels Convention are liable up to a maximum amount of €1,500 million. In addition, for personal injury only, the time limit for instituting actions for compensation has been raised from 10 years to 30 years from the date of the incident. The definition of "nuclear damage" is evolving and includes, in addition to damage to persons and property, consequential damage, economic losses, the cost of protective measures, the cost of measures to rehabilitate damaged environments, and certain other losses resulting from damage to the environment.

These Conventions also provide that the operator has an obligation to take out insurance or lodge a financial guarantee for the liability amounts established, in order to guarantee the availability of funds.

In France, the civil liability obligations imposed on nuclear facility operators have been transposed into the French Environment Code. Thus, the liability limits for civil liability of nuclear facility operators are set at €700 million for nuclear damage caused by each nuclear accident (€70 million for low-risk facilities) and €80 million in the event of transport of nuclear substances for a given nuclear accident[2].

EDF set up the "Nuclear Civil Liability Insurance Programme (RCN)" insurance cover obtained following a call for tenders, which enables the Group to meet its obligations arising from the revised Paris Convention, while controlling their financial impact. This insurance is shared between the nuclear insurance market (AXA, reinsured by the French nuclear pool Assuratome), the Group's captive insurance companies, and the nuclear mutual insurance company ELINI.

Framatome entered the Group insurance scheme on 18 February 2020.

In the United Kingdom, EDF Energy has implemented a programme satisfying the requirements of the updated Paris Convention, subscribed with the British NRI pool, the Group's captive insurance companies and the ELINI nuclear mutual insurer. It should be noted that the British operators' obligations will be gradually raised over a five-year period, from €700 million to €1,200 million.

Cover for damage to nuclear facilities

The cover obtained through EDF's membership of the Everen mutual insurance company provides protection against material damage in cold regions, excluding the consequences of a nuclear accident, amounting to 60% of US$450 million in excess of a deductible of US$15 million, both in France and the United Kingdom.

The insurance system covering nuclear facilities is as follows:

- in France, the protection provided by Everen is supplemented, for the consequences of a nuclear accident, including the costs of site decontamination, by insurance cover of up to €80 million in excess of a deductible of up to €20 million using the EMANI nuclear mutual insurance company, Axa and Allianz (all of which are reinsured by Assuratome), and Wagram Insurance Company DAC (the latter reinsured by Océane Re);
- in the United Kingdom, Everen's protection is supplemented, for the consequences of a nuclear accident, including the costs of site decontamination, by an insurance programme with capacity defined based on the technology and status of the plants of up to £1 billion provided by the nuclear mutual insurance association EMANI, the British nuclear pool NRI and Northcourt, which consists of British specialist insurers.

Framatome is insured by the mutual insurance association EMANI for damage and consequential operating loss affecting the facilities involved in the manufacture of fuel, up to a limit of €650 million, with a deductible not exceeding €5 million for damage, and 90 days for operating loss.

Premiums

The total amount of Group insurance premiums for all types of cover was €297 million in 2023.

(1) With the exception of Party Countries that have opted for unlimited liability (Germany, Switzerland, Sweden, *etc.*).
(2) Articles L. 597-4 and L. 597-8 of the French Environment Code.

2.2 Risks to which the Group is exposed

The Group operates in a fast-changing environment that entails numerous risks of various kinds: they may be regulatory, strategic or operational. Some are exogenous; others are endogenous and inherent to the Group's business lines. Their consequences may affect the Group's operating results, the Group's financial position and its ability to finance its strategy or development. They may also affect its internal or external stakeholders or environment, or its reputation.

The Group describes hereinafter the specific risks to which it considers itself exposed, and the corresponding main control actions, without overriding the managerial independence of regulated infrastructure operators. For non-specific risks, the absence of a risk description in this section does exclude their being taken into account.

The risks must be read in their entirety, as some of them may be interdependent.

Risks are divided into five categories described in sections 2.2.1 to 2.2.5:

- section 2.2.1 "Risks related to operational performance" describes the risks related to the control of the Group's operating activities across its various industrial projects and activities. In particular, this section describes the Group's risk relating to current and/or future EPR projects, which is a major risk;
- section 2.2.2 "Specific risks related to nuclear activities" supplements section 2.2.1 for activities relating to the Group's nuclear activities (nuclear safety, operation, fuel cycle and long-term commitments);
- section 2.2.3 "Market regulation, political and legal risks" describes the risks related to changes in public policy and regulation in the countries and territories where the Group operates, as well as the legal risks to which the Group is exposed;
- section 2.2.4 "Financial and market risks" describes the risks arising from exposure to the energy markets in which the Group operates, as well as risks related to changes in the financial markets and the reliability of the related information;
- section 2.2.5 "Group transformation and strategic risks" describes the risks related to the Group's ability to adapt, particularly in terms of strategy and skills, in response to the needs for transformation brought about by climate change, new competition, and technological and societal changes.

The risks are outlined in detail in each of the relevant sections for their respective category. They are numbered to make it easier to connect the summary table and the detailed descriptions that follow.

The aftermath of the Covid crisis, and the consequences of current geopolitical tensions, particularly the Ukrainian conflict and the situation in Israel-Gaza, drive inflation and cause disruption on the various markets. These factors are treated as factors aggravating the following risks:

- energy market risk (Risk 4A): increased volatility;
- operational continuity of supply chains and contractual relationships (Risk 1E): inflationary pressures, disruption of industrial supply chains for products or equipment from countries affected by the conflict, disruption of contracts with companies affected by economic sanctions against Russia;
- financial risks in section 2.2.4 "Financial and market risks", particularly the liquidity risk;
- damage to assets including cyber-attacks (Risk 1C): increase in cyber threats.

All the risks identified in this document have been selected because they are significant in terms of the materiality of their estimated impact on the Group. In addition, they are prioritised based on a qualitative assessment of their criticality, taking into account simultaneously the significance of the potential impact for the Group, the probability of their occurrence and the level of control, in light of the actions undertaken. This prioritisation produces a three-level scale for all risks: the criticality can be considered strong, intermediate or moderate. The categories are not ordered hierarchically.

As a general rule, the scope of exposure is France, Belgium, Italy, the United Kingdom and all countries in which the Group is present. Where the scope of exposure is more restrictive, it is specified in the table and in the risk description.

Exposure to risk may vary according to duration. The potential impact of these risks may produce effects at very different time horizons, ranging from very short term (less than a year), to medium term (up to a few years) to very long term (up to several decades or more), given the nature of the relevant industrial activities which may span centuries.

In order to control risks, measures have been put in place. Some measures apply to all risks: internal control, commitment approval process (see section 2.1 "Risk management and control of activities"); others are specific to each risk.

Additional provisions for taking into account certain risks related to Corporate Social Responsibility are set out in chapter 3 "Non-financial performance". Cross-references shall, where appropriate, be specified in the risk description.

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TABLE OF RISKS – NUMBERING, LABELS AND CRITICALITIES

Criticality is appraised having regard to the control actions undertaken.

Category	Risk	Criticality
1. Operational performance	1A – Management of large and complex industrial projects, including EPR projects	■■■
	1B – Failure to comply with the objectives for operation and/or for extending the operating life of nuclear power plants (France and United Kingdom)	■■■
	1C – Attacks against assets, including cyber attacks	■■■
	1D – Occupational health or safety violations (employees and service providers)	□□
	1E – Operational continuity of supply chains and of contractual relationships	□□
	1F – Hydropower safety violations	□□
	1G – Risk of supply/demand imbalance within EDF	□□
	1H –Risk of blackout	■
	1I – Industrial safety violations and impact on environmental assets, including biodiversity	■
2. Specific risks related to nuclear activities	2A – Control of radioactive waste treatment, of the decommissioning of nuclear facilities, and ability to meet related commitments	□□
	2B – Control of the fuel cycle	□□
	2C – Nuclear safety violations during operation resulting in nuclear civil liability	□□
3. Market regulation, political and legal risks	3A – Changes in public policies and in the regulatory framework in France and Europe, in particular ARENH and post-ARENH	■■■
	3B – Changes in the legislative and regulatory framework for hydropower concessions	□□
	3C – Changes in the legislative and regulatory framework for electricity distribution concessions	□□
	3D – Ethics or compliance violations	■
	3E – Litigation risk	■
4. Financial and market risks	4A – Energy market risk	■■■
	4B – Risk related to accounting assets and liabilities identified in the Group's balance sheet	□□
	4C – Financial markets risk	□□
	4D – Interest rate risk	□□
	4E – Access to liquidity risk	□□
	4F – Counterparty risk	□□
	4G – Foreign exchange rate risk	■
5. Group transformation and strategic risks	5A – Adaptation of skills	□□
	5B – Adaptation to climate change: physical and transition risks	□□
	5C – Transformation capacity in the face of disruptions	□□
	5D – Ability to fulfil long-term social commitments	□□

Criticality: ■■■ high □□ *Intermediate* ■ moderate

2.2.1 Risks related to operational performance

1A – Management of large and complex industrial projects including EPR projects

SUMMARY

The Group carries out very large-scale projects. These projects represent a major risk for the Group in terms of the potential financial impact on its balance sheet and the implications for its development strategy. In particular, the success of EPR projects depends on specific industrial, regulatory and financial factors.

Criticality: ■■■ *High*

a) Context

As part of its business, the Group is required to carry out, as a project owner and/or project manager, projects that are highly complex, in particular the EPR projects at Flamanville 3 in France and Hinkley Point C (HPC) in the United Kingdom, which are currently being implemented, as well as future projects such as the EPR2 projects in France. These projects require significant investment and lengthy regulatory approval and review procedures.

The success of these projects will determine the future of the French nuclear industry sector. These projects pose major risks for the Group, notably with regard to its financial results and balance sheet.

The Group's other major projects under way are:

- major projects related to the existing nuclear fleet *(Grand Carénage*, see risk 1B, and decommissioning projects, see risk 2A);
- offshore renewable energy projects (off-shore wind power);
- international hydropower projects.

b) Main risks

b1) Cross-cutting risks

These projects are exposed to numerous technical and operational risks relating to their industrial implementation, which could result in start-up delays and an increase in associated costs or a possible *reconsideration of certain technical choices. This could result, in fine*, in a reduction in expected profitability, or even an additional impairment of assets.

Given their scale, these projects have an extremely significant impact on the Group's results and balance sheet, in particular on its equity and financing capacity, as well as on its development strategy.

There exist other technical, industrial, operational, economic, regulatory, political, environmental or acceptability risks, which could jeopardise project schedules, associated costs or profitability.

Risks of technical or operational non-performance

The technical and operational risks associated with large and complex industrial projects expose the Group to major uncertainties *in the implementation and operation of these projects. These risks* may have a major impact on the Group's business, results, asset value, financial position, reputation, organisation and outlook.

In addition to or as a result of these uncertainties, the Group may also be in breach of its contractual obligations.

Strategic risks

The Group's strategic goal is to become involved in the construction of new nuclear facilities in France and abroad. The risk with regard to these projects would be that investment decisions might not be made or might be made under poor technical, regulatory or financial conditions, and thus to find ourselves unable to successfully implement the Group's strategic goals.

Risks related to financing and, where applicable, the regulatory framework

New reactor construction projects, particularly in France and the United Kingdom, require considerable investment, as well as appropriate market organisation, with appropriate financing and pricing conditions. Given the economic or institutional climate or depending on the appropriate progress of the pending projects, obtaining such funding may be delayed or compromised.

In the United Kingdom, the context resulting from Brexit may lead to changes in the conditions for the implementation and profitability of projects and may not allow sufficient conditions to be met for involving investors in the Group's future projects in the United Kingdom: Notably, it can impact labour availability and on-site productivity.

In addition, the classification as transitional energy under the Taxonomy regulation (see risk 3A) could insufficiently recognise decarbonised nuclear electricity, with potential consequences for access to financing for new projects. The legislation does not include the fuel cycle or waste management. Finally, the conditions set out in the Delegated Act for the classification of nuclear energy as an aligned activity may not be fully met. These elements could influence the Group's ability to finance future major nuclear projects (see risk 3A).

External risks – political and geopolitical, administrative procedures

All these projects are large-scale and of long duration. They involve numerous industrial partners. Relations with the partners involved with EDF in these projects may also be a source of difficulties.

For example, *trade tensions between the United States and China* could have an impact on the conduct of some of these projects given the technologies and partnerships implemented (see risk 1E).

These projects require, among other things, administrative authorisations, licences or permits which may be subject to disputes, withdrawals or delays in obtaining them.

Risks related to CSR issues

A very large number of stakeholders are involved in these projects, which may, for example, need to be associated with territorial development projects or suffer from difficulties related to local acceptance.

Cyclical risks

Inflationary pressures could lead to higher project costs (see notably risk 1E "Operational continuity of supply chains and contractual relationships") and could also affect the financial strength of supply chain players.

Other risks

Other issues and risks specific to nuclear activities, whether in terms of nuclear safety, control of operations and maintenance activities, long-term commitments or the fuel cycle, are specified in section 2.2.2 "Specific risks related to nuclear activities".

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b2) Risks specific to the main projects and associated control actions

Risks related to the Flamanville 3 EPR (France)

The achievement of the project schedule and cost targets, as announced[1], is conditional, principally, on the ASN issuing the various administrative authorisations attesting to the completion of various technical issues and the completion of the final touches to the installation (see section 1.4.1.1.3.1 "Flamanville 3 EPR project").

In addition to the activities still to be carried out before the fuel is loaded into the reactor vessel, the project could also face other potentially significant additional costs and delays in the event of a new hazard. However, the risk in relation to the schedule and cost to completion is considered moderate.

Risks of discrepancies in components, equipment or parts of equipment delivered by EDF service providers and suppliers (see section 7.1.5 "Disputes") could, after analysis and if the discrepancies were confirmed, lead to a justification or correction of the discrepancies and, where applicable, to delays in the start-up schedule.

Risks related to the Taishan EPR (China)

In China, the Group has a 30% stake in TNPJVC (Taishan Nuclear Power Joint Venture Company Limited) alongside its Chinese partner CGN and Guangdong Energy Group (19%). Taishan 1 was the first EPR reactor to be coupled to the grid on 29 June 2018. It became commercially operational on 13 December 2018. The Taishan 2 reactor became commercially operational on 7 September 2019 (see section 1.4.1.1.3.2 "Other New Nuclear projects").

The profitability of the asset is linked to the feed-in tariff for electricity produced by Taishan and could be affected if tariff decisions are not favourable. On 20 March 2019, a temporary tariff was set by the National Development and Reform Commission (NDRC) at RMB 435/MWh until the end of 2021, for a guaranteed annual volume of generation offtake equivalent to 7,500 hours of full power operation. Any surplus above this volume is sold at the market price. As with any scalable generation facility, the actual call-up of the Taishan plant is decided by the Guangdong provincial power grid operator. The temporary tariff was extended on 22 December 2021 until the publication of the new tariff mechanism applied to Chinese third-generation nuclear power plants, particularly the Taishan plant. The authorities had issued no further publication at the end of 2023.

The profitability of the asset is also subject to the risk of changes in the volume of sales at this tariff, against a background of development in the electricity market.

The financing arrangements put in place by TNPJVC include provisions to secure the repayment of the joint venture's financial liabilities. In certain situations, these provisions may temporarily limit the payment of dividends. If the company were to fail to generate a positive cumulative net result or a sufficient level of cash flow, the amount of dividends expected by EDF would be revised downwards which could result in the need for an additional impairment of the asset [2].

Risks related to the Hinkley Point C EPR (United Kingdom)

Control of the design and bringing the manufacturing and the major milestones of the Hinkley Point C (HPC) construction site under control will determine the profitability of the project and the financing of any future projects in the United Kingdom.

Its construction achieved a number of important milestones in 2023, including the installation of the dome on reactor 1 (see section 1.4.5.1.2.5 "Nuclear New Build business"). However the project was marked by:

- a lower than expected performance of the main civil engineering in terms of costs and quantities;
- shortages in the global building materials market and job market, which were significant in 2023. Vigilance was maintained with regard to health and safety performance, in the context of the ongoing investigation into the fatal accident in November 2022;
- project costs sensitive to inflation, which remains high in the United Kingdom;
- the ability to secure the necessary skills and resources, in particular for electro-mechanical and ventilation assemblies (EHM), which are just starting. As for civil engineering, the project will be sensitive to the performance of these arrangements (costs, execution rate);
- supply chain problems due to the geopolitical and macroeconomic climate.

A review of the project's schedule and costs was finalised in January 2024. This review resulted in a new estimate of the project schedule and costs (see section 1.4.5.1.2.5 on the "Nuclear New Build business" in the United Kingdom).

In addition, the financing requirements for the HPC project exceed the contractual commitment of shareholders (committed equity). Shareholders were asked to allocate additional equity (voluntary equity). Today, the Group alone contributes to financing (voluntary equity). In the absence of a contribution from CGN (voluntary equity), EDF is actively seeking financing solutions until the commissioning of HPC.

The profitability and financing of the HPC project are sensitive:

- inflation and changes in electricity market prices beyond the term of the CFD;
- the risk of CGN not contributing voluntary equity;
- the exchange rate between the British Pound and the Euro. A hedging strategy for this risk is in place at the HPC project and Group levels;
- delays in construction or difficulties in the commercial commissioning of the HPC EPR units beyond 31 October 2036, which could result in the loss of the revenue protection afforded to these works *via* the CfD (see section 1.4.5.1.2.5 *"Nuclear New Build business"*);

CGN's non-contribution to voluntary equity could imply possible alternative debt or equity financing that could modify EDF's profitability (dilution risk).

Risks related to the renewal of the fleet in France (EPR 2)

In France, an inadequate market organisation and the failure to obtain, or delay in obtaining, the authorisations required to continue the development of the EPR2 reactor could have an impact on the Group's financial position, notably because of the development costs incurred upstream of the decision, which could ultimately be borne by EDF. Any factor likely to delay the launch of the project could lead to discontinuities in engineering activities, and difficulties in maintaining skills and mobilising the supply chain, which would be detrimental to the industrial control and performance of the programme.

The main challenge is to ensure that the conditions are fulfilled for a decision to launch the programme and its transposition into the legal and financial framework necessary for its implementation.

(1) See EDF's press release of 16 December 2022 "Update on the Flamanville EPR".
(2) The value of TNPJVC's share of equity at the end of 2022 in EDF's financial statements amounted to €1,944 million – see note 12 to the consolidated financial statements for the financial year ended on 31 December 2023.

This requires several main prior actions:

- consolidating cost estimates at completion and during planning on the basis of a sufficiently mature design;
- following the structuring of the programme with the creation in 2022 of the Directorate for the New Nuclear Programme for France, defining in particular the schedule for financing, regulation and governance to which the French State and EDF will commit;
- If necessary, notification by the French State to the European Commission of the programme's structuring arrangements, having regard to state aid regulations;
- obtaining administrative authorisations within a schedule compatible with that of the programme.

Risks related to the Sizewell C EPRs (United Kingdom)

Sizewell C and its shareholders, EDF and the British government, are working together to finalise the remaining steps leading to this final investment decision, expected in 2024 subject notably to the following conditions for the Sizewell C project:

- securing financing for the project, including finalising the BAR licence and the GSP, and finalising the process of seeking additional financing from private investors which is currently under way;
- an agreement with the British government on the baseline schedule and the cost of completing the project;
- the obtaining of all the required authorisations remaining outstanding, particularly the authorisation concerning control of subsidies.

EDF's contribution to the financing of the construction is subject to compliance with certain conditions, including:

- a stake in Sizewell C's capital reduced to a level not exceeding 19.99%;
- the ability to deconsolidate the project in the EDF group's financial statements (including in the calculation of economic indebtedness by rating agencies);
- an expected return on capital, as an investor holding a maximum stake of 19.99%, in line with EDF's investment policy.

EDF's commitment to fund Sizewell C up until the date of the FID is subject to a cap, reached in December 2023, without any obligation to fund the project beyond it.

Failure to bring about these conditions (without prejudice to satisfactory risk allocation) could result in the Group not making a final investment decision.

The main actions to create favourable conditions for the decision include:

- work with the UK government to finalise the steps leading to this final investment decision, expected in 2024. In January 2024, the UK government released an additional investment of £1.3 billion to support the construction of Sizewell C, which is progressing towards a final investment decision expected in 2024. This investment will consolidate the government's position as the majority shareholder of the project. It follows initial financing of £700 million approved in November 2022, and an additional £511 million approved in the summer of 2023;
- work with supply chain operators to develop an appropriate contractual strategy, particularly including the replication strategy; organisational and collaborative discussions with Hinkley Point C are under way to secure the benefits of HPC's replication on the Sizewell C project, while taking into account the difference in governance (percentage of eventual ownership, partners, etc.). Depending on the schema, the risk of non-compatibility with the deconsolidation target could be significantly aggravated;
- a detailed review of the cost and planning, taking into account the feedback from the HPC project.

Risks related to the Jaitapur project (India)

Following the submission of a binding technical-commercial offer in April 2021, EDF and its partners are engaged in negotiations with NPCIL with a view to supplying all the studies and equipment for the nuclear island, the conventional island, the auxiliary systems as well as the cold sources and galleries for six EPR technology units.

EDF does not plan to invest in the project. The NPCIL client will be the overall project manager and integrator in the implementation phase (bearing in particular the risks of licensing, construction, assembly and overall integration).

The project has the risk profile of a supplier of engineering services and plant and equipment supplies. Its value therefore lies in the realisation of the margin included in the price of the services sold. Like all large, complex industrial projects, this project presents technical, industrial and cost control risks for the scope under the responsibility of EDF and its partners, as well as a risk relating to compliance with pre-defined milestones, having regard in particular to the expected revenue model. In addition to the country risk, which includes a substantial tax dimension, the conditions related to the scope of nuclear liability in India must be met, and the project's financing plan must be secured before the final contracts are signed.

Risks related to the Dukovany project and its potential extension (Czech Republic)

In the event that the offer that could be submitted to the Czech electricity company ČEZ and its national authorities is accepted (see section 1.4.1.1.3.2 "Other "New Nuclear" projets"), EDF would be required to update its exposure to the commercial consequences of possibly exceeding the level of risk (technical, industrial, cost control and lead times) provided for in this offer, in its capacity as designer and builder of four EPR1200 units. The signature of the contracts concluding this competitive procedure is not expected to take place before April 2025.

c) Cross-cutting control actions

Control of major projects and excell plan

As part of a continuous improvement approach to project management, the Group has a project management policy and a Commitments policy which require an analysis of risks and associated security measures. Regular project reviews are carried out and the Group set up a Major Project Control unit at the end of 2020. The Group has implemented the excell plan since December 2019 to enable the French nuclear industry to return to a high level of rigour and quality in order to ensure the success of current and future major projects in France, the UK and elsewhere in the world (see section 1.4.1.1.1 "The excell plan").

The vigilance plan and CSR challenges

Project management takes into account, in accordance with EDF's vigilance plan, the potential impacts of projects on human rights, the environment, health and safety, as well as the CSR issues of dialogue and consultation with stakeholders, territorial development, development of industrial sectors, ethics and responsible land management (see chapter 3 "Non-financial performance").

Control actions specific to Framatome

The success of EPR projects, the competitiveness of the nuclear industry in France, and the success of the Group's international development all depend on the quality and compliance with contractual clauses in the production of studies, components and services by Framatome. Framatome's industrial performance is strategic for EDF as a Nuclear operator in France and the UK.

Framatome can also expose the Group to risk through its activities in France and abroad, for nuclear operators other than EDF, or other customers. The Group's exposure may be financial or address its reputation.

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1B – Failure to comply with the objectives for operation and/or for extending the operating life of nuclear power plants (France and United Kingdom)

SUMMARY

*The Group may not be able to meet its nuclear power fleets' operating objectives in terms of safety and availability, notably in the case where controls or defect detection would lead to modifications on the nuclear French fleet. It may also not be able to continue operating its reactors beyond the current planned expiry date, or even be authorised to operate them until that date in both France and the United Kingdom. In addition, the Group may not be able to control the costs and deadlines for modifying its operating fleet to continue its operations (*Grand Carénage *in France), which constitutes a major risk for the Group.*

Criticality: ■■■ *High*

a) Context

The fleet of nuclear reactors that the Group currently operates in France is highly standardised (see section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation"). This enables the Group, in particular, to achieve economies of scale, to apply improvements made to its newest reactors to all reactors and, in the event of a reactor malfunction, to anticipate the measures to be taken with the other reactors. The Group has been aiming for several years to continue operating its nuclear fleet in France significantly beyond 40 years.

On 15 December 2021, EDF announced having detected the phenomenon known as "stress corrosion cracking" on pipe welds in the safety injection system (SIS) as part of the 10-year inspection of reactor No. 1 at the Civaux power plant. Similar defects have been detected in other power plants on auxiliary circuits to the main primary circuit. The handling of this phenomenon generated an inspection and repair programme that had an impact on the nuclear generation. The control programme is continuing nominally.

During the periodic reviews carried out during the 10-yearly inspections (VD) and following the Fukushima accident in Japan, the Group drew up a major work programme, called "*Grand Carénage*", the principle of which was approved by the Board of Directors in 2015.

In the United Kingdom, the operating life currently planned for the operation of the reactors of EDF Energy's existing nuclear fleet ranges from 41 to 47 calendar years for advanced gas reactors (AGR), and is 40 years for Sizewell B's pressurised water reactor (PWR). Since their acquisition by EDF Energy, the operating lifespan of AGR reactors has been extended by around six years on average. The objective for the PWR plant is to continue its operation for 20 years after the 40 years currently planned (see section 1.4.5.1.2.2 "Nuclear generation"). The two reactors at Dungeness B were permanently shut down in June 2021, those at Hunterston B in November 2021 and those at Hinckley Point B in July and August 2022.

b) Main risks

Nuclear fleet in France

- This standardisation of the fleet has a potential parallel risk of the dysfunction being ordinary to several reactors or to a generation or series of reactors (see section 1.4.1.1.2 "Nuclear power generation in France").
- The Group may be required to make significant or costly repairs or modifications to all or some of its plants. Events may occur that could have an impact on the operation of the fleet or on its output, which could lead to a temporary shutdown or closure of all or part of the fleet.
- In particular, the detection of the aforementioned indications (known as "stress corrosion cracking") led to the shutdown of reactors, in order to carry out extensive checks and to replace the portions of piping affected by the phenomenon. The final findings of the control programme could result in targeted replacement repairs.
- For each reactor, during the ten-year periodic reviews, EDF carries out studies and implements modifications, in order to improve the level of safety and demonstrate the ability of each reactor to operate for an additional 10 years. After submitting the review conclusion report for each reactor, ASN adopts a position on the measures taken by the operator and may issue additional requirements. These studies relate in particular to non-replaceable equipment, namely reactor vessels and containment buildings, to demonstrate their ability to perform their function for the additional 10 years after the 10-year inspection. These studies, which are based on data available in France but also internationally(1), make it possible to confirm the safety margins available for the operating periods under examination but may also lead to the adoption of additional protective measures, if necessary, for the existing nuclear fleet, which could have consequences on its performance.
- In its decision of 23 February 2021 on the generic phase of the fourth periodic review of the 900MWe class, the ASN found that the measures planned by EDF, supplemented by the responses to the requirements formulated by the ASN, would make it possible to achieve the particularly ambitious objectives of the review and that these safety improvements would open up the prospect of the continued operation of the 900MWe reactors for a period of 10 years beyond their fourth periodic review, subject to the implementation of additional measures. These new requirements lead to an increase in investments and an additional industrial load of around 25% compared with the already very large-scale initial programme, increasing the risk affecting the ability of industrialists to make the necessary investments within the stipulated deadlines.
- In accordance with the French Environment Code, the provisions proposed by EDF during reviews beyond the 35th year of operation are submitted, reactor by reactor, to a public inquiry, at the end of which ASN takes a position on the continued operation of the reactor. For Tricastin 1, whose VD4 (head of series) ended with its recoupling on 23 December 2019, the review conclusion report (RCR) was submitted to ASN in February 2020, and was the subject of a public inquiry from 13 January to 14 February 2022. ASN's position on the continued operation of Tricastin 1 beyond its fourth periodic review was issued in 2023. At the end of 2023, the VD4s of 12 reactors, namely Tricastin 1, Tricastin 2, Tricastin 3, Bugey 2, Bugey 4, Bugey 5, Dampierre 1, Dampierre 2, Gravelines 1, Gravelines 3, Blayais 1 and Saint-Laurent B2, were completed, and the VD4s of five reactors, namely Blayais 2, Gravelines 2, Chinon B1, Dampierre 3 and Bugey 3, were underway. Each ASN opinion on a reactor may include specific requirements in addition to the requirements of the generic opinion, impacting industrial load and costs.

(1) Six reactors in the United States have been licensed to operate for up to 80 years. For 10 others, the license renewal application for up to 80 years is being examined (six more are planned by the end of 2025): "The Nuclear Regulatory Commission (NRC) staff has defined subsequent license renewal (SLR) to be the period of extended operation from 60 years to 80 years" (www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html).

- In 2016, the Board of Directors approved the extension in the consolidated financial statements of the depreciation period for the 900MW PWR plants, except Fessenheim, from 40 years to 50 years, without prejudice to the decisions of the ASN on the measures proposed by EDF for each reactor individually, after each 10-year inspection. The risk that ASN may object to the continued operation of a reactor for another 10 years cannot be ruled out, but an important step was taken with the generic opinion issued by ASN on 23 February 2021.
- The continuing in operation of the other series of France's nuclear fleet (1,300MW and 1,450MW), which are more recent, remains an industrial objective for the Group. In 2021, the Board of Directors approved the extension in the consolidated financial statements of the depreciation period for the 1,300MW PWR plants from 40 years to 50 years (see section 6.1, note 1.3.4.1 "Depreciation period of nuclear power plants in France" to the consolidated financial statements for the financial year ended on 31 December 2023). This accounting estimate does not anticipate the French Nuclear Safety Authority's positions on continued operations, which will be taken reactor by reactor after each 10-year inspection, as provided for by law.
- The potential uncertainties regarding the *Grand Carénage* programme include a possible delay in the processing of the authorisations required to start operations, especially as regards the authorisations expected from the French Nuclear Safety Authority. Such uncertainties may also concern the manufacture and delivery on site of new equipment or work carried out on-site in a situation where a large number of industrial operations are being carried out at the same time. In addition, the competent authorities may object to the expected continued operation. Such operating extensions may also be subject to requirements by these authorities, the financial impact of which, in particular in terms of investments, may affect the Group's strategy with respect to extending the operating life of its reactors or the Group's ability to pursue its global investment strategy. These events could have a significant negative impact on the Group's financial position.
- Risks of discrepancies in components, equipment or parts of equipment delivered by EDF service providers and suppliers (see section 7.1.5 "Disputes") could, after analysis and if the discrepancies were confirmed, lead to a justification or correction of the discrepancies and, where applicable, to extended shutdowns of the nuclear fleet.

Nuclear facilities in the United Kingdom

- Given the nuclear safety rules applicable in the United Kingdom and AGR reactor technology in particular, EDF Energy may not obtain the necessary authorisations from the Office for Nuclear Regulation (ONR) when the time comes to operate its existing nuclear reactors until the currently planned (AGR) or potential (Sizewell B) end of operation date, or may obtain such authorisations under conditions involving significant expenditure or investment by the Group.
- The ongoing analysis of graphite ageing in the AGR may lead to prolonged unavailability or early shutdown of the reactors. The cracking of graphite subjected to irradiation must be carefully monitored, with inspections carried out regularly, and controlled by the ONR, to ensure that there is sufficient knowledge of the core to justify continued operation. Following decisions taken in August 2020 and November 2020, Hunterston B was permanently shut down in January 2022, and Hinckley Point B permanently ceased production in August 2022. Following a review of the lifespans of the AGR reactors, carried out at the start of 2023, the projected final shutdown dates for Heysham 1 and Hartlepool were extended by two years to 2026 +/- one year, based on the results of the graphite inspections. The projected final shutdown dates for Heysham 2 and Torness remain set at March 2028 +/- two years.
- An accelerated fuel withdrawal strategy would be implemented in the event of any risk of an early shutdown of the other AGR plants. If this strategy were to be adopted, a re-examination of the value of the assets may be required.
- In view of the ageing of the British fleet and the technical difficulties relating to the ageing of the graphite, the future level of generation from the AGR reactors currently in service remains highly uncertain. For example, a defect on certain AGR reactor valves was detected at the end of 2023. While the scope of the repair work has been defined, at the date of publication of the Universal Registration Document, the review of the design and the operational and organisational safety remains to be validated.

Other nuclear facilities

- For nuclear reactors where EDF is not in charge of operation but has financial interests (Belgium, China), the Group is also financially exposed to some risks. The Group may need to contribute up to the amount of its share to costly repairs or modifications to be carried out on these units or to events that may have an impact on their operating lifespan, generation or availability. As in France and the United Kingdom, the nuclear safety authorities in these countries may take decisions that require additional work or controls, in particular as regards exploiting feedback from international experience and anticipating potentially precursory events. The Group is also exposed in terms of the value of its assets.

Other risks

- Furthermore, despite the quality of operations and the changes made by the Group to its nuclear facilities, it cannot be ruled out that some of these facilities will be subject to special operating conditions to reinforce the operating safety margins at the initiative of the nuclear operator responsible for nuclear safety or at the request of the French Nuclear Safety Authority.
- Finally, a potential serious nuclear accident not involving the Group but with widespread consequences worldwide could lead the safety authorities to require new reactor upgrades applicable to the Group's reactors, and to those in which the Group has a stake.

c) Control actions

The action plans for this risk are carried out by all the operational engineering and operating teams of the nuclear fleet, particularly in the context of the Start 2025 project and the *Grand Carénage* programme (see section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation").

During the ten-year inspections, the periodic safety reassessment makes it possible to increase the level of safety by taking into account, on the one hand, international best practices and, on the other hand, the condition of the facilities, the experience acquired during operation and the developments in the knowledge and rules applicable to similar facilities.

The increase in the number of VD4s completed each year (one in 2019, one in 2020, four in 2021, four in 2022 and six in 2023) and the increase in the load on the industrial fabric are covered by an approach involving the main suppliers of the plant in operation, in order to have a multi-year vision of the load, and to enable the entire nuclear industry to implement the necessary measures (in terms of resources, contractual terms, standardisation, etc.) so as to secure the success of the industrial programme for the plant in operation.

Since December 2019 the Group has been implementing the excell plan, which aims to enable the French nuclear industry to return to the highest level of rigour, quality and excellence in order to keep up with major projects and meet the needs of existing nuclear power plants in France and the United Kingdom (see section 1.4.1.1.1 "The excell plan").

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As regards the phenomenon of stress corrosion, EDF submitted a strategy for inspecting and repairing all its reactors in relation to the risk of stress corrosion to the ASN for the years 2023-2025. The ASN adopted a position on this strategy in an information note dated 25 April 2023 and deemed this timetable to be appropriate.

At the end of 2023, the controls of the most sensitive areas were completed (with the exception of three welds that will be inspected in 2024) and the systematic replacement campaign of the most sensitive piping of the 1300 P4 and N4 series was completed (with the exception of a reactor whose shutdown is scheduled for early 2024). The controls of the other areas will be continued and, depending on their results, may give rise to repairs.

On 21 December 2023, EDF confirmed the estimate of nuclear generation in France for 2024, in the range of 315-345TWh, and for 2025, in the range of 335-365TWh (*vs* 289TWh in 2022, at the peak of the impacts of stress corrosion sites).

See also section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation", subsection "Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors".

In the United Kingdom, risk control is also based on:

- ongoing interactions with the regulator on safety cases relating to the life cycle of facilities, assessment by the regulator and licensing requirements;
- the graphite management and ageing monitoring programme for the AGR fleet, with frequent graphite inspections, in particular at Heysham 2 and Torness;
- Sizewell B's long-term operating programme to manage the production of the business case in support of the decision on the investment programme required for extending the operating life;
- reviews, where necessary, of the life cycle of the AGRs and actions to prepare for fuel retirement in the event of early closure;
- strategies for preventive monitoring and maintenance of facilities to enable early consideration of problems that could lead to loss of generation.

1C – Attacks against assets, including cyber attacks

SUMMARY

The Group is exposed to risks of failure of or damage to its tangible or intangible assets, including its information system. In particular, these risks may arise from malicious actions, including cybercrime.

Criticality: ■■■ *High*

a) Impact on assets

Main risks

The Group's assets consist of its staff and its tangible and intangible assets. The facilities or assets operated by the Group or its employees may be the target of malicious acts of any kind. These acts could have negative consequences on the Group's operational activity, financial position, legal situation, assets or reputation.

The Group would also be forced to make additional investments or incur additional costs if laws and regulations relating to the protection of sensitive sites and critical infrastructures became more stringent.

Control actions

The EDF group has defined its Security of Assets against Malicious Acts policy to prevent this risk and limit its impact in the event of an attack. This policy is supplemented by procedures for the protection of people, property assets, intangible assets, instructions and an IT tool for collecting security incidents. Their implementation relies on a network of Asset Security Managers (ASM) who are members of the entity's management committees.

The main asset-protection actions are:

- coordinating the ASM network;
- providing acculturation tools;
- participating in steering the implementation of the NIS V2 directive and the LPM (military programming law) in collaboration with the ANSSI, the DSIG and the entities;
- establishing the obligations associated with the new version of the IGI 1300 instruction (adaptation of the notes to the IGI 1300, support for entities, *etc.*);
- training with the DGSI: cyber risk, radicalization, *etc.*;
- taking into account "Asset Security" aspects during the development of IT applications, *etc.*;
- contributing to working groups on the implementation of the CER directive (Critical Entities Resilience) in French law;
- contributing to the preparation of compliance record.

b) Information Systems failure, including from cyber attacks

Main risks

The Group operates multiple, interconnected and complex information systems (databases, servers, networks, applications, *etc.*) that are essential to the conduct of its commercial and industrial activity, the preservation of its human, industrial and commercial assets, and the protection of personal data (of customers and employees) and that must adapt to a rapidly changing context (digital transition, collaboration in the nuclear sector, development of working-from-home, new ways to share work in extended companies with suppliers, changes in regulations, *etc.*).

Information systems and the data they host or carry, like the Group's other assets, could be targets for external attacks or malicious acts of any kind. An attack or malicious act committed on these facilities could have consequences for people and/or property, lead to the liability of the Group on the basis of measures deemed insufficient, and hinder operations to a greater or lesser extent. The Group would also be forced to contract additional investments or incur additional costs in the event of greater stringency in laws and regulations relating to the protection of sensitive sites and critical infrastructures.

The frequency and sophistication of information system hacking and data corruption incidents are increasing worldwide. The impact of a malicious attack or any other failure resulting in the unavailability of information systems may have a negative impact on the Group's operating activity, financial, legal and asset situation or reputation.

Control actions

The EDF group defined an information systems security policy in order to prevent these risks and limit their impact in the event of an attack. This policy is supplemented by instructions on the classification and protection of information, as well as on the personal data protection.

A charter regarding the use of IT resources is annexed to the Company's internal regulations. Cyber security training courses are adapted to the different profiles (users, project managers, application developers, IS security managers, etc.) are offered to employees. The Executive Committee and the Board's Risk and Audit Committee receive reports on cyber security risk management. Several dozen security audits are carried out each year by external IS security audit companies (IS security audit providers), which are "PASSI" (IS security audit service providers) qualified by the ANSSI (French National Agency for Information Systems Security), both on IT infrastructures and on business information systems. In addition, IS security incidents are identified by EDF's Group SOC (Security Operational Centre), which has been classified as a PDIS (security incidents detection service provider) since 2021.

In 2023, the main actions deployed in the areas of cyber security, protection of intangible assets and, more generally, Company's resilience to the risks of damage to information systems were:

- the definition of cyber security goals for the Group entities, their achievement being measured *via* cyber security reviews;
- the roll-out of a cybersecurity and information protection awareness-raising campaign, including phishing exercises, for all Group employees;
- the continued deployment and evaluation, within the entities, of a security reference framework based on ANSSI rules;
- the redefinition of the cyber operating model at Group level through improvements in the way the sector is managed; further awareness-raising, the introduction of a broader second level control system and greater integration of industrial information systems in the Group's cyber security strategy.

In addition, cyber security crisis management exercices are regularly carried out to test the various measures put in place.

A Group-wide cyber security crisis exercise was held in October 2023, calling on all crisis units and mobilising more than 500 people, as well as around 10 observers, including ANSSI representatives.

2.2 - Occupational health or safety risks for employees and subcontractors

SUMMARY

The Group is exposed to health and safety risks in the workplace, both in terms of its employees and those of its service providers.

Criticality: *Intermediate*

a) Main risks

Human resources and their related skills are a major challenge for the Group and its service providers. The industrial nature and diversity of the Group's activities reinforce the crucial importance of complying with the rules and taking into account the various risks that may affect people working in the Group's industrial facilities in order to protect health and safety in the workplace.

The risk of work-related accidents or occupational illnesses cannot be excluded in any of the Group's areas of activity, including across the entire value chain. The occurrence of such events may lead to lawsuits against the Group and may result in the payment of damages, which could be significant.

b) Control actions

The Group has for many years taken the steps necessary to comply with the health and safety laws and regulations in the various countries in which it operates, and considers that it takes the measures required to ensure the health and safety of both its employees and its subcontractors.

Each Group entity has action plans aimed at continuously improving health and safety at work. Actions are also carried out at the Group level as a whole: definition and promotion of the vital rules and the BEST reference framework for health and safety management, one-day shutdown on 17 October 2023 for each team to reflect on improving and strengthening safety actions at shop-floor level (see sections 3.3.1.3 "Health and safety of employees and subcontractors" and 3.8 "Vigilance plan").

2.3 - Operational, industrial, supply chain and project risks

SUMMARY

The Group is exposed to the proper enforcement and operational sustainability of the supply chains and the contractual relationships with its suppliers, together with the risk of price volatility, the risk of availability (discontinuance or shortage of supplies), the logistical risk related to materials, equipment or services that it has purchased for the needs and requirements of its business lines. These risks may be exacerbated by crises and conflicts, such as the Russian-Ukrainian conflict, with nations or blocks of nations opposed to each other, particularly when major sources of raw materials or resources essential to the continuity of Group's supply or to its industrial partners are located in the territories concerned.

Criticality: *Intermediate*

a) Main risks

The Group's needs for critical materials or products may be connected to markets within a reduced area or in markets subject to growing pressures, notably due to the structure of and the trends of the industrial offer or to the increasing competition arising from new uses. This pressure is due, in particular, to the growing needs of information systems and the needs of the players in the energy sector, especially those related to climate transition. These market pressures may increase the supply costs of certain critical products or services and, as a result, reduce supply for some suppliers in response to a reduction in their margins. This risk is currently heightened due to inflationary pressures on the price of raw materials and components needed for operations.

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The Group uses technologies, mainly in the fields of nuclear energy, hydropower and renewable energy, electrical storage and mobility, which require materials and products which access may be highly sensitive [1]. The scarcity of or conditions of access to certain raw materials may be critical to the Group due to limits of a geological, geopolitical, industrial, regulatory nature or for reasons related to competition, particularly in a context of energy transition. Some crisis, such as the Covid pandemic, may also exacerbate or generate difficulties regarding access to certain products, materials or services required for the Group's activities and may render the provision of certain services particularly complex or even delay their completion. Development, in particular related to storage/disposal, expansion of renewable energies and the market penetration of low-carbon electricity, could create problems regarding access to certain materials: lithium for batteries, ferromagnetic rare earths for wind power, indium or selenium for solar energy. These difficulties could limit the Group's ability to achieve its development objectives. In addition, control of the conditions under which raw or semi-finished materials are extracted, processed, packaged or made available for the Group's needs may be subject to provisions calling to reinforce control over regulatory requirements and enhance the duty of care.

Supplier panels

The Group currently depends, in certain fields, on a limited number of industrial players with specific skills and the required experience. This situation reduces competition in these markets where EDF acts as a buyer. It creates a risk of exposure for the Group to the failure of one or more of these suppliers or of service providers with specific expertise. Beyond the existing large groups, it is the small and medium-sized French companies that, together, represent the majority of the Group's industrial suppliers. The trend towards financial fragility, observed over the last 10 years or so and fueled by the successive international crises, continues, although the number of bankruptcies is limited and they generally result in a takeover and an opportunity to revive the business.

Contractual relations and partnerships

Relationships with partners involved with EDF in completing these projects may also be a source of difficulties. Trade tensions between the United States and China could have an impact on the performance of some of the Group's activities and projects, given the materials, technologies and partnerships involved.

These risks may be aggravated by conflicts between nations or blocs of nations, and in particular, to date, the Ukrainian conflict, when major sources of raw materials or of production resources essential for the continuity of the Group's supply or to its industrial partners are located in the territories concerned.

b) Control actions

In 2021, the Group adopted a new Suppliers policy which aims to secure the performance objectives of projects by ensuring they may rely on panels of suppliers meeting their needs and by treating or removing risks in cases of supplier failures, quality crisis or contractual deadlocks.

Furthermore, the excell plan launched in 2020 (see section 1.4.1.1.1 "The excell plan") aims to meet these challenges, in particular those related to strengthening the sector's skills (welding plan and initiatives connected with professional and educational facilities), *improving suppliers selection and qualification processes*, taking into account the CSR issues relating to "Ethics, compliance and human rights" and to "responsible territorial development" (see sections 3.3.2 "Ethics, compliance and human rights" and 3.4.2 "Responsible regional development"), as well as increasing the number of contractual relationships which are more partnership-based. In 2021 in this context, the Group set up a "Supplier policy panel" for the nuclear sector intended to coordinate the actions of the entities involved in the relationship with suppliers. GIFEN[2] is also a key player in relaying the Group's industrial policy.

With respect to contracts entered into between the Group and suppliers of equipment or services, improved contracting processes and management of contracts, in particular through the implementation of scrutiny processes at each relevant stage, constitute a major issue as concerns controlling operations, deadlines and associated costs.

The Contract Management function, led by the Contract Management Department, aims to improve risk management and create opportunities in the management of contracts. This function calls on the involvement of Contract Managers from the departments throughout the contractual process. It is an additional *line of defense in the management of contracts*, along with the Group's senior managers and departments.

In response to the regulations and laws adopted by certain countries, including the United States and China, and in order to ensure it complies with their laws and decisions, the EDF group (EDF, NNB, Framatome, etc.) has taken precautionary measures notably as part of the organisation of its nuclear projects, particularly in the United Kingdom.

1F – Hydropower safety violations

SUMMARY

The hydroelectric facilities operated by the Group present risks with potentially serious consequences for people, property and the environment that could have a financial and reputational impact on the Group.

Criticality: □□ *Intermediate*

Hydropower safety comprises all the measures taken when designing and operating plants to reduce risks and hazards to people and property associated with water and the presence or operation of facilities.

a) Main risks

The Group's hydraulic structures present specific risks with potentially very serious consequences: breakage, overflow during floods, operating manoeuvres.

(1) The topic of Uranium supply is not considered here. It is dealt with in risk 2B "Control of the fuel cycle".
(2) The French Nuclear Energy Industry Group (Groupement des industriels français de l'énergie nucléaire), created in October 2018, aims to bring together all the actors of the French nuclear industry to ensure the attractiveness of the sector and maintain its skills.

b) Control actions

Hydropower safety is the major and permanent concern of the producer. It falls under the purview of the Group's CSR "nuclear safety, health and security" issue (see section 3.3.1 "Security, health and safety for all"). It involves three main activities:

- measures to address the major risk associated with dam or reservoir failures, through the regular monitoring and maintenance of facilities under the supervision of public authorities, mainly the French Regional Environment, Land Use and Housing Authorities (Directions régionales de l'environnement, de l'aménagement et du logement - DREAL). Of the largest dams, 67 of them are subject to a special administrative procedure implemented by the competent prefect;
- the management of facilities during periods of exceptionally high water levels, in order to ensure safety at the facilities and for the surrounding communities;
- control of operational risks: changes in the level of the water bodies or the flow of watercourses downstream of the works.

EDF regularly monitors and maintains its dams, including through continuous monitoring. The real-time readings and analysis, at each site, of multiple data (settlement, pressure, leakage measurements, combined with the visual inspection of the concrete and an inspection of the mechanical parts, *etc.*) enable EDF to conduct a regular assessment on the state of the dams it operates. In Grenoble and Toulouse, EDF teams can analyse the largest dams or those dams that are the hardest to access, remotely and in real time, using a series of sensors.

Furthermore, for each of the large dams, a danger study, including an exhaustive examination, is conducted every 10 or 15 years (for one class A dam and one class B dam respectively). This examination requires draining or an inspection of the submerged parts with sub-aquatic equipment. These operations are carried out under the strict control of the French State authorities (the Hydraulic Works Control and Safety Department, Service de contrôle et de sécurité des ouvrages hydrauliques, within each DREAL).

At the organisational level, the Hydropower Safety Inspector prepares an annual report for the Chairman and CEO of EDF, to whom he or she reports directly, as well as reporting to those involved in hydropower safety (See section 1.4.1.3.1.3 "Hydropower safety"). Issued after analyses, inspections and assessments carried out by the Hydropower Safety Inspector, this report aims to give an opinion on the level of hydropower safety of the Group's installations and provide a basis for reflection and progress to ensure its improvement and consolidation. This report is made public on the Group's website.

1G – Risk of supply/demand imbalance within EDF

SUMMARY

A reduction in the generation of the nuclear fleet, combined in particular with a massive return of alternative suppliers' customers to EDF, could create an imbalance between the supply of and demand for electricity within EDF's scope, which could result in significant purchasing requirements on the wholesale markets. Such a situation could have financial consequences for the Group.

Criticality: UD *Intermediate*

a) Context

The risk of an imbalance between electricity supply and demand within the EDF scope over the winter of 2023-2024 is decreasing compared to the previous winter due notably to better forecasted winter availability at EDF's nuclear power plants and to the continued sobriety effect, observed since the summer of 2022, on consumption.

Nevertheless, due notably to the uncertainties about the geopolitical context, market prices remain high, which therefore keeps the impact of any electricity purchases on the markets by EDF at a high level in the event of generation contingencies.

Given the thermal sensitivity of the consumption of some of EDF's customers, such a situation could mainly occur during a major cold and it would be worsened, should circumstances dictate, in a situation of low wind affecting wind power generation and the liquidity of the short-term markets. This risk cannot therefore be anticipated beyond a few days, depending on the weather forecasts.

b) Main risks

In the event of a proven imbalance, EDF may be compelled to purchase very sizeable energy volumes on short-term markets, at very high prices. The consequence for EDF is therefore financial. If market liquidity is insufficient to allow EDF to make the purchases necessary for balancing, the financial risks are increased because they depend on the settlement price of imbalances, which can be much higher than market prices.

c) Control actions

As part of the preparations for the winter, EDF identified, in accordance with its usual processes, the levers to be put in place, by acting on both generation and demand, and renewed some of the exceptional prevention and control actions put in place for the winter of 2022-2023.

To maximise the generation available in winter, EDF optimised the schedule for shutting down its nuclear units, by bringing forward or delaying shutdowns to free up as many weeks of high demand as possible. The operating exemptions to increase the authorised operating limits at the Cordemais coal-fired power plant were also extended.

On the demand side, the Group continued its communication campaigns to foster energy sobriety.

Finally, if the imbalance was such that the French electricity system was no longer able to balance itself, RTE would have to implement the various contracts and back-up mechanisms available to it in real time (contracted load shedding with large consumers, temporary lowering of the electricity grid voltage plan, temporary and targeted load shedding).

Communication by the public authorities, RTE and EDF has contributed to a significant drop (around -10%) in temperature-adjusted French consumption.

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1H – Risk of blackout

SUMMARY

A blackout, i.e. a widespread electricity grid incident, in a territory served by the Group, could have consequences for the Group's activities, financial position and reputation.

Criticality: ■ *Moderate*

a) Main risks

The Group may be faced with a blackout, a widespread network incident of considerable scale, or be involved in such incident, even if the triggering event occurred on a network not operated by the EDF group or was attributable to a third party.

Unlike the risk of imbalance between supply and demand, the potential causes of a blackout are due to rapidly-occurring phenomena: accidental power-supply or transmission failure, cascade failures on the transmission network, interconnection problems. The initiating event is usually a major failure in an essential equipment item for transport or, more rarely, for production, in specific, aggravating circumstances which, by triggering automatic protective devices, cause the rapid shutting down of a significant portion of the electricity system.

Unforeseeable supply breaks of this kind could create major disruption in all or part of the country, potentially lasting several hours. Thus, a blackout may negatively impact the Group's reputation among its customers and all its stakeholders, as well as impacting its financial position.

b) Control actions

Controlling this risk is at the heart of RTE's mission, as it is responsible 24 hours a day for managing the French electricity system, and balancing electricity supply and demand in France, particularly in real time. The resources implemented by RTE fall within the framework defined by the public authorities and they comply with the policies ordinary to European TSOs and established within the framework of ENTSOE (European Network of Transmission System Operators for Electricity).

EDF's contribution to risk management, over and above its regulatory obligations and in accordance with the public service contract and its responsibility as a balance manager, lies in its commitment to:

- respond to RTE's calls for tenders for the constitution of reserves;
- contract with RTE to enable coordinated planning of generation unit shutdowns and network interventions;
- guarantee compliance of the performance of its power plant and the automated mechanisms associated with the standards and formalised by contract commitments between EDF and RTE.

1I – Industrial safety violations and impact on environmental assets, including biodiversity

SUMMARY

The Group operates facilities, accidents in which could, in the event of an industrial safety failure, have serious consequences on the human or natural environment, particularly as regards biodiversity and environmental capital (air, soils and water).

Criticality: ■ *Moderate*

a) Main risks

The Group operates or has operated facilities which, in the course of their operation or dismantling, may be the cause of chronic or incidental events, or of industrial accidents giving rise to environmental impacts (risks of air, soil or water pollution) or health risks.

This risk is addressed in additional sections of chapter 3 relating to the environment, as well as in the Group's vigilance plan.

- All of the Group's facilities and projects are concerned by matters relating to biodiversity or impact on ecosystems. The main issues concern temperatures, water consumption and discharges in relation to climate change. This is particularly the case in France, where EDF is a major manager of land and natural resources. The challenge is all the more important given that the energy transition and regulatory changes are introducing more stringent requirements in terms of protecting biodiversity, controlling pollution and, more generally, managing all the impacts on our environmental heritage.
- The Group owns around 40 facilities classified as Seveso under the European Directive for the prevention and management of major industrial risks. These are essentially storage or warehousing facilities for oil, gas or chemicals. A failure to ensure industrial safety could have a negative impact on the Group's operations, financial position, legal position in relation to the duty of vigilance, or on the Group's environmental assets or reputation. Such a failure could call into question the Group's ability to meet the Group's CSR challenges on biodiversity (see section 3.2.1 "EDF's nature issues, commitments and governance").
- In addition, the Group's facilities may be located in industrial areas where there are other activities presenting the same type of risks. Accidents occurring in neighbouring facilities owned by other operators that are not subject to the Group's control could have an impact on the Group's own facilities.

Measures taken for industrial safety and the control of these risks may not be fully effective, which could have consequences for people, property and immediate surroundings. The Group may be held liable.

In case of a major accident, insurance policies for civil liability and damage taken out by the Group could prove to be inadequate, and the Group cannot guarantee that it will be able in the long run to maintain a level of cover at least equal to current cover levels.

Risks specific to nuclear facilities are further developed in section 2.2.2 "Specific risks related to nuclear activities". Risks specific to hydropower facilities are set out in risk 1F.

b) Control actions

- Risk management studies are carried out at each industrial site. They include potential health or environmental impacts: compliance with regulations, monitoring, land, water and air damage prevention and protection actions, and actions in relation to potential effects on health. These studies and control actions are reviewed at least every 10 years during ten-year inspections. They are also re-examined when significant changes in processes require an update of the risk management study and of the potential impact on the environment.
- Risk studies and control actions include ARC (Avoidance, Reduction, Compensation) measures when necessary.
- Feedback is taken into account in risk studies and control actions. In this respect, feedback from the fire that occurred on 26 September 2019 at the Seveso-classified Lubrizol plant in Rouen was included in the analyses. The Group's French Seveso sites all implement the regulatory requirements applicable to this type of facility. In addition, those sites all responded to the requests of the Prefects following the fire at the Lubrizol plant. The additional post-Lubrizol decrees on the storage of flammable liquids and toxic materials are applicable and therefore integrated into the Group's ICPE (facilities that are classified for the protection of the environment) industrial facilities.
- The industrial and natural risks (RIN) network within EDF ensures that the new requirements are monitored, appropriated and integrated on the sites.
- Furthermore, the Group mobilises significant resources for biodiversity through its corporate social responsibility commitments relating to the preservation of the planet's resources (see section 3.2 "Preserving the planet's resources").

2.2.2 Specific risks related to nuclear activities

2A – Control of radioactive waste treatment, of the decommissioning of nuclear facilities and ability to meet related commitments

SUMMARY

The provisions set aside by the EDF group to cover the expenses relating to the decommissioning of nuclear facilities in France and for the treatment, decommissioning and ultimate disposal of radioactive waste, including long-lived waste from spent fuel treatment and decommissioning, may be exposed to technical, cost and planning risks which could make them insufficient. In order to control these risks, EDF has instituted a dedicated organisation to carry out decommissioning and waste management projects covered by these provisions. The 2020-2021 audit by the DGEC on the decommissioning of halted facilities and the ASN inspection in 2021 on the management of projects for decommissioning NUGG reactors, lent strength both to the scenarios examined and to the relevance of the organisation and management for the projects instituted by EDF. However, there are still a number of exogenous factors that could have an impact on the costs of dismantling and on long-term waste management, notably: the risk of inflation, pressure on the industrial fabric and skills, possible changes in the Cigéo tax system, etc. These risk factors could unfavourably impact the estimated expenses, requiring upward revision of the related provisions and of the assets dedicated to covering them, with a negative impact on the Group's cash flow, earnings and prospects. In addition, these operations must address the CSR challenge of waste management and the circular economy.

Criticality: [illegible] *Intermediate*

a) Decommissioning of facilities which have been definitively shut down

In France, the law (Environment Code) requires every basic nuclear plant operator to prudently evaluate the expenses for decommissioning their facilities and the expenses for managing spent fuel and radioactive waste, including expenses of transport away from the site. The law also requires the setting aside of provisions corresponding to these expenses and the exclusive allocation to covering these provisions of the necessary assets also termed "dedicated assets". This obligation also applies both to installations that have already been halted, where their decommissioning has not been completed and the authority has not pronounced them to be declassified, and to installations currently in operation, in anticipation of their future decommissioning.

Currently, the operations for decommissioning EDF nuclear facilities in France (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity") chiefly concern reactors that were constructed, operated then finally shut down. These operations cover four different reactor technologies: heavy water reactor (Brennilis), sodium-cooled fast-neutron reactor (Superphenix at Creys-Malville), graphite-moderated and gas-cooled reactors (NUGG reactors at Chinon, Saint-Laurent and Bugey) and the pressurised water reactors ("PWR") at Chooz A and Fessenheim.

In the United Kingdom, the two reactors at Dungeness were permanently shut down in June 2021, those at Hunterston B in November 2021 and January 2022, and those at Hinckley Point B in June and August 2022. Under the agreements concluded in connection with the restructuring of British Energy, the costs of decommissioning EDF Energy Nuclear Generation Group Ltd.'s existing nuclear power plants will be paid by the Nuclear Liabilities Fund (NLF). If the assets of this Fund prove insufficient, these costs will be borne by the British Government (see section 1.4.5.1.2.2 "Nuclear generation"). In June 2021 an agreement was reached with the British Government (BEIS), which specifies EDF Energy's role in the fuel disposal phase, how and when costs will be recovered, and the terms under which the plants will be transferred to the government. This agreement updates the Nuclear Liabilities Fund Agreement (NLFA).

- The decommissioning operations under way in France are a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no feedback internationally. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists.
- It will be construed that any provision relating to a future expense presents a risk which may in particular relate to changes in the administrative, regulatory, technical, economic, etc. context.

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- These uncertainties and contingencies could lead to revisions of the amounts provisioned. The provisions set aside may not cover the costs actually incurred in due course. Accordingly, in the United Kingdom, the agreements in force provide that the expenses related to the unloading and evacuation of the fuel, to be covered by the NLF, must be evidenced by EDF Energy and approved by the French government; failing this, they would remain the responsibility of EDF Energy.
- For nuclear power plants which EDF does not operate, but has financial interests in (China and Belgium), the Group is exposed financially in proportion to its shareholding in its contribution to future decommissioning costs.

Control actions

- For the present and future decommissioning of nuclear installations in France, and for the long-term management of waste, EDF has set up a dedicated organisation for defining the project covered by the legally-prescribed provisions, in technical terms and in terms of cost and lead times.
- The feedback from the virtually-completed decommissioning of the Chooz A PWR reactor, and the information derived from the Fessenheim studies, together with the early information on the preparation for decommissioning of that site's reactors, render as robust as possible the studies and the estimate for the future cost of decommissioning the currently operational EDF nuclear fleet.
- The Group regularly conducts an update of the key assumptions underpinning the provisions (see section 6.1, note 15 "Provisions related to nuclear generation and dedicated assets" to the consolidated financial statements for the financial year ended on 31 December 2023). These information items are set out in particular in the triennial report drawn up by EDF pursuant to the French Environment Code, describing the evaluation of the expenses of decommissioning and waste management, the methods applied for calculating provisions corresponding to those expenses, and the options adopted regarding the composition and management of the assets assigned to cover these provisions. This report, together with its annual updating document, is submitted for assessment by the competent authority (DGEC).
- The amount of provisions, in accordance with the French Environment Code, is subject to control by the DGEC (the French General Directorate for Energy & Climate), which verifies in particular the adequacy of the provisioned expenses and imposes a cap on the discount rate for the provisions.
- The 2020-2021 audit by the DGEC on the decommissioning of halted facilities (excluding PWR) and the ASN inspection in 2021 on the management of projects for decommissioning NUGG reactors, lent strength both to the scenarios examined and to the relevance of the organisation and management for the DP2D projects (Directorate for decommissioning and waste projects), which inspection found that *"the process for estimating and for annual review is robust, and allows for good traceability of the assumptions used and the original data. The provisions are consistent with the baseline scenarios of the projects and cover the full scope of the expenses of the audited scope"*.
- Governance in terms of securing the financing of nuclear expenses has been strengthened through the development of a Group policy, validated by the Board of Directors on 30 June 2021, and the creation in 2021 of a Nuclear Expense Assessment Control Function in accordance with Decree 2020-830 of 1 July 2020.
- In the United Kingdom, the risk of decommissioning cost recovery has been significantly reduced by the agreement with the government. Additional risk control actions are:
  - > maintaining the quality of relations with the government and the NDA (Nuclear Decommissioning Authority);
  - > strengthening monitoring and contractual compliance arrangements, as well as reporting and performance management.

Plans are being drawn up to enable the transfer, under the best possible conditions, of the reactors to be dismantled to the Nuclear Restoration Services (NRS, formerly Magnox), which will complete the dismantling once the fuel has been removed.

b) Waste management

In France, EDF is responsible for all radioactive waste produced during:

- the operation of the nuclear facilities operated by the Group;
- processing operations for spent fuel from reactors operated by EDF;
- decommissioning operations at the nuclear facilities operated by the Group (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity – storing conditioned ultimate waste").

In this regard, EDF has allocated provisions for the long-term management of such waste (see legal framework as set out in paragraph a) above). For each category of waste (high, medium, low or very low activity), a specific management channel is identified.

Most of the provision for the long-term management of waste concerns high-level waste (HLW) and long-lived intermediate-level waste (ILW-LL). It is based on the assumption of geological disposal, which is the international benchmark for the ultimate disposal of long-lived high-level and intermediate-level radioactive waste, and on the work carried out in 2006 with ANDRA, the public authorities and other producers of radioactive waste (see section 6.1, note 15 "Provisions related to nuclear generation and dedicated assets" to the consolidated financial statements for the financial year ended on 31 December 2023 and see section 1.4.1.1.2.3 "The issues relating to the nuclear activity").

The reference cost of the storage/disposal project for high-level waste (HLW) and for long-lived intermediate-level waste (ILW-LL), which enables the associated provisions to be drawn up, is laid down in the Order of 15 January 2016.

Law no. 2006-739 dated 28 June 2006 provides for a dedicated storage facility for long-lived low-level waste (LLW-LL), such as the graphite of the NUGG reactors. The overall industrial scheme for the management of all LLW-LL is being defined within the framework of the PNGMDR (French National Plan for the Management of Radioactive Materials and Waste) (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity").

In the United Kingdom, the agreements signed with the authorities (see section 1.4.5.1.2.2 "Nuclear generation") stipulate that responsibility and some of the costs associated with the management of certain radioactive waste are transferred to the British government. The supplementary agreement entered into with the government in 2021 clarifies how the costs associated with waste management will be recovered.

Main risks

- As a nuclear operator, the Group is liable for assuring the safety of its own waste treatment and disposal facilities.
- As a producer of radioactive waste, the Group is liable for identifying the appropriate waste management processes. When the waste management processes are operated by other players, the Group may be liable particularly in the event of an accident with damage to third parties or to the environment due to nonconformities of such waste with the specifications defined by the operators of the facilities concerned.
- For the geological storage facility project developed by ANDRA to accommodate high-level waste and long-lived intermediate-level waste (CIGEO), the risks of overcosts persist at both design phase and construction phase. Moreover, work on the taxation of this project is still expected.

- With regard to the storage of low-level radioactive waste, provisions may need to be updated in the light of the conclusions of studies carried out as part of the PNGMDR or the design of the future storage site developed by ANDRA.
- Pursuant to the restructuring agreements of British Energy, EDF Energy Nuclear Generation Ltd. remains financially, technically and legally liable for the management, storage and reprocessing of waste that does not come within the scope of the aforementioned agreements.
- Failure to control the costs and time-frames for completion with respect to the solutions for the treatment and ultimate storage of waste for which the Group is liable would have a negative impact on the Group's financial position and reputation.
- For nuclear power plants which EDF does not operate, but in which it has financial interests (Belgium, China), the Group is exposed financially in proportion to its shareholding to contributing to future expenditures related to the management of spent fuel and waste.

- The control strategy consists in developing and securing radioactive waste treatment channels to meet the present and future needs of the Group's nuclear facility decommissioning and operating projects. To this end, the Cyclife subsidiaries are continuing to consolidate their organisation in order to offer a range of adapted waste treatment solutions.
- For CIGEO (the geological storage facility project developed by ANDRA for high-level waste and long-lived intermediate-level waste), the control strategy consists in securing the project by proposing to ANDRA and provide support for the development strategy and implementation of the disposal, in order to meet the target cost of €25 billion[1] (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity"). To this end, a cooperation agreement was signed at the end of 2020 between EDF and ANDRA.
- The Group continues to participate, as a producer, in the various working groups on the storage of graphite waste. In addition, EDF is very actively involved in the PNGMDR steering Committee.
- In the United Kingdom, the establishment of arrangements for the management of spent fuel from AGR and PWR reactors continues:
  - > through its safety and sustainable development policies, EDF Energy implements actions to continuously improve and minimise the quantities of spent fuel and waste generated;
  - > the arrangements for the management of spent fuel from the AGRs were defined at the time of the restructuring of British Energy. Spent fuel from AGRs is disposed of at the Sellafield reprocessing site for long-term storage. EDF Energy finances this storage (as well as the reprocessing carried out in previous years);
  - > the Sizewell B PWR spent fuel is stored on site in a dedicated dry storage facility. This will ensure safe storage of all spent fuel generated during the lifespan of Sizewell B. At the end of this long-term surface storage, the spent fuel from the Sizewell B PWR will be transferred to the future British geological storage facility. This strategy is approved by the NDA and financed by the Nuclear Liabilities Fund.

c) Provisions and management of dedicated assets

Note 15.1 "Nuclear provisions and dedicated assets in France" to the consolidated financial statements as at 31 December 2023 sets out the amounts of expenses under the economic conditions at the end of 2023 as well as the corresponding provisions relating to:

- the future decommissioning of the nuclear electricity generation fleet in France and of the currently-halted facilities;
- the management of the last fuel cores;
- the long-term management of waste and the recovery and packaging of waste present in the facilities.

This note also provides analyses of the sensitivity of the Group's provisions and income to a change in the discount rate for the various categories of provisions. All these provisions represent several tens of billions of euros.

Note 17.1 "Other provisions for decommissioning" to the consolidated financial statements for the financial year ended on 31 December 2023 presents the same items for Framatome and Cyclife France and their basic nuclear facilities in France.

Note 15.1.2 "EDF's dedicated assets" to the consolidated financial statements for the financial year ended on 31 December 2023 presents the realisable value of EDF's dedicated asset portfolio to cover the costs of long-term commitments in the nuclear industry (radioactive waste and deconstruction) as of 31 December 2023. In the United Kingdom, funds for nuclear commitments are managed by an independent body set up by the UK government (Nuclear Liabilities Fund – NLF) for the existing nuclear fleet. For HPC-related liabilities, the funds will be managed by FundCo, a body (Trust) independent of HPC's shareholders (EDF Energy and CGN) and the UK Government. Operators therefore have no assets to manage for this purpose (see section 1.4.5.1.2.2 "Nuclear generation").

- All the risks and uncertainties relating to these provisions could have a significant negative impact on the Group's financial position.
- In the event of a significant change in the provisions that determine the reference base of earmarked assets, additional provisions may be necessary to adjust the value of these assets. This would have a significant negative impact on EDF's financial position. Moreover, stricter regulations at the national level (in particular those that might impact the base for determining the dedicated assets to be constituted by EDF[2]) or European level may lead to more stringent requirements regarding the constitution of dedicated assets and have a significant impact on EDF's financial position.
- Although these assets are constituted and managed in accordance with strict prudential rules, price fluctuations in the financial markets or changes in valuation may have a material adverse impact on the value of these assets (for a sensitivity analysis, see section 5.1.6.1.6 "Management of financial risk of EDF's dedicated asset portfolio"). This could lead EDF to allocate additional amounts to restore the value of these assets. Such events could have a material adverse effect on the Group's financial position.
- The unavailability or insufficient amount of the dedicated assets to hedge the expenditure schedules of the Group's long-term commitments could have a negative impact on the Group's financial position and reputation.

(1) Economic cost 2011.
(2) The report of the French Cour des Comptes to the Senate Finance Committee on the decommissioning and dismantling of nuclear power plants, published on 4 March 2020, recommends that the costs of all decommissioning preparation operations, post-operational expenses and the cost of taxes, levies and insurance premiums directly attributable to decommissioning sites should be phased into the long-term expense categories.

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Governance arrangements

In order to ensure the control of provisions and the management of dedicated assets, the Group has put in place specific governance arrangements:

- the Nuclear Expense Assessment Control Function, in accordance with Decree 2020-830 of 1 July 2020;
- the Dedicated Asset Portfolio Operational Management Committee;
- the Nuclear Commitments Monitoring Committee (CSEN) of the Board of Directors.

2B – Control of the fuel cycle

SUMMARY

In addition to the control of nuclear safety (risk 2C), the operation of existing nuclear facilities (risk 1B) and New Nuclear projects (risk 1A), the Group is exposed, in the context of nuclear activities, to the control of the nuclear fuel cycle.

Criticality: ⊟□ *Intermediate*

a) Context

The Group's operating costs include nuclear fuel purchases.

EDF is supplied with uranium, conversion and enrichment services, fuel assembly supplies and spent fuel reprocessing operations for its nuclear fleet in France and the United Kingdom.

In France, EDF has set aside provisions for spent nuclear fuel management operations (transport, processing, conditioning for recycling) (see note 15 "Provisions related to nuclear generation and dedicated assets" to the consolidated financial statements for the financial year ended on 31 December 2023) based on the price and volume conditions of the master agreement signed with Orano in December 2008 and broken down in the successive implementation agreements (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity"). These provisions amount to approximately €12 billion.

Note 15.1.1.5 "Inflation rate, discount rate and analyses of sensitivity" and note 15.1 "Nuclear provisions and dedicated assets in France" to the appendix to the consolidated financial statements for the financial year ended on 31 December 2023 set out the connection between "costs based on year-end economic conditions", which represent estimated amounts as at 31 December 2023 and "provisions made at present value".

b) Main risks

Nuclear fuel supply

Prices and volumes are subject to fluctuations that depend on factors beyond the Group's control, including political and economic factors (in particular, profitability outlook for mining investments, supply/demand imbalance or supply-side shortage, associated, for example, with the occurrence of an operating incident in a uranium mine or cycle plant, a delay in commissioning a new mine, or an event leading to institutional instability in a producing country, or restrictions/sanctions/embargoes, *etc.*).

Nuclear fuel logistics

The storage and transport of new or spent nuclear fuel is an industrial activity that requires specific safety and security measures. These requirements could become more stringent, generating additional difficulties and costs for the Group.

In the event of failure of said industrial logistics, the Group could slow down, or even interrupt, all or part of the generation of electricity at the affected sites, either due to the non-delivery of new fuel assemblies or due to the saturation of storage facilities. This could have a negative impact on the Group's financial position (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity").

The constraints on the transport of nuclear materials remain strong, notably in view of the increase in security and regulatory requirements.

In view of the saturation of the existing storage pools, and of the risk of the long-term impossibility of implementing multi-recycling in its third-generation pressurised water reactors, or of recycling in fourth-generation reactors termed "GEN IV", the fuel cycle could be jeopardised. This would have both operational and financial consequences.

Provisions for spent fuel disposal

The amount of provisions currently set aside to cover the period not addressed by the current contract with Orano takes into account the provisions of the preliminary agreement signed at the end of September 2023 to govern the drafting of the contract with Orano for the 2024-2026 period.

c) Control actions

The supply risk management strategy consists of progressively securing the portfolio through competitive, diversified and long-term contracts in line with the objectives for covering requirements presented to the Board of Directors. Fixed-price contracts are preferred, or contracts including a limited market-price component, the latter being systematically structured to reduce exposure to the market.

In the field of transport, the control actions implemented by EDF include strengthening the unpredictability of transport and ties to the authorities (HFDS/IRSN/ASN), the prevention and reduction of potential impacts on the fleet, as well as the development of alternative drivers (anticipation of deliveries, inter-unit transfer, *etc.*).

The control of spent fuel storage capacity is essential to preserve the balance of the closed cycle. A new large-capacity spent-fuel storage pool will be commissioned by EDF in 2034 at the site at La Hague (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity"). In the meantime, Orano plans to densify its existing pools on the site and is developing a dry storage solution for spent fuel.

Lastly, EDF's strategy for the fuel cycle is to maintain the long-term perspective of a closed cycle based on GEN I3 reactors.

2.1 Nuclear safety violations during operation resulting in nuclear civil liability

SUMMARY

In addition to controlling industrial performance and given the importance of nuclear generation within the EDF group, the way EDF exercises its responsibility as a nuclear operator – with nuclear safety being the number one priority – determines the Group's overall performance. As a result of its nuclear activities, the Group is exposed to nuclear civil liability risks.

Criticality: ☐☐ *Intermediate*

a) Context

The primary responsibility for nuclear safety lies with the nuclear operator throughout the operating cycle of nuclear reactors. This principle, along with the principle of control, is reaffirmed in the EDF group's nuclear safety policy. Liability as a nuclear operator falls under the "nuclear safety, health and security" aspect of the Group's CSR policy (section 3.3.1 "Security, Health & Safety for all"). The Chairman and Chief Executive Officer delegates this responsibility to the Group Senior Executive Vice President with responsibility for the Nuclear and Thermal Generation Directorate and Group Senior Executive Vice President with responsibility for the Projects and Construction Directorate, who then sub-delegate it to the Directors of the Divisions involved, who in turn sub-delegate it to the Unit Managers.

b) Main risks

The top priority is nuclear safety, as defined in the Group's Nuclear Safety Policy, and this is a factor in the industrial performance of the nuclear business as a whole. Nuclear safety takes into account the design by the nuclear operator and the operation by the designer. Failure to control operating safety could have major or even vital consequences on the value of the Group's industrial assets, its financial position and its development outlook, or even on the continuation of its industrial activity.

Any serious event related to the Group's nuclear activities, with a potential or proven impact on the population, the environment or on a territory, could lead to a significant increase in the operating constraints of the Group's industrial sites, or even the partial or total interruption of the Group's nuclear activities. Such an event could have a significant negative impact on the Group's activities, financial position, strategy and reputation.

The nuclear civil liability scheme that applies to nuclear facility operators of States, which are parties to the Paris Convention, and the insurance applicable thereto, are described in section 2.1.3.7 ("Insurance"). This scheme is based on the principle of the operator's strict liability. Accordingly, if an event occurs that causes nuclear damage, the Group would be automatically liable up to a monetary maximum set by the law applicable in the country, regardless of the source of the event that caused the damage and any safety measures that may have been taken.

In countries where the Group operates nuclear facilities, statutory liability limits may be increased or repealed. For example, the protocols amending the Paris Convention and the Brussels Convention, in force since 1 January 2022, provide for these maximum amounts to be increased and a substantial expansion of the loss to be covered. The operator's liability in France amounts to €700 million for nuclear damage caused by each nuclear accident, and €80 million in the event of transport of nuclear substances for a given nuclear accident. The entry into force of the other amendments introduced in these protocols is likely to further increase the cost of insurance, and insurance covering this liability may not always be available or maintained. Insurance coverage for the Group's nuclear operator's civil liability and for the transport of nuclear substances is described in section 2.1.3.7 "Insurance".

Property damage to EDF's nuclear facilities is covered by insurance programmes (see section 2.1.3.7 "Insurance"). Despite this cover, any event that may cause significant damage to a nuclear facility of the Group could have an adverse impact on the Group's business and financial position.

Lastly, the Group cannot guarantee that the insurers that cover both its liability as a nuclear plant operator and property damage to its facilities will always have available capacity or that the costs of cover will not significantly increase, particularly in light of the impacts on the insurance market of events such as the nuclear accident in Japan that occurred in March 2011.

c) Control actions

In view of these risks, and pursuant to the Group's policy, each Group company operating nuclear facilities acts within the framework of legal and regulatory requirements specific to the country in which it operates and is obliged to comply with them. Each one ensures the nuclear safety of its facilities and constantly improves the level of this safety, based on its methods, skills and values. The Group develops ordinary principles aiming to obtain the best level of prevention of incidents and protection of workers, the public and the environment. These principles apply to all stages of the activity, both for new projects and for the existing power plants or sites being decommissioned. The Group closely involves its industrial partners in the achievement of these objectives.

Each company is responsible for the proper conduct of its nuclear activities and sets the appropriate delegations at each decision and action level. The Group guarantees the allocation of the necessary resources for nuclear safety.

An internal entity in charge of an independent safety evaluation is put in place at the level of each site, each company and of the Group. Each one reports to the manager concerned, independently of other managerial functions. Furthermore, each one has the duty to alert the superior hierarchical level if the reaction of the level directly involved is not what is expected.

The Group's nuclear operating companies regularly receive international evaluation teams (WANO[1], Peer Review and OSART from the IAEA[2]).

Clear and honest information communication on the events and their possible impacts are promoted within the Group. This high standard of dialogue is sought and maintained with the salaried personnel and their representatives, subcontractors, the supervisory authorities (Nuclear Safety Authority in France, Office for Nuclear Regulation in the United Kingdom), local government and all other nuclear safety stakeholders.

(1) OSART: Operational Safety Analysis Review Team; IAEA: International Atomic Energy Agency.
(2) WANO: World Association of Nuclear Operators.

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The Nuclear Safety Council, chaired by the Chairman & Chief Executive Officer of EDF, meets several times a year and, periodically reviews the annual nuclear safety assessment for the EDF group. A General Inspector for nuclear safety and radiation protection (IGSNR) is appointed by the Chairman and Chief Executive Officer to whom he/she reports. He/she carries out inspection assignments regarding all of the nuclear activities of the EDF group. Each year, he/she issues an opinion on safety within EDF. The report is presented to and discussed by the Nuclear Safety Council. It is then made public (see section 1.4.1.1.4.3 "Nuclear facilities and safety").

2.2.3 Market regulation, political and legal risks

3A – Changes in public policies and in the regulatory framework in France and Europe, in particular ARENH and post-ARENH

SUMMARY

Public energy policies and sectoral regulations are scalable, even on short notice, and expose the latter to a significant regulatory risk. These changes may impact, notably, in France, the market architecture, regulated sales tariffs, the tariffs for using the public electricity networks (Tarif d'utilisation du réseau public d'électricité - TURPE), or the taxation applicable to the company. They may also have an impact on the regulatory framework for energy saving certificates, CO_2 emission quotas or the mechanisms for financing the Group's investments through the European taxonomy.

The evolution of the architecture of the European electricity market is very advanced. It aims notably to reduce the dependence of retail electricity prices on fluctuating gas prices, and to create more favourable conditions for upstream investment (generation of low-carbon electricity) and downstream investment (electrification of uses).

The French State's guidelines on the post-ARENH market announced on 14 November 2023(1) could be included in a draft act to be presented in 2024.

The consequences of regulatory changes are potentially significant for the Group, insofar as they may affect its financial position, limit its ability to finance its strategy or meet its commitments to climate protection, or slow down its development in relation to its competitors.

Criticality: ■■■ *High*

a) Context

In France, the context determining the scale of this risk (laws, regulations, policy directions) is as follows:

- **Review of the French energy and climate strategy (SFEC):** After several rounds of dialogue and consultation with stakeholders in the sector from 2021 to the end of 2023, the government is preparing an "energy sovereignty" law, which could contain an energy planning component(2) – the first of its kind – which will be followed by decrees: multi-year energy programme (Programmation pluriannuelle de l'énergie – PPE), national low carbon strategy (Stratégie nationale bas carbone – SNBC) and national climate change adaptation plan (Plan national d'adaptation au changement climatique – PNACC). In the preparatory documents, the government announces its energy trajectory for 2030, which is more ambitious than that set out in the previous multi-year energy programme, with, as key points:
  - > a reduction in fossil energy consumption from 40% to 45% in 2030 compared to 2012; a reduction in final energy consumption that is tending towards 30%, and a share of electrical energy produced by nuclear facilities that will represent more than 60% in France in 2035;
  - > the revival of nuclear power (preparation of the EPR2 construction programme, development of the SMR sector, extension of the operating lifespan of units capable of doing so);
  - > the decarbonisation of thermal means of generation, in particular coal-fired ones, from 2027;
  - > the need to develop flexibility offerings and renewable energies;
  - > it should be noted that the decarbonisation trajectories for 2050 have not yet been set: generation does not meet the consumption levels foreseen for this period, and should be the subject of new scenarios and working groups in 2024 with a view to their finalisation.
- **to support the SFEC process,** two draft laws were adopted which, without amending the development targets set by the SFEC, aim to facilitate and accelerate the roll-out of new renewable and nuclear facilities:
  - > the law on accelerating renewable energy generation was passed by Parliament on 7 February 2023, aimed in particular at easing the constraints on the development of the various renewable energies: hydropower, onshore wind power, offshore wind power, and solar power;
  - > the law "on the acceleration of procedures related to the construction of new nuclear facilities near existing nuclear sites and the operation of existing facilities", promulgated on 22 June 2023, facilitates administrative procedures to accelerate the construction of new EPR2-type nuclear reactors, planned on existing nuclear sites. This law also removed the principle of a 50% cap on the share of nuclear energy in national generation;
  - > among the important texts making it possible to simplify the deployment of new generation facilities, the decree of 28 December 2023 defines, for both renewable energies and nuclear facilities, the power criteria enabling projects to meet an imperative reason of vital public interest (RIIPM) and to be exempted from a certain number of constraints relating notably to the preservation of protected species.
- **ARENH (regulated access to legacy nuclear electricity):**
  - > since 2023, the "maximum overall volume of electricity that can be transferred" by EDF to alternative suppliers under the ARENH has returned to its previous level of 100TWh per year, after an exceptional increase to 120TWh in 2022(3). As a result, if suppliers' requests for ARENH exceed 100TWh during the year, the volume of ARENH transferred will be capped;

(1) *Bruno Le Maire, Agnès Pannier-Runacher and Luc Rémont press conference of 14 November 2023.*
(2) Other issues are covered by the draft act, in particular consumer protection and the post-ARENH framework.
(3) Order of 11 March 2022 setting the maximum overall volume of electricity to be sold by Électricité de France in respect of regulated access to legacy nuclear electricity, pursuant to Article L. 336-2 of the French Energy Code.

> from 2024, the calculation of ARENH rights is revised downwards *via* the "closing coefficient", which makes it possible to adjust the power consumed in line with the share of historical nuclear power in the French energy mix[1]. In practice, this will not change the quantities of ARENH available to alternative suppliers, but it will reduce capping and improve visibility for all players. This new calculation of rights also has the effect of reducing the volumes of ARENH available to suppliers for supplying network operators' losses (these volumes are not subject to capping).

- **emergency measures:**
  > **a €3 billion "emergency fund"** was set up in 2023 to assist major companies particularly affected by the price crisis. The criteria for entitlement to these exceptional French State aids are controlled by the Community decision relating to the Ukraine emergency measures. It was renewed in 2024 with significantly lower amounts.

  > **a "tariff shield"**: the French State had decided, for 2023, to cap the increase in the electricity regulated sales tariffs (TRVE) at +15% including tax (including tax measures). For 2023, the company was compensated for the corresponding loss of revenue as a public service expense for its sales under the TRVE as well as under the market offering to customers entitled to the TRVE tariffs. The TRVE level excluding tax was stable in 2024. The French State decided to set the TICFE (domestic tax on final consumption of electricity) at €21/MWh, which means an average increase in the TRVE of less than 10% including tax, as promised (8.6% for the Basic options, 9.8% for the HP/HC options). In 2024, there will be no shortfall in TRVE revenue that will require compensation for the company, except in interconnected areas where the tariff shield is activated at a level of 10% (including tax) for business customers subscribing to yellow and green tariffs.

  > **a "shock absorber"**: consisting of a reduction in the supply portion of customer invoices beyond a price threshold, it was set up for the benefit of SMEs and local authorities not eligible for the TRVE and the tariff shield mentioned in the previous point. The 2024 Finance Law provides for the continuation of this system for 2024 by increasing the trigger threshold for the energy portion to €250/MWh (€180/MWh in 2023) but also increasing the coverage of the invoice to 75% (50% in 2023),

  > **a "contribution levied on the infra-marginal electricity generation windfall" (CRIM)**: the 2024 Finance Law extended until 31 December 2024 the system introduced in 2023 following regulation (EU) 2022/1854 of 6 October 2022 introducing a contribution, above a ceiling expressed in MWh prices, on the revenues of electricity generators from certain primary energy sources. EDF falls under this measure for its power generation as follows: nuclear (excluding revenues derived from ARENH volumes made over to competitors to supply end customers or network operators in order to offset their losses); hydropower from free-running water, and part of the energy generated at dams (controllable hydropower from large-capacity lakes and dams is not covered by this measure); thermal fire generation (excluding coal-fired). The new ceiling threshold for 2024 was set at €94/MWh for nuclear with a collection rate of 50% of revenues above this threshold.

- **public service expenses and income:**
  > in France, public service missions are assigned to EDF by the law[2], which also provides for the full compensation of expenses *via* the general State budget. Nevertheless, financial flows may differ from one year to the next, since the French State may accelerate or defer the settlement of the amounts paid to EDF, when the amounts of the expenses recognised exceed or fall short of forecast.

> on 13 July 2023, the French Energy Regulation Commission (Commission de régulation de l'énergie - CRE) discussed, as it does each year, the amount of public service expenses to be compensated in 2024. In view of the significant price movements observed on the markets, and as permitted by a special provision of the 2023 Finance Law, this deliberation also included a recalculation of the expenses to be compensated for 2023. The latter thus amounted to €8.2 billion (+€18.4 billion in expenses relating to the tariff shields and €[10.2] billion in SPE expenses excluding tariff shields). This new calculation, requested and obtained by EDF, therefore led to a positive assessment of the expenses to be compensated for 2023 (amount owed by the State to EDF) and made it possible to offset the expenses as closely as possible. Market price variations may still be significant in 2024 and lead EDF to ask the CRE for a new assessment of the 2024 expenses to be compensated (estimated by CRE at €[0.5] billion last July), as allowed by the 2024 Finance Law.

- **the European agreement on the revision of the market architecture:** at the end of a fast-track procedure, the revision of the Electricity Regulation and the Electricity Directive, launched on 14 March 2023 by the European Commission and which introduces provisions making it possible to introduce a long-term dimension (PPA, CfD, forward markets) into a current market design focused on short-term operation, led to a three-way agreement at the end of 2023. The texts must still be formally approved by the Council and the European Parliament before April 2024.
- **the State's guidelines announced on 14 November 2023 on the post-ARENH market framework.** These guidelines set out a framework favourable to the development of medium- to long-term contracts (commercial offers and industrial partnerships). Furthermore, it plans to set up a system to levy a fraction of high-priced revenues from nuclear energy to be redistributed by the State to consumers (see section 1.3.2 "Strategy priorities"). These guidelines could be translated into legislative provisions.

The European context is also significant:

In a context of multiple crises, of war in Ukraine and of intense international competition, 2023 saw changes to several European texts which are of significance for the Group:

- **electricity market reform** (see above paragraph on the "European agreement on the revision of the market architecture").
- **launch of a revision of the regulation on the integrity and transparency of wholesale energy markets (REMIT)**. Notably, the proposed revision grants new powers to the Agency for the Cooperation of Energy Regulators (ACER) and clarifies the rules relating to cross-border cases. The revised text also requires market participants based in third countries but carrying out transactions in the EU to appoint a representative in the Member State in which they are active;
- **end of negotiations on the revision of the Renewable Energy Directive (RED III)**, which sets a target of 42.5% for renewables in the European energy mix, accelerates permitting for renewable energies, strengthens sustainability criteria for biomass, and introduces exemptions for bioliquid power plants in the outermost regions. At the same time, a Commission recital and communication recognise the complementary role of decarbonised energies in contributing to the EU's climate objectives.
- **finalisation of the texts relating to renewable hydrogen**, including the recognition of the role of low-carbon hydrogen generated using electricity from the grid or nuclear power. A delegated act on low-carbon hydrogen is expected in 2024, which must specify in detail the methodologies for calculating CO_2 emissions in order to comply with the definition included in the "gas and hydrogen" package

(1) The Decree of 27 July 2023 published in the Official Journal of 24 August 2023 lowered the value of the closing coefficient from 0.964 to 0.844 from 2024.
(2) Notably by Articles L. 121-1 *et seq.* of the French Energy Code.

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- **revision of the European Union's Emissions Trading System (ETS)** to strengthen the existing system by gradually reducing the total number of rights to pollute or allowances allocated free of charge over the next few years.

b) Main risks

- **Risks associated with the existing ARENH system:** As long as the ARENH system exists (until the end of 2025), it exposes EDF to the following risks:
  - > the general framework of the ARENH system, due to its optional nature, gives suppliers opportunities to arbitrate between the ARENH price and market prices, to EDF's detriment. It exposes EDF to major uncertainties that negatively impact the effectiveness of its risk management in energy markets. As a result, EDF is exposed to falls in wholesale electricity market prices when their total level (energy + capacity) is below the ARENH price (currently €42/MWh) for the year of delivery in question. Conversely, the positive impact of wholesale electricity market price increases is limited when their total level (energy + capacity) is above the ARENH price;
  - > in addition, there is the risk resulting from the potential practices of so-called "intermittent" suppliers of reducing their portfolio before the onset of winter to resell the ARENH volumes thus made available on the markets.
- **Risks relating to the economic framework for the operation of the historic nuclear fleet after the ARENH** comes to an end: the European regulation currently being adopted encourages the use of long-term contracts and gives Member States the option of using "Contracts for Difference" (CfD) for all low-carbon resources. At the national level, the draft law on energy sovereignty enshrines this market framework and establishes a system of levying a fraction of high-price nuclear revenues to be redistributed to consumers by the State. The risks and uncertainties concerning regulatory changes are potentially significant for the Group, insofar as they may adversely affect its financial position and limit its ability to successfully complete its industrial project. Moreover, there is a risk that the markets will be depressed long term, leading to revenues that are below financial projections.
- **Risks of upward spiralling of the levy on electricity generators' infra-margin revenues:** the system was extended by the 2024 Finance Law (Article 54 defines a new period of application, from 1 January 2024 to 31 December 2024).
- **Risks related to the compensation of public service expenses:** in 2024, EDF should receive compensation from the French State for energy expenses. In addition, the shock absorber will give rise to compensation from the French State for EDF. The amounts have not yet been defined:
  - > figures have not yet been consolidated and are subject to considerable uncertainties in a market context that remains volatile; the precise compensation arrangements (implementation date, mechanism for neutralising flows, etc.) also remain uncertain and have not yet been validated;
  - > these uncertainties entail a capital-outflow risk for EDF (a risk of EDF making overpayments in 2024 which would only be offset in 2025).
- **Other price and tariff risks:**
  - > **TURPE7** (Tariff for using the public electricity networks, seventh period): the TURPE6 HVA/LV (high-voltage and low-voltage distribution networks) currently in force was implemented from 1 August 2021 for a period of four years. Given the market conditions, a significant tariff receivable is recognised by Enedis. It will have to be covered by the next tariff for using the public electricity networks (TURPE7). The risk and the challenges of the negotiations that will be initiated in 2024 relate to the effective coverage by TURPE7 of the growing expenses, in view of a sharp increase in activity, in particular in the field of renewable energies, and the expected rise in the purchasing cost of losses, as well as to the adequacy of the rate of return on assets so that the network operator can fulfil its missions and finance its development at the heart of the environmental transition.
  - > **CO_2 price:** the revision of the EU Emissions Trading Scheme (EU-ETS) could introduce many uncertainties and risks regarding the level and predictability of prices.
  - > **emergency supply**: there is a risk of not being able to recoup the costs incurred in providing emergency supply to customers who can leave EDF's portfolio at any time, subject to prior notice to the companies. This risk exists in both the transitional and the permanent arrangements for emergency supply.
  - > **coverage of costs by the regulated sales tariff**: in 2022, costs were not covered, mainly due to the purchases that had to be made to cover the lower nuclear availability in a very unfavourable price context, but also due to the many unforeseen returns of customers to the TRVE. The 2024 Finance Law provides that the coverage of costs by the TRVE is now subject to verification over a period of three years. With this measure, the non-coverage of costs in 2022 will be offset by the over-coverage that will be observed for 2023, and will not be compensated by a tariff catch-up.
  - > beyond the financial risks for EDF, uncertainties over the regulatory provisions relating to prices and tariffs could have an external impact on its ability to respond to the challenges of fuel poverty mentioned in section 3.3.4 "Energy poverty and social innovation".
- **Risks relating to the energy mix:** decisions to shut down generation assets prematurely, not as a result of an industrial choice, but as a result of an energy policy decision or a court ruling, may occur. Such potential energy-policy decisions should lead to EDF being compensated for the harm suffered, as recalled by the French Conseil constitutionnel (the French Constitutional Council) in a decision of 13 August 2015. There is a risk that EDF would not be compensated for the entire loss.
- **Other risks relating to the "energy sovereignty" draft law**. In addition to the provisions relating to the market framework, the energy sovereignty draft law is close to EDF's strategic orientations in its first version: prioritising decarbonisation *via* electrification first and foremost, upward revision of the nuclear generation trajectory to complement the development of renewable energies However, certain elements will only be specified in the decree on the PPE (multi-year energy programme, expected in mid-year). In this context, the risks identified are as follows:
  - > risk of delaying or scaling back the goals of the Energy Sovereignty Law, which aims to decarbonise all areas of society in a way that is efficient and fair from an economic and climate point of view, notably as regards the decarbonisation of buildings by electrifying heating through the installation of heat pumps;
  - > risk that the role assigned to hydrogen in the long-term energy mix (generation and uses) is not sufficiently clarified, likewise the strategy and the regulatory framework for the generation of low-carbon hydrogen (from decarbonised electricity, including nuclear), which is to be drawn up in coordination with our European partners (delegated act of the European Commission).
- **Other risks associated with the European context:**
  - > risks associated with difficulties or delays in the European Commission's validation of the framework relating to the programme for the construction of new EPRs in France;
  - > risks associated with the implementation of the new REMIT regulation leading to very strong operational constraints and giving the ACER significant power to the detriment of national regulators;

> regarding electrolytic hydrogen, risks remain from the European regulatory framework and from the French strategy for the method of calculating emissions associated with hydrogen generated using network electricity;

> risk of introducing technical provisions that would make it difficult to decarbonise the electricity mix in ultra-peripheral regions and non-interconnected zones (ZNI) for power plants running on bioliquids or in the process of converting to running on bioliquids;

> risk weighing on the supply chain and the operation of facilities, due to the introduction of environmental provisions, regarding in particular chemical products and substances;

> risks associated with difficulties in discussions relating to the evolution towards a legal system for authorising hydropower structures.

c) Control actions

Control actions are limited for those risks, which stem from decisions originating outside the Company. Nevertheless, they include the following:

- monitoring the political, legislative and regulatory context in France, Europe and in the regions where the Group operates;
- analysing the potential consequences of published or still pending legislative or regulatory instruments in order to identify the impact on the Group, notably as regards the ARENH, the tariff shield, the shock absorber, and the tax on infra-marginal power generation revenue. The aim is to provide inputs for the action plan to reinforce the Group's balance sheet structure;
- dialogue with and lobbying of public authorities (particularly in France and Europe) to share views on all the potential direct and indirect impacts on the EDF group of the pending instruments and public policies;
- contributing to public consultations on relevant pending texts at the national and European level;
- EDF's participation in the Conseil supérieur de l'énergie (CSE);
- EDF's participation in industry associations and think tanks in France and at the European level;
- the institution of operational measures to align with legislative and regulatory instruments posing a significant challenge or impact identified for EDF or the Group;
- energy market risk and financial risk control policies;
- regular dialogue with State services on the issue of financing energy public service expenses in order to secure the implementation of the compensation mechanism. EDF is particularly vigilant regarding capital-outflow risks, and actively seeks to secure payment by the French State at the end of the year and avoid year-on-year trade-offs by the State.

3B – Changes in the legislative and regulatory framework for hydropower concessions

SUMMARY

The Group carries on its hydropower generation activities mainly in France under concessions or licence agreements. Therefore, the Group does not always own the assets it operates. In France, changes in the legislative and regulatory framework, notably for the renewal of concessions (provisions for facilities with installed capacity above 4.5MW), changes in the economic conditions of concession specifications and in the conditions for implementing publicity and competitive-bidding procedures could have an impact on the Group's earnings.

Criticality: ◐ *Intermediate*

a) Main risks

The challenges associated with the renewal of hydraulic concessions in France are specified in section 1.4.1.3.1.4 "Issues relating to hydropower generation".

At 31 December 2023, the French State had not renewed 34 expired concession titles, representing an installed capacity of 3,432MW. These concessions are subject to the so-called "rolling periods" regime. The French Energy Code provides that if, at the end of the concession agreement, a new concession has not been established, this title is extended under the previous conditions until the new concession is issued. This plan only ensures the continuity of operations until the effective renewal.

France has received two formal warnings from the European Commission (EC). In the first, dated 22 October 2015, the EC considers that the award and maintenance for the benefit of EDF of the bulk of the hydroelectric concessions in France would constitute an infringement of the provisions of Articles 102 and 106 of the Treaty on the Functioning of the European Union (TFEU) which would lead to the consolidation of a dominant position for EDF on the French retail electricity supply markets. In addition, on 7 March 2019, the EC sent France a second letter of formal notice, citing non-compliance with European public procurement law as part of the renewal of concessions.

There is the risk that the EDF group may not obtain the renewal of each of its concessions in its favour or may obtain the renewal under less favourable economic conditions. In addition, the compensation that should be paid by the State, in particular, in the event of early termination of the operation of a concession, may not fully compensate the loss of revenue borne by the Group. Future regulations or the discussion with the European Commission could also change in a way that is detrimental to the Group. These factors could have an adverse impact on its activities and financial position.

On the subject of renewing concessions, discussions between the State and the European Commission (EC) are still under way with regard to the resolution of two formal notices.

Depending on the conditions in each country, and mainly in Italy, these concessions may not be continued or may not be renewed in its favour with changes to the financial terms and conditions of the concession specifications, which would have an adverse impact on the Group's activities and financial position.

b) Control actions

EDF operates as a responsible concession holder through dialogue and joint construction with all its stakeholders, chiefly regarding the management of water resources and support for local economic development in the regions.

This consultation is conducted on a daily basis by EDF's close collaboration with actors from the economic, political and trade-association sectors in the geographical areas concerned and by maintaining a close dialogue with the people living near the facilities.

In France, anchoring the economy in the regions means maximising local economic benefits by making 67% of all of its purchases in the hydropower regions to support the local industrial fabric (referencing in the supplier panels of more than 1,980 local companies in the specifically hydropower trades).

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3C – Changes in the legislative and regulatory framework for electricity distribution concessions

SUMMARY

Enedis conducts its distribution activities under public service concessions and does not own most of the assets it operates. Changes in the legislative framework, and in concession specifications, could have an impact on the Group's results.

Criticality: ◻◻ *Intermediate*

a) Context

In France, the law stipulates that Enedis and the Local Distribution Companies (LDC) have exclusive rights, in their respective service areas (as well as EDF for areas not interconnected with the continental metropolitan network), to carry out the mission of developing and operating the public electricity distribution networks. Similarly, EDF and the LDCs carry out a supply mission in their service areas at regulated tariffs, here again under the exclusive rights granted to them by law.

Insofar as the powers of AODE (authority responsible for organising public electricity distribution) are conferred by law upon local authorities (municipalities or EPCIs, which are inter-municipality cooperation establishments) and where these AODEs are, except for source stations, the owners of the assets constituting the public electricity distribution network, the law requires Enedis to enter into concession contracts with them for a period generally ranging from 25 to 30 years.

Consequently, Enedis carries out its public service missions (maintenance, renewal and development of the network, metering, connections, etc.) both under the law (the French Energy Code designates the operators of the electricity distribution networks and specifies the missions conferred upon them) and under these concession contracts. Moreover, the purpose of such contracts is, yet again in application of the law, to provide access to the TRVE regulated sales tariffs; they are therefore trilateral (they bind the AODEs, the distribution network operators and the regulated tariff supplier).

b) Main risks

Due to the exclusive rights granted to them, Enedis and EDF, when renewing a concession agreement, cannot be pitted against other parties. The current process for renewing concession contracts with all of the AODEs is based on a contract template drawn up in December 2017 by the FNCCR (the French national federation of licensing authorities), France Urbaine, Enedis and EDF.

Even though two decisions of the French Conseil d'État (Council of State) in July and September 2020 confirmed the compatibility of the exclusive rights granted to Enedis and EDF under, on the one hand, European Union law and, on the other hand, the constitutional principle of the administrative freedom of local authorities, the Group cannot exclude the possibility of these provisions being amended by legislation or following an unfavourable court ruling.

c) Control actions

- Monitoring and follow-up of European or national texts, whether sectoral or not;
- Close monitoring of any dispute likely to call into question the public electricity distribution model.

3D – Ethics or compliance violations

SUMMARY

Prohibited practices that are contrary to the law and to the ethical conduct of business by employees or third parties (in particular violations of human rights or fundamental freedoms) could expose the EDF group to civil or criminal sanctions entailing a significant financial or reputational impact.

Criticality: ■ *Moderate*

a) Main risks

The international nature of the Group's activities and the strengthening of regulatory frameworks that control unethical business practices, in particular, are likely to expose the Group, its employees or third parties acting on behalf of the Group to breaches of its ethical commitments or non-compliance that could damage its reputation or lead to civil or criminal sanctions and impact the Group's financial performance.

b) Control actions

To prevent risks relating to ethical breaches or non-compliance, 13 programmes have been set up covering the following topics:

- preventing the risk of corruption and influence peddling;
- preventing conflicts of interest;
- combating fraud;
- complying with international sanctions programmes;
- preventing harassment and discrimination;
- preventing market abuse;
- preventing the risk of money laundering and financing of terrorism;
- complying with the European EMIR regulation (European Market Infrastructure Regulation for the regulation of financial markets);
- complying with the REMIT regulation (regulation on wholesale energy market integrity and transparency);
- preventing breaches of competition law;
- personal data protection;
- export control (dual-use goods);
- the duty of vigilance (covering environmental, human rights and health and safety issues).

These programmes are described in section 3.3.2 "Ethics, compliance and human rights".

3E – Litigation risk

SUMMARY

Proceedings or litigation could have a significant financial or reputational impact on the Group.

Criticality: ■ *Moderate*

a) Main risks

In the ordinary course of its business, the EDF group is involved in litigation, the proceedings or outcome of which could have a material adverse effect on its earnings or financial position.

In particular, the EDF group is subject in France to proceedings initiated by its competitors or by administrative authorities owing to its position in certain markets. Claims made against EDF could be considerable and could lead to the payment of compensation or a fine, or even lead to orders being issued that could have an impact on some of EDF's activities. For example, in proceedings before the competition authorities in France or before the European Commission, the amount of fines may be as high as 10% of the consolidated sales of the company concerned (or of the group to which it belongs, as the case may be). The EDF group may also be involved in litigation relating to commercial or fiscal disputes with significant stakes, the outcome of which is inherently unpredictable.

b) Control actions

The EDF group considers that overall, in all the countries in which it operates, it complies with all the specific regulations in force, and particularly those relating to the conditions under which it carries out its nuclear activities. However, it cannot anticipate in this respect what may be decided by the supervisory and administrative or judicial authorities to which such matters are referred. These risks are closely monitored and preventive policies (contractual policies, compliance policies, *etc.*) are implemented. A procedure is in place to provide information to the Group's Legal Department on actual or potential material disputes.

The main proceedings in which the EDF group is involved are described in note 17.3 "Contingent assets and liabilities" to the consolidated financial statements for the financial year ended on 31 December 2023 and in section 7.1.5 "Disputes".

2.2.4 Financial and market risks

The EDF group, through its varied activities, is exposed to numerous financial and market risks, which could weigh on the accounting assets and liabilities identified in the Group's balance sheet. This section describes these various risks, covering the risks weighing on the Group's balance sheet assets and liabilities, interest rate risks, financial market risks, energy market risks, foreign exchange risks, counterparty risks and liquidity risks. All of these risks could affect the Group's ability to finance its investments. Financial and market risks are also discussed in the activity report (see section 5.1.6 "Management and control of market risks") and the appendices to the consolidated financial statements for the financial year ended on 31 December 2023.

4A – Energy market risk

SUMMARY

In order to sell its output, the Group is exposed, directly or indirectly, to the prices of the European wholesale energy markets and capacity markets, the levels of which impact its financial position.

The volatility of the energy markets is still significantly higher than its level prior to the end of 2021. In particular, a sustained decline in market prices in 2024, following the high price context of 2022-2023, would have a significant negative impact on the Group's results. Moreover, uncertainty over the level of the Group's French nuclear generation remains high. These factors give rise to significant uncertainties regarding the Group's net exposure and represent a major risk for the Group.

Criticality: ■■■ *High*

a) Context

In conducting its production, distribution and marketing activities, the Group does business in energy markets, primarily in Europe. Accordingly, the Group is exposed to changes in wholesale market prices: electricity energy prices and prices of capacity guarantees for the countries concerned, gas, coal, petroleum products, CO_2 emission quotas (see section 5.1.2 "Economic environment" for information on recent changes in these prices). A connection exists between these markets: a fall in the prices of gas, coal, petroleum products or CO_2 leads to a fall in electricity prices.

The wholesale prices of these various commodities fluctuate with the supply-demand balance worldwide (for oil, coal and gas) or at European and national level (for electricity). These markets can experience significant and unpredictable price fluctuations, in both directions, as well as liquidity crises. As an example, the Ukrainian conflict entailed significant risks for the supply of gas at European level, and in turn on to the prices for gas traded on the various European marketplaces.

b) Main risks

These exposures may thus impact the Group's earnings and all of its financial indicators.

In France, the degree of exposure to market prices for electricity depends in particular on the level of sales under the ARENH system currently applicable until the end of 2025. The risks associated with changes to the ARENH system are described in risk 3A "Changes in public policies and the regulatory framework in France and Europe, in particular ARENH and post-ARENH".

The context of highly volatile markets has led to significant uncertainty over the Group's financial results. In particular, a sustained decline in market prices in 2024, following the high price context of 2022-2023, would have a significant negative impact on the Group's results.

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In these circumstances, the Group's market actions expose it both to sizeable liquidity requirements to meet margin calls, and to increased counterparty risks in the event of default by its trading partners.

Lastly, the Group is exposed to numerous requests for information pursuant to the European regulation relating to wholesale energy market transparency and integrity(1).

c) Control actions

The Group manages its exposure to energy markets through a specific energy market risk policy, which is essentially aimed at gradually reducing uncertainties regarding the level of its financial results in the coming years (see section 5.1.6 "Management and control of market risks" for more detailed information on the associated principles and organisational measures). This policy serves to smooth the impact of price changes but cannot negate it. The Group remains subject to the contingencies affecting its generation or the consumption of its customers, or to the structural trends of upward or downward movements in the commodity markets (see note 18.6 "Market and counterparty risks" to the consolidated financial statements for the financial year ended on 31 December 2023).

The level of hedging sought by the Group entails striking the right balance between reducing uncertainties due to price fluctuations and those due to changes in volume of the EDF portfolio.

Moreover, a Group REMIT instruction defines the requirements to ensure compliance by Group entities with the European regulation on the transparency and integrity of wholesale energy markets.

4B – Risk related to accounting assets and liabilities identified in the Group's balance sheet

SUMMARY

The Group is exposed to risks relating to changes in the accounting assets and liabilities that make up its balance sheet, resulting from changes in the economic and financial environment, in the activities and markets in which the Group operates, or from changes in the accounting standards used to account for and measure these assets and liabilities.

A significant decrease in the Group's assets or rise in its liabilities as a result of such changes could significantly deteriorate the Group's financial position, notably by reducing its ability to tap the financial markets to finance its activities, and could affect its results and all the Group's financial indicators.

Criticality: ▯▯▯ *Intermediate*

a) Main risks

The preparation of the EDF group's financial statements requires the use of judgements, best estimates and assumptions to determine the value of assets and liabilities, and income and expenses. The main transactions for which the Group uses significant judgements and estimates are described in note 1.3.4 "Management judgments and estimates" to the consolidated financial statements for the financial year ended on 31 December 2023.

As part of these estimates, the Group is exposed to risks that relate to all of its accounting assets and liabilities, and mainly to the following items:

- **the value of its assets**, and notably the value of fixed generation assets, resulting from long-term projects that the Group is required to carry out, as project owner or project manager, which are highly complex, in particular the EPR projects under way in France (Flamanville 3) and the United Kingdom (HPC, Sizewell). In view of the numerous risks of a technical and operational nature, related to financing or, where applicable, to the regulatory framework (see section 2.2.1 "Risks related to operational performance"), and given the many uncertainties in the economic environment (price curve, interest rate levels, *etc.*), the value of the assets presented in the Group's balance sheet is subject to considerable risks of impairment that could significantly deteriorate the Group's financial position and performance in the future;
- **the value of liabilities** and notably the value of provisions recognised in the balance sheet, in particular provisions related to the Group's nuclear activities in France, relating to the future dismantling of the existing nuclear fleet and waste management. In view of the numerous risks specific to nuclear activities (described in section 2.2.2 "Specific risks related to nuclear activities"), the value of the provisions presented in the Group's balance sheet is subject to a considerable risk of upward revision, which could significantly deteriorate the Group's financial position and performance in the future. In addition to the risks discussed in subsection 2A of section 2.2.2, the EDF group assesses the risks regarding its nuclear provisions that could arise from changes in the international accounting standards used to prepare the Group's consolidated financial statements. In particular, the proposed change to IAS 37 standard "Provisions, Contingent Liabilities and Contingent Assets", considered by the IASB (the international standard-setter), could lead to the adoption of a "risk-free" discount rate, which is very significantly lower than the discount rate currently prescribed and used by the Group to measure its nuclear provisions. This change, which could be applied by 2027 or 2028, would lead to a very significant revaluation of the nuclear provisions made in the Group's balance sheet. Moreover, due to the regulations currently in force, this change would present financial and regulatory risks, insofar as the change in the methods of the rate foreseen would require an additional allocation to the dedicated assets to be made in cash, which would reduce cash flow and increase the Group's economic debt. Such a change gives rise to additional uncertainty regarding the regulation currently in force, in terms of the regulatory cap on the discount rate currently provided for by the texts and the allocation of dedicated assets to secure the financing of the underlying expenses for the dismantling of nuclear facilities and the storage of long-term radioactive waste (the regulation currently in force and the method used for assessing the nuclear provisions are described in notes 15.1.1.5 "Discount rate, inflation and sensitivity analyses" and 15.1.2.1 "Regulations" to the consolidated financial statements for the financial year ended on 31 December 2023).

b) Control actions

Faced with risks related to the value of assets, operational control actions continued with the implementation of a control system and a solid governance structure (see risk 1A). Economic trends and market developments are monitored periodically and in-depth analyses of the value of its assets are carried out frequently in order to quickly detect any potential impairment and adapt its strategy. On this last point, the Group manages its exposure to the risks associated with the assets and liabilities identified in the EDF group's balance sheet, through a specific financial and accounting reporting policy. At each reporting date, the EDF group's Finance Department complies with this policy and ensures its due application.

(1) EU regulation no. 1227/2011, see section 3.3.2.2.4 "Integrity and transparency of the wholesale energy market (REMIT regulation)".

In this context, the EDF group ensures the recoverability of the value of its assets, presented in the balance sheet when the Group's financial statements are prepared. To do this, impairment tests are carried out, in strict compliance with applicable accounting standards, as part of a process established by the Group's management and implemented at the various entities that make it up. The method applied and its results are described in a dedicated note to the financial statements (see note 10.8 "Impairment losses / reversals" to the consolidated financial statements for the financial year ended on 31 December 2023). These topics are the object of particular attention by a number of stakeholders (corporate governance, financial markets and analysts, AMF, Cour des Comptes).

Moreover, the EDF group and its Finance Department are putting in place systems and resources to contribute to accounting projects presenting significant challenges for the Group, notably in relation to changes in international accounting standards. Thus, the Group is mobilising in the face of the emergence of the risk that such a project would involve for the valuation of its nuclear provisions. As part of this process, the Group is analysing and deciphering the implications of this project for the Group's financial statements, and is monitoring developments in the IASB's process for amending the standard. The Group has also undertaken a number of initiatives with the stakeholders concerned (members of the IASB, preparers of financial statements, directorates of the French State, which is the Group shareholder, *etc.*) to raise awareness of the challenges of such a project, to make proposals to the IASB and to identify possible alternatives.

4C - Financial markets risk

SUMMARY

As a result of its activities, the EDF group is exposed to risks related to the financial markets, in particular an equity risk.

Criticality: [illegible] *Intermediate*

The Group is exposed to equity risk on securities held primarily as dedicated assets constituted to cover the cost of long-term commitments in relation with the nuclear business, in connection with outsourced pension funds and, to a lesser extent, in connection with its cash assets and investments held directly by the Group.

EDF is exposed to equity risks, interest rate risks and foreign exchange risks through its dedicated asset portfolio.

The market value of the listed equities in EDF's dedicated asset portfolio was €13,447 million at the end of December 2023. The volatility of the listed equities at 29 December 2023 was 11.36% based on 52 weekly performances, compared with 17.04% at the end of December 2022. Applying this volatility to the value of listed equity assets at the same date, the Group estimates the annual volatility of the equities portion of dedicated assets at €1,528 million.

At the end of December 2023, the sensitivity of the listed bonds (€12,489 million) was 5.7, meaning that a uniform 100 basis-point rise in interest rates would result in a €708 million decline in market value. This sensitivity was 4.9 at the end of December 2022.

4D - Interest rate risk

SUMMARY

The Group is exposed to risks related to changes in interest rates in the various countries in which it operates. These rates depend partly on the decisions of the central banks.

Criticality: [illegible] *Intermediate*

a) Risk of falling interest rates

Lower interest rate fluctuations could affect the Group's economic indebtedness, due to changes in the value of the Group's financial assets and liabilities, as well as its discounted liabilities. The discount rates for pension commitments and other specific employee benefit commitments (see note 16 "Provisions for employee benefits" to the consolidated financial statements for the financial year ended on 31 December 2023) and the Group's long-term nuclear commitments (see note 15 "Provisions related to nuclear generation and dedicated assets" to the consolidated financial statements for the financial year ended on 31 December 2023) are directly or indirectly linked to interest rates over different time horizons.

For the specific case of nuclear provisions in France, the discount rate could also decrease over the next few years as a result of the regulatory cap applicable to this rate.

The Order of 1 July 2020 on securing the financing of nuclear expenses, which amends the initial Order of 21 March 2007, outlines new provisions concerning the regulatory cap on the discount rate expressed as a real value, corresponding to the unrounded representative value of the expected long-term real interest rate used for the calculation published by the European Insurance and Occupational Pensions Authority (EIOPA) of the ultimate forward rate (UFR) applicable on the relevant date, increased by 150 basis points. This cap is applicable as from the year 2023, in accordance with the Decree of 27 December 2023 on the securing of the financing of nuclear expenses.

Furthermore, an increase in nuclear provisions due to a decrease of the discount rate may require allocations to the dedicated assets, and may result in an adverse effect on the Group's earnings, cash flow generation and net debt.

As the case may be, this increase in provisions, including those to be covered by dedicated assets, does not however automatically knock on to the amount to be allocated to dedicated assets at the dates in question, as this notably depends on:

- the return on dedicated assets and the resulting hedge rate;
- the period within which the allocation is to be made, the texts providing for the possibility of setting a period, up to a maximum of five years, to proceed with the allocation, subject to approval by the Supervisory Authority.

In view of the regulatory framework, no additional provisions are expected in respect of 2023 (as was the case for 2022), as the rate of coverage of nuclear provisions by dedicated assets is greater than 100%.

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Moreover, an increase in inflation rate expectations, at a given interest rate, would result in a decrease in real interest rates which would have effects similar to a decrease in interest rates on the Group's discounted liabilities, given that the future expenses included in these liabilities are considered to be indexed to inflation rates.

b) Risk of higher interest rates

Main risks

Upward variations in interest rates could affect the Group's ability to obtain financing on optimal terms, or even its ability to refinance itself if the markets were very strained in view of the risk related to changes in flows linked to variable-rate financial assets and liabilities. Financial securities and derivatives held by the Group, as well as debts issued, may pay or receive coupons directly indexed to variable interest rates.

Thus, a 0.5% increase in interest rates would have an effect on the pre-tax income of approximately €(60) million, due to the increase in coupons on the debt issued by the Group, at variable or floating rates, offset by the increase in the Group's cash proceeds, leading to an unfavourable net impact on cash.

Moreover, these unfavourable impacts related to a rise in interest rates are in principle more than offset by the favourable impacts related to a rise in interest rates connected with long-term commitments (see previous point), without any immediate and automatic effect on cash-flow.

4E – Access to liquidity risk

SUMMARY

The Group must at all times have sufficient financial resources to finance its day-to-day business activities, the investments necessary for its expansion and the appropriations to the dedicated portfolio of assets covering long-term nuclear commitments, as well as to deal with any exceptional events that may arise. Any downgrading of EDF's financial rating (1) could increase the cost of refinancing existing loans and have a negative impact on the Group's ability to obtain financing. On 31 December 2023, the Group's net financial debt amounted to €54,345 billion.

Criticality: ☐☐ *Moderate*

a) Context

The Group's ability to raise new debt, refinance its existing indebtedness or, more generally, raise funds in financial markets, and the conditions that can be negotiated to this effect, depend on numerous factors including the rating of the Group's entities by rating agencies. The Group's debt is periodically rated by independent rating agencies.

To meet liquidity needs, the Group issues securities on the bond and money markets, and resorts to bank borrowings with or without collateral.

The Group thus carried out the following transactions:

- on 19 January 2023, a senior bond issue in four tranches for a nominal amount of €2 billion and £950 million, comprising:
  - > a €1 billion bond with 9-year maturity and a 4.250% fixed coupon,
  - > a €1 billion bond with 20-year maturity and a 4.625% fixed coupon,
  - > a £450 million bond with 12-year maturity and a 5.500% fixed coupon,
  - > a £500 million bond with 30-year maturity and a 5.625% fixed coupon.
- on 28 March 2023, a £99 million bond issue fungible into the £500 million, 30-year maturity bond issued on 19 January 2023.
- on 17 May 2023, a US$3 billion issue and a CAD 500 million issue in five tranches of senior bonds:
  - > a US$1 billion bond with a 5-year maturity and a fixed coupon of 5.700%,
  - > a US$1 billion bond with a 10-year maturity and a fixed coupon of 6.250%,
  - > a US$1 billion bond with a 30-year maturity and a fixed coupon of 6.900%,
  - > a CAD 300 million bond with a 7-year maturity and a fixed coupon of 5.993%,
  - > a CAD 200 million bond with a 30-year maturity and a fixed coupon of 6.492%.
- on 8 June 2023, a US$1.5 billion issue of hybrid bonds (perpetual super-subordinated notes denominated in US dollars), with an initial coupon of 9.125% maturing in 2033 and a 10-year redemption option at EDF's discretion.
- on 22 June 2023, an ¥33 billion issue in four tranches of senior Samurai bonds:
  - > a ¥25.3 billion bond with a 5-year maturity and a fixed coupon of 1.059%,
  - > a ¥2.2 billion bond with a 7-year maturity and a fixed coupon of 1.355%,
  - > a ¥4.4 billion bond with a 10-year maturity and a fixed coupon of 1.695%,
  - > a ¥1.1 billion bond with a 20-year maturity and a fixed coupon of 2.328%.
- on 7 July 2023, the redemption for US$904 million of a tranche of hybrid bonds denominated in US dollars for an initial amount of US$1.5 billion with a first early redemption date at the discretion of EDF on 22 January 2024.
- on 21 August 2023, a CHF325 million issue in two tranches of Senior Green Bonds to be used to finance and/or refinance, in whole or in part, investments in electricity distribution:
  - > a CHF200 million bond with a 4-year maturity and a fixed coupon of 2.300%,
  - > a CHF125 million bond with an 8-year maturity and a fixed coupon of 2.550%.

On 28 November 2023, EDF launched a senior green bond issue for a nominal amount of €1 billion, with a maturity of 3.5 years and a fixed coupon of 3.75%, dedicated to the existing nuclear fleet.

In January 2023, the Group also entered into bilateral term loans with maturities of two and three years for a total of €750 million.

Lastly, on 19 October 2023, EDF announced that it would repay more than €2 billion in bilateral credit lines signed at the start of 2022 with 11 banks.

(1) At the date of this Universal Registration Document, EDF's long-term rating is as follows: BBB with a stable outlook (S&P Global Ratings); Baa1 with a negative outlook (Moody's); BBB+ with a stable outlook (Fitch Ratings).

b) Main risks

Any downgrading of EDF's financial rating could increase the cost of refinancing existing loans and have a negative impact on the Group's ability to obtain financing.

The completion of the simplified public purchase offer on 8 June 2023 provided more visibility on the Group's ability to finance itself. In 2023, there was an improvement in liquidity criteria, notably with greater availability of the nuclear fleet and less volatility in energy market prices.

In this positive context, Fitch confirmed, on 3 April 2023, EDF's long-term rating (BBB+ outlook stable), by upgrading its short-term issuer rating to F2.

On 6 and 30 June 2023, Moody's and S&P respectively confirmed EDF's rating (Baa1 outlook stable for Moody's and BBB outlook stable for S&P).

c) Control actions

The EDF group was able to meet its financing needs by conservative liquidity management and has obtained financing on satisfactory terms.

A range of specific levers are used to manage the Group's liquidity risk:

- EDF issues on the US dollar, Canadian dollar, yen, Swiss franc and pound sterling market, which enables it to diversify its financing currencies and its investor base;
- on 12 July 2022, EDF published an update to its green financing [1] framework, enabling it to substantially increase its green issues, for which there is sustained investor demand;
- centralising of financing for controlled subsidiaries at the level of the Group's Cash Management Department. Changes in subsidiaries' working capital requirement are financed out of the Group treasury resources in the form of stand-by credit lines provided for subsidiaries, which may also be granted revolving credit from the Group. EDF and the investment subsidiary EDF Investissements Groupe (EDF IG), set up in partnership with the bank Natixis Belgique Investissements, also provide medium and long-term financing for EDF group operations outside France. This financing is set up entirely independently by EDF and EDF IG, with each establishing the financing conditions. Said conditions are those that the subsidiary would have in a arm's length market transaction;
- the Group's cash pooling system, which centralises cash management for controlled subsidiaries. This system is aimed at making the subsidiaries' cash balances available to EDF in return for interest, so as to optimise the Group's cash management and provide subsidiaries with a system that guarantees them market-equivalent financial terms, active management and diversification of the financing sources used by the Group. The Group has access to short-term resources on various markets through programmes for French commercial paper (*billets de trésorerie*) and US commercial paper (US CP). For EDF, the ceilings for these programmes were increased from €10 billion to €12 billion for the NeuCP programme (Negotiable European Commercial Paper) and $10 billion for its US commercial paper;
- the repurchase of securities (repo) from the Treasury portfolio placed with bank counterparties for cash.

4F – Counterparty risk

SUMMARY

Like all economic operators, the Group is exposed to possible default by certain counterparties (partners, subcontractors, service providers, suppliers or customers).

Criticality: ▯▯ *Moderate*

a) Main risks

The default of certain counterparties may impact the Group financially (loss of receivables or additional costs related to a change of supplier during the project, for example).

b) Control actions

The Group remains vigilant regarding industrial and commercial counterparties, which could be weakened in a context of deteriorated economic conditions.

For certain activities, the risk may be hedged by the use of margin calls.

Furthermore, the Group has a counterparty risk management policy which applies to EDF and all operationally controlled subsidiaries. In particular, this policy provides for quarterly consolidation of the Group's exposures.

At end-September 2023, no significant defaults had been identified in relation to the Group's counterparties. 90% of the Group's exposure concerned "investment grade" counterparties, mainly due to the predominance of exposures generated by the cash and asset management activity, as most short-term investments concern low-risk assets.

(1) https://www.edf.fr/groupe-edf/espaces-dedies/investisseurs-actionnaires/espace-obligataire/finance-durable.

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4G – Foreign exchange rate risk

SUMMARY

Due to the diversity of its activities and their geographical distribution, the Group is exposed to the risks of fluctuations in foreign exchange rates, which may impact currency translation adjustments, balance sheet items and the Group's financial expenses, equity and financial position.

Criticality: ■ *Moderate*

a) Main risks

Due to the diversity of its activities and geographical locations, the Group is exposed to the risk of exchange rate fluctuations, which may impact the translation differences affecting balance sheet items, Group financial expenses, equity capital, net income and the internal rate of return (IRR) of projects.

As the Group is involved in long-term contracts, an unfavourable currency fluctuation could have consequences on project profitability. In the absence of hedging, currency fluctuations between the euro and the currencies of the various international markets in which the Group operates can therefore significantly affect the Group's results and make it difficult to compare performance levels from year to year. If the euro appreciates (or depreciates) against another currency, the euro value of the assets, liabilities, income and expenses initially recognised in that other currency will decline (or increase). Moreover, insofar as the Group is likely to incur expenses in a currency other than that in which the corresponding sales are made, fluctuations in exchange rates could result in an increase in expenses, expressed as a percentage of sales, which could affect the Group's profitability and income.

b) Control actions

To limit exposure to foreign exchange risk, the Group has introduced the following management principles:

- local currency financing: to the extent possible given the local financial markets' capacities, each entity finances its activities in its own functional currency. When financing is contracted in other currencies, derivatives may be used to limit foreign exchange risk;
- matching of assets and liabilities: the net assets of subsidiaries located outside the Euro zone expose the Group to a foreign exchange risk. The foreign exchange risk for the consolidated balance sheet from foreign currency assets is managed by market hedging with debts issued or contracted in foreign currencies or by using derivative financial instruments. Hedging of net assets in foreign currencies complies with risk/return targets. The hedging ratio varies depending on the currency. If no hedging instruments are available or if hedging costs are prohibitive, these foreign exchange positions remain open. The risk they represent is then monitored through sensitivity calculations;
- hedging of operating cash flows in foreign currencies: in general, the operating cash flows of EDF and its subsidiaries are in the relevant local currencies, with the exception of flows related to fuel purchases which are primarily in US dollars, and certain flows related to purchases of equipment, which concern lower amounts. Under the principles laid down in the strategic financial management framework, EDF and the main subsidiaries concerned by foreign exchange risks (EDF Energy, EDF Trading, Edison, EDF Renewables) are required to hedge firm or highly probable commitments related to these future operating cash flows.

2.2.5 Group transformation and strategic risks

5A – Adaptation of skills

SUMMARY

The Group will have to secure the skills of the various sectors of the energy transition in a job market under pressure to cope with a significant volume of activity, particularly following the Belfort speech of 10 February 2022 (existing fleet, EPR 2, increase in the volume of connections, gain of customers).

Criticality: ■ *Intermediate*

a) Main risks

To successfully complete large-scale projects in the nuclear sector, with an unprecedented level and diversity of activities in a demanding environment, and to support a development dynamic shared by the major sectors involved in the energy transition, the need for skills is exponential. Adapting skills is therefore an integral part of EDF's company project. This is because the approach has become predominant in the sector in achieving industrial objectives in the face of a break in the volume and nature of recruitment needs, estimated at around 20,000 jobs per year on average over the next 10 years for the three main sectors of nuclear power, networks and renewable energies and energy systems.

b) Control actions

In view of the number of skills required for the Energy Transition sectors, the lack of appeal of industrial professions and the new tense employment context in France, the EDF group, the leader in managing the skills challenges of its ecosystem, decided to scale the actions implemented in terms of developing and securing skills over the next 10 years, by initiating the Skills Project in 2023.

The main actions will make it possible to:

- reinforce overall consistency among the energy transition sectors, the Group's entities and business lines, and the regions. This consistency relates to guidance, attractiveness, sourcing, recruitment and training. It is structured at three levels: the national players in employment and education, the major industrial sectors, as well as the regions and their business campuses;
- move to another scale by ensuring the identification of needs in the regions and the advance planning of resources, by attracting candidates to the energy transition training courses and into the EDF group, by diversifying the sourcing of recruitment candidates, and by offering career paths that build loyalty.

2.1 Adaptation to climate change physical and transition risks

SUMMARY

The Group is exposed to physical effects of climate change that could have consequences on its own industrial and tertiary facilities and more generally on the Group's financial position. The effects of climate change also present systemic challenges, including cross-cutting impacts on the EDF group and its external stakeholders. Moreover, the societal, technological and economic context may not be favourable to the Group's low-carbon solutions.

Criticality: ⊔⊓ *Intermediate*

According to the breakdown proposed by the Task Force on Climate-Related Financial Disclosures (TCFD), with which EDF complies (see section 3.1.4.2.1 "The EDF group and the TCFD"), climate change risks are structured into two parts: risks of not adapting to the physical effects of climate change (termed "physical risks"), and risks induced by the transition to a low-carbon economy (termed "transition risks").

a) Main physical risks

The EDF group's facilities are closely tied to water, wind and solar resources. The overall reliability of the electricity system depends on the resilience of the generation facilities and network infrastructure to climate change, whether it be chronic effects or an increase in the frequency and intensity of extreme weather events.

Extreme risks can potentially affect the safety and security of facilities and network infrastructure or generation. Chronic risks can potentially have consequences on generation, on network capacities, on the environment and in particular on water resources (resource conflicts).

Due to this climate sensitivity and taking into account the many uncertainties associated with the effects of climate change, despite the control actions undertaken, climate change could have an adverse impact on the Group's business continuity, operating performance, and balance sheet and financial results. These risks could also result in impacts on the Group's external stakeholders.

b) Control actions for physical risks

- Periodic reviews are carried out on nuclear and hydropower facilities, incorporating both feedback and projections related to climate change.
- As required by the Group's CSR policy, the Group's main operating entities regularly update their climate change adaptation plans. They are especially strengthened for nuclear entities, in France and the United Kingdom, hydropower and island entities, and are based whenever possible on the IPCC scenarios, in order to examine the measures taken and to be taken. To this end, a guide to implementing adaptation plans is available to the Group's entities.
- Since the 1990s, the EDF group has been building up specific R&D expertise on climate change issues, which it has invested in collaborative academic research projects to support these actions.
- The Group carries out numerous monitoring and anticipation actions on extreme and chronic effects, so as to update its adaptation plans as much as necessary, both for production facilities and infrastructures, as well as to anticipate the consequences on the supply-demand balance.
- The Group coordinates internally and with external stakeholders on water uses.
- A programme called ADAPT was set up in France to ensure the long-term resilience of the Group's nuclear and thermal generation facilities in the face of climate change. This programme takes into account systemic challenges, risks and impacts relating to all internal and external stakeholders.
- The Group regularly renews its insurance coverage.

c) Main transition risks

In line with its *raison d'être*, the Group's strategic orientations are part of the low-carbon transition (see section 3.1.1.4 "Roadmap for developing the Group's low-carbon production").

In this seemingly favourable and promising context, there are several transition risks:

- the external, societal, competition, labour, economic or industrial context could be an obstacle to this strategy. In particular, nuclear energy may not be recognised at the societal level as a key factor in enabling the low-carbon transition;
- achieving the objectives of reducing emissions and, more generally, ensuring the success of the Group's low-carbon strategy, depend primarily on the successful shutdown or decarbonisation of fossil fuel power plants and the accelerated development of renewable generation resources to complement nuclear and hydroelectric generation;
- in addition, new low-carbon energy solutions may induce new societal questions (intrusive new technologies, land rights-of-way, new conflicts related to the use of water or scarce resources, *etc.*);
- the publication in May 2021 of the International Energy Agency's (IEA) Net Zero scenario sets 2040 as the new target for decarbonising the electricity sector by 100% (or even 2035 for developed countries). This target has been taken up by many players, including Eurelectric, coalitions of investors (*e.g.* IIGCC) or the SBTI in its new Net Zero standard published in October 2021. This requires EDF to explain the impacts of such a scenario on its own activities, while the Group plays a critical role in the supply and demand balance of the electricity system, particularly in France. Such a decarbonisation trajectory for 2040 for all activities requires that certain conditions be met, in particular concerning the robustness of the long-term CO_2 price or the support for all low-carbon technologies and their value chains. Without these conditions, the Group is at risk of having to call into question certain development projects or making commitments that are more difficult to keep, thus impacting the Company's profitability (by forgoing profitable activities);

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- the new European Directive on the reporting of non-financial data (the CSRD Directive, adopted in November 2022) sets the goal for all European companies to be aligned with the 1.5°C target and for attaining carbon neutrality by 2050. The lack of standardisation in the labels poses a risk of legibility for our stakeholders. The EDF group is labelled 1.5°C by Moody's (Net Zero Assessment) but is still rated as being on a "Well Below 2°C" trajectory by SBTi;
- new legislative or regulatory changes brought about by climate change could also have a negative impact on EDF's business and lead to new legal or compliance risks;
- the Group may also have to deal with the emergence of new technologies or disruptive solutions that are part of the efforts to meet the transition objectives.

d) Control actions to address transition risks

- Carbon trajectory. In 2018, the Group set itself the objective of contributing to achieving carbon neutrality by 2050. In 2020, it committed to a trajectory of reducing all its emissions (Scope 1, 2 and 3) by 2030 and to a climate transition plan. After cutting its direct CO_2 emissions by 50% from 2017 to 2022, in 2023 the Group set new targets for 2025, 2030 and 2035, setting an ambitious short- and medium-term trajectory for decarbonising its electricity mix (see section 3.1.1 "Group carbon trajectory").
- Deployment of low-carbon solutions. The Group is involved in the development of renewable energies in France, in electrical storage and in low-carbon electric mobility.
- As a final step in the process of contributing to achieving neutrality, the Group favours so-called "negative emission" projects to offset its residual emissions by 2050 (see section 3.1.1.6 "Contribution to carbon sinks").
- Control actions for risk No. 3A concerning changes in public policies and the regulatory framework consist of: monitoring the political, legislative and regulatory context; analysing the potential consequences of legislation in preparation; dialoguing with and lobbying the public authorities.

e) Overall control actions – summaries and mapping of climate risks

- In 2019, a summary on climate change and its impacts on EDF, integrating the accumulation of all the knowledge acquired by the EDF group and its scientific partners, was presented to EDF's Scientific Council.
- Since the 1990s, the Group has had significant expertise in climate change, both in its R&D Department and in its engineering centres. In particular the R&D Department's climate unit is mentioned in section 3.1.4.1.1 "Recently reinforced governance".
- In 2019, a Group-wide climate risk mapping of all physical and transition risks was established following the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) and submitted to the Board's Risk and Audit Committee. It is based in particular on the adaptation plans of the operational entities and on the report to the Scientific Council. Climate risks are identified, assessed and updated annually in accordance with the Group's general risk mapping methodology (summarised in this risk factor and further detailed in section 3.1.4.2.2 "Identifying climate change risks and opportunities").
- Climate risk mapping includes a "climate" action plan, which is included in the company project.
- An audit on the adaptation of the EDF group's resources to climate change was conducted from October 2021 to February 2022. Recommendations focused on three areas: the management and coordination of the Group's adaptation to climate change, asset resilience to the climate horizon, and finally the adaptation of the Group's commercial offering. An action plan was rolled out and monitored as part of the Group's resilience approach.
- A presentation to the Board of Directors was made in September 2023. It focused on the main areas of progress made in the action plans, notably in terms of governance, the choice of scenarios for climate studies, and the completion of adaptation plans for the Group's various business lines.
- Numerous actions are carried out internally to raise awareness of climate issues among all employees and to mobilise them in concrete ways (see section 3.1.4.5 "Involvement of employees and executive officers in carbon neutrality").

5C – Transformation capacity in the face of disruptions

SUMMARY

The Group's development strategy, changes in the scope of activities and synergies within the Group could not be implemented in accordance with the objectives defined by the Group.

Criticality: ◧□ *Intermediate*

a) Context

- Changes in public policies and the regulatory framework in France and in Europe having a significant impact on the Group's activities (SFEC and CRIM); European agreement on energy markets; draft "protection of electricity consumers" system, planned in France from 1 January 2026.
- Consensus among all stakeholders on the major role of electricity in the decarbonisation of economies by 2050.
- Significant increase in demand for low-carbon electricity in all regions, emergence of new markets and new players, changes in players' business models.
- Energy crisis in 2022 and energy price volatility; inflation; pressure on raw materials and critical materials.
- Crisis linked to the industrial hazard of stress corrosion, in a context weakened by the Covid crisis.
- Changes in the competitive environment of the markets in which the Group operates, and new customer expectations.
- Geopolitical tensions.
- The impact of climate change on our activities.

In this context, competition is intensifying in all areas (energy generation, supply, services, storage, international calls for tenders) while the rules of the game are changing (system for capturing intra-marginal income, tariff shields and shock absorbers, new post-ARENH rules, etc.)

b) Main risks

In the context mentioned above, the main risk is not to achieve the Group's strategic goals. In particular:

- there is a risk that the transformations undertaken to cope with the changes will be insufficient, or that the Group's model will be jeopardised. The potential consequences of this risk are measured in the following terms:
  - > financing and profitability (taking into account the new electricity market organisation planned for France from 1 January 2026) in the business model;
  - > non-achievement of decarbonisation targets, non-achievement of market share targets, or reduced margins;
  - > deterioration of upstream/downstream integration;
  - > reduction in cross-cutting synergies rolled out across the integrated Group;
  - > decrease in the Group's ability to seize new opportunities (mobility, hydrogen, *etc.*) and loss of the Group's leading position in the energy field;
  - > inability to find, in the industrial sectors concerned, the skills necessary for the development and implementation of projects related to the energy transition.
- risk that nuclear costs and cost trends, as well as the Group's ability to finance them, could force the Group to reconsider the pace at which it deploys its strategy.
- even if the transformation is well under way and the contractual arrangements are adequate, the Group may not be able to implement its decarbonisation projects on schedule and under satisfactory conditions. Low-carbon solutions may not fully meet the needs expressed by the Group's customers and stakeholders with the expected profitability.
- risk that the individual and collective mobilisation of staff is not sufficient.
- risk of not achieving the Group's digital transformation objectives, notably those associated with the "Responsible digital" challenges mentioned in section 3.4.4.

c) Control actions

The following actions are in line with the Group's and its CSR commitments, responding to the needs of its customers and stakeholders:

- continued development and deployment of low-carbon solutions: supply of low-carbon electricity and services, notably energy efficiency and decarbonisation of uses, low-carbon electricity production, storage solutions, low-carbon hydrogen projects, flexibility solutions, with a view to sustainable development and proximity to customers and regions. This development concerns France, the United Kingdom, Italy, Belgium and the other countries where the Group operates. This strategy combines the search for growth drivers with the promotion of existing assets. The strategy and drivers of the Group's transformation are described in section 1.3 "Group strategy and objectives";
- the Solar Plan, the Electric Storage Plan, the Electric Mobility Plan and the Excell plan are major levers for developing and expanding the range of low-carbon energy solutions offered by the Group in addition to the means of generation already widely available at the Group, notably wind power, solar power, hydropower and nuclear power (see section 1.4.1.1.1 "The excell plan");
- implementation of development, adaptation and transformation programmes and performance plans. These programmes may be complemented by a strategic analysis of assets which may itself lead to a requirement for additional financial agility, giving rise to disposals or acquisitions (see section 1.2.3 "Significant events of the year");
- actions to mobilise work groups through transformation projects, including in particular the "work differently, manage differently" project within EDF.

2.2 SD – Ability to fulfil long-term social commitments

SUMMARY

The Group may be required to meet significant commitments related to pensions and other employee benefits.

Criticality: HG *Intermediate*

a) Main risks

The pension plans applicable in the various countries in which the Group operates involve long-term commitments to pay benefits to the Group's employees (see note 16 "Provisions for employee benefits" to the consolidated financial statements for the financial year ended on 31 December 2023). In France, in addition to these pension commitments, the Group also owes obligations for post-employment benefits and long-term benefits for employees currently in service. Any new pension reform in France may have an impact on the Group's commitments.

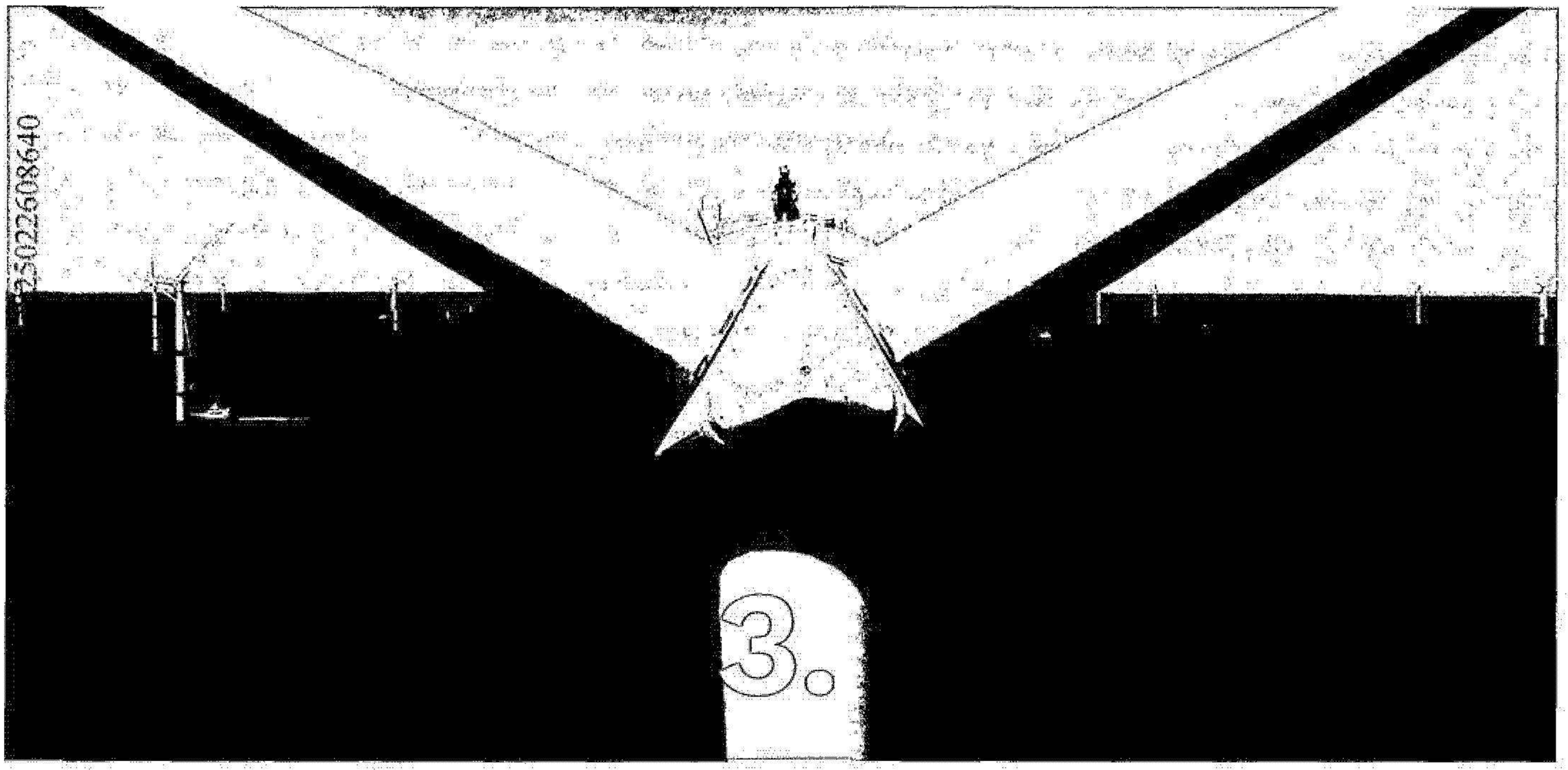
The amounts of these commitments, the provisions set aside, the externalised funds or pension funds set up, and the additional contributions intended to offset funding shortfalls are estimated on the basis of actuarial assumptions. These assumptions and the rules governing benefits could be subject to adjustments that could increase the Group's current commitments in respect of pensions and other employee benefits, and therefore lead to an increase in the corresponding provisions.

Thus, any new pension reform in France may have an impact on the Group's commitments. The impact of the reform introduced by the amended Social Security Financing Law of 14 April 2023, which includes parametric changes to pension entitlements and the closure of the IEG special scheme for people recruited from 1 September 2023, is recognised in the financial statements at 31 December 2023 (see note 16.1.2 "Pension reform" to the consolidated financial statements for the financial year ended on 31 December 2023).

Equally, calculation assumptions or changes in the financial markets could make the Group's current contributions insufficient, in view of the corresponding commitments to pension funds in the United Kingdom.

b) Control actions

In order to cover its commitments, the Group has set up pension funds in the United Kingdom, where coverage of commitments is a regulatory obligation, and outsourced funds in France, which provide partial coverage of the commitments. In the United Kingdom, the pension reform in 2021 (from defined benefit to defined contribution) and the merger of the three existing funds (BEGG, EEGS and EEPS) into one fund (EDFG) from 31 December 2021 will limit future risks.



3.

Non-financial performance

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Corporate social responsibility issues and commitments

In line with its *raison d'être*, strategy, business model and related risk factors[1], the EDF group presents in this chapter 3 its non-financial performance issues, commitments, policies, actions and results.

16 priority CSR issues

The EDF group's priority CSR issues underpin the action it takes in respect of ESG performance, whilst preserving the management independence of network operators[2]. They are seen as key *sustainability issues, i.e. ones that involve impacts, risks and/or* opportunities for the Group and its stakeholders. EDF has used a materiality analysis to map them over the last eight years. This analysis makes it possible to identify, select and prioritise the main sustainability issues, by comparing the point of view of external stakeholders with the Group's.

Against a changing backdrop, the initial materiality analysis carried out in 2014 was updated in 2018. The analysis was prepared with the support of a specialist firm and underpinned by international standards based on documentary studies, interviews and workshops conducted with about one hundred people forming a representative cross-section of the Group's stakeholders[3]. External stakeholders included internationally-recognised qualified individuals as well as representatives of the Group's main stakeholders (authorities, administrations, shareholders, banks, customers, partners, subcontractors, suppliers, NGOs, *etc.*). Internally, members of the Executive Committee participated in the development process, as did managers from the Group's main departments and subsidiaries.

The conclusions were approved by the Group Senior Executive Vice-President for Innovation, Corporate Responsibility & Strategy. In 2019, the Sustainable Development Council[4] met to examine the *Group's materiality analysis and, based on current best practice,* recommended reducing the number of issues.

On 7 May 2020, EDF established its *raison d'être*, which was adopted by a 99.99% vote of the General Shareholders' Meeting, and added to its articles of association: "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development". More than 4,000 employees[5] contributed to developing this statement. In accordance with the EDF Sustainable Development Council, these 16 high-priority CSR issues have been ranked and categorised into four key issues in line with EDF's:

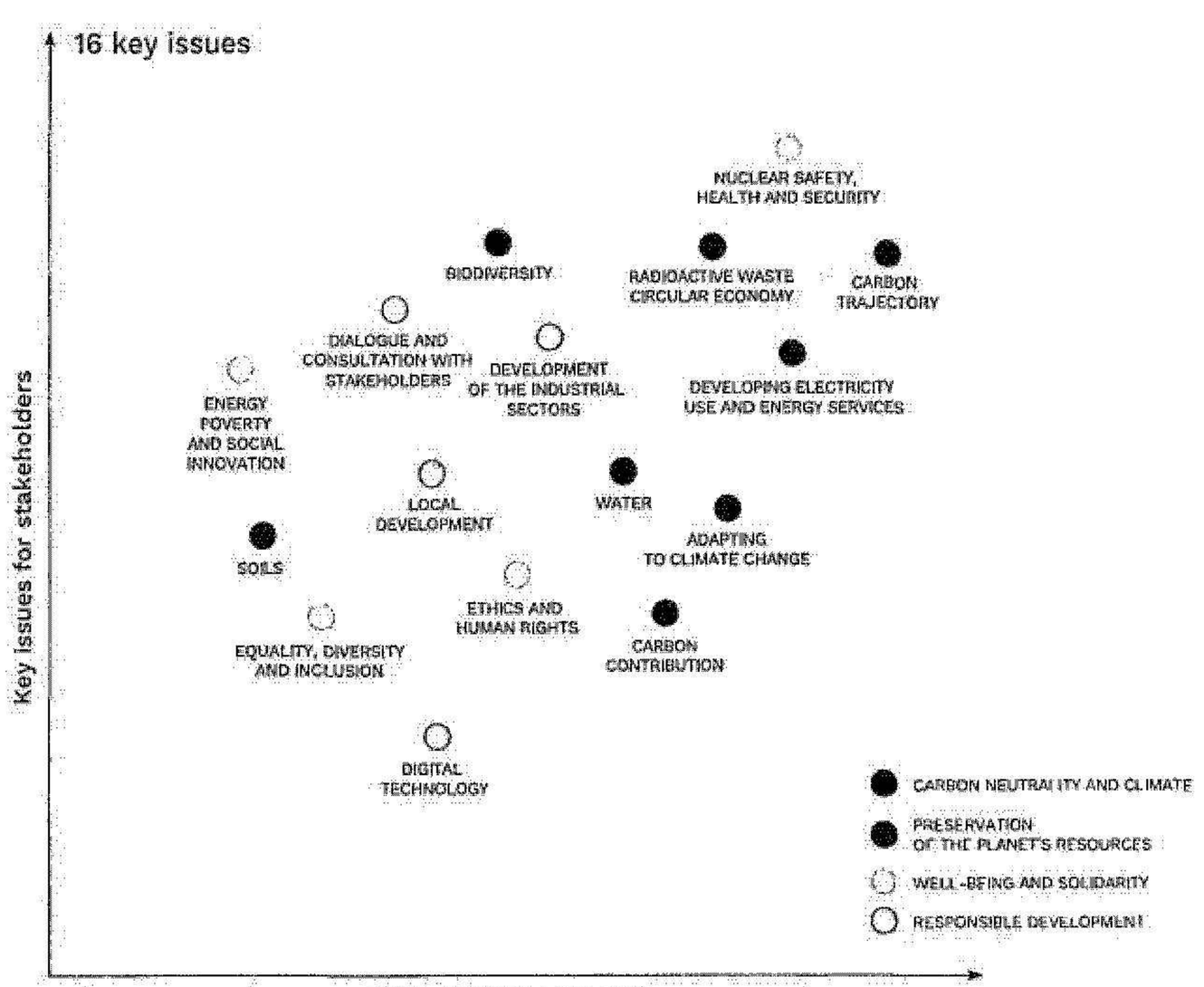
Carbon neutrality and the climate

Preserving the planet's resources

Well-being and solidarity

Responsible development

The EDF group's materiality matrix has remained unchanged since 2020, with the priority CSR challenges mapped out as follows:



CSR key stakes for EDF

The materiality analysis is due to be revised in 2024 to coincide with the introduction of the CSRD (Corporate Sustainability Reporting Directive), following the process imposed by the ESRS (European Sustainability Reporting Standards).

(1) For details of the EDF group's *raison d'être*: see the introduction to the URD; for details of the EDF group's strategy, see section 1.3 "Group strategy and objectives"; for details of the EDF group's business model: see section 1.1 and section 1.4; for details of the EDF group's risk factors: see chapter 2 "Risk factors and control framework".

(2) Measuring a business's ESG performance consists of assessing the extent to which Environmental, Social & Governance (ESG) impacts are taken into account in its strategy and management. This process is based on environmental, social and governance criteria that structure the business's non-financial performance analysis.

(3) For a detailed description of the various methodological stages in its preparation, see section 3.6 "Methodology".

(4) Renamed the EDF group Stakeholder Council (*Conseil des parties prenantes*) in 2021; see section 3.4.1.1.1 "EDF: a pioneer in the implementation of stakeholder panels". The materiality matrix remained stable in 2021, 2022 and 2023.

(5) Through the "Let's talk about energy" dialogues, see section 3.4.1.1.2 "An open dialogue with all, involving all of the Group's businesses and subsidiaries".

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Focus: nuclear issues

Several of the Group's most practical challenges relate to nuclear power, both for the optimisation of its positive impacts and for the mitigation of its negative impacts. Several key components of this are outlined below, with further details in the main body of the statement of non-financial performance.

	2021	2022	2023	SNFP section
Contribution to climate change mitigation				
Life cycle analyses (LCA) studies of nuclear generation activities *(in gCO_2/kWh)*	-	4	4	3.1.1.2.1.2
Adaptation of nuclear power plants				
Adaptation to Climate Disruption (ADAPT) policy and CEMA action plan: proportion of completed local "monographs" (target: 100% in 2025)	-	8	33	3.1.2.4
Nuclear safety				
Significant level-2 events on the INES* *(number)*	1	0	0	3.3.1.1
Solid radioactive waste				
France: volume of long-lived high and intermediate level solid radioactive waste *(in m^3)*	287	225	261	3.2.4.1
United Kingdom: volume of low-level solid radioactive waste disposed of *(in m^3)*	471	498	474	3.2.4.1

* *International Nuclear Event Scale, a seven-level international scale.*

16 Group CSR commitments

For each of the 16 CSR issues, the Group has formulated a corresponding CSR commitment. It takes the form of policies and operational actions aimed, from an environmental, labour and societal point of view, at minimising the negative impacts and maximising the positive impacts of each of the issues[1].

The following map lists these 16 CSR commitments. It states, for each of one, the corresponding sustainability risk as described in the Group major risk mapping, its contribution to the UN Sustainable Development Goals, and related performance measurements[2].

The Group's non-financial performance is a component of the Group's performance. It is at the service of a just and inclusive energy transition

For a just and inclusive energy transition

EDF's *raison d'être* is based on four key areas, which, together, look to ensure that the Group's action in the context of the energy transition can be carried out in a fair and inclusive manner. For a detailed discussion on the matter, see the publication "A fair and inclusive energy transition, from strategy to action" published on the edf.fr website[3].

(1) The EDF group considers that the information relating to actions aimed at promoting the link between the Nation and the Army and supporting commitment to the reserves, the fight against food waste, the fight against food insecurity, and for responsible, fair and sustainable food, are not relevant to its issues.
(2) For the methodology used for these indicators, see section 3.6 "Methodology".
(3) https://www.edf.fr/sites/groupe/files/2022-10/edfgroup_rse_transition-juste-et-inclusive_principes_2022_va.pdf

Non-financial performance
Corporate social responsibility issues and commitments

Methodology and links with other public documents

The methodology for the key indicators cited in the Statement of Non-Financial Performance (SNFP) is set out in section 3.6 "Methodology".

The "ESG Pack", a public document recognised at "the Finance Transformation Awards", sets out all the EDF group's sustainability indicators[1]. The EDF group's Impact report is a public document that draws inspiration from the guiding principles of the Impact Management Project (IMP), and details how the Group aims to maximise its positive impacts to facilitate the energy transition and minimise its negative impacts.

16 Group commitments

Major non-financial risks from the Group risk mapping	CSR commitments	Contribution to the SDGs	Policy, actions, results	Key performance indicator	Scope	Unit	Target	2021	2022	2023
CARBON NEUTRALITY AND CLIMATE										
Adaptation to climate change – transition risks (5B)	**Ambitious carbon trajectory**		Section 3.1.1	Carbon intensity: specific CO_2 emissions from electricity and heat generation √	Group	gCO_2/kWh	30 in 2030	48	50	37
Adaptation to climate change – transition risks (5B)	**Carbon contribution**		Section 3.1.1.6	Deployment rate of the framework guidelines on carbon contribution solutions	Group	%	100 in 2023	50	50	100
Adaptation to climate change – physical risks (5B)	**Adapting to climate change**		Section 3.1.2	Deployment rate of new climate change adaptation plans within concerned entities	Group	%	100 in 2023	47	100	**100***
Transformation capacity in the face of disruptions – downstream transformation (5C)	**Developing electricity use and energy services**		Section 3.1.3	Avoided CO_2 emissions thanks to sales of innovative goods and services	Group	Mt	>30 in 2030	4.4**	11.4	**12.4**
PRESERVATION OF THE PLANET'S RESOURCES										
Risk of industrial safety violations and impact on environmental assets, including biodiversity (1I)	**Biodiversity**		Section 3.2.2	Achievement rate of "Act4nature international" commitments (2023-2025)	Group	%	100 in 2025	67***	89***	43
Risks related to the management of large industrial projects – risk of conflict in the use of land (1A)/Risk of industrial safety violations and impact on environmental assets, including biodiversity – risk of soil pollution (1I)	**Responsible land management**		Section 3.2.2	Implementation rate of innovative solutions encouraging multifunctional land use	Group	%	100 in 2026	20	40	60
Risk of industrial safety violations and impact on environmental assets, including biodiversity – risk of water pollution (1I)/Risk relating to adapting to climate change – risk of conflict in the use of resources (5B)	**Integrated and sustainable water management**		Section 3.2.3	Water intensity: water consumed/electricity generated by fleet √	Group	l/kWh	<0.95****	0.86****	0.83****	**0.83****
Risks relating to control radioactive waste treatment and decommissioning of nuclear facilities (2A)	**Radioactive and conventional waste, and circular economy**		Section 3.2.4	Annual rate of conventional waste directed towards a waste recovery industry	Group	%	>90	92.7	88.4	**85.3**
WELL-BEING AND SOLIDARITY										
Nuclear safety risks during operation (2C)/Risk relating to hydro power safety (1F)/Risk relating to occupational health or safety (employees and service providers) (1D)	**Security, health and safety for all**		Section 3.3.1	Global LTIR	Group	Ind	<1.8 in 2023	2.1	1.9	**1.7**
Ethics and compliance risk (3D)/Risk relating to the duty of care: Risks related to supply chains (1E) and management of large industrial projects (1A)	**Ethics, compliance and human rights**		Section 3.3.2	Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure	Group	%	100	-	100	**100**
Risk related to the development of employees skills – professionalisation action and inclusive employer approach (5A)	**Equality, diversity and inclusion**		Section 3.3.3	Gender balance index: percentage of women in the Management Committees of the Group's entities	Group	%	33 in 2026	29.8	30.8	**31.7**
Risk related to changes in public policies and the regulatory framework in France and in Europe – risk of insufficient compensation for missions of general interest (3A)	**Energy poverty and social innovation**		Section 3.3.4	Advisory actions carried out with customers within the framework of the Energy Support Service	EDF	Nb	600,000 to 1,000,000	642,482	476,638	**390,376**
RESPONSIBLE DEVELOPMENT										
Risks related to the management of large industrial projects – consultation of stakeholders and acceptability aspect (1A)	**Dialogue and consultation with stakeholders**		Section 3.4.1	Annual rate of projects for which a dialogue and consultation procedure is engaged	Group	%	100	100	100	**100**
Risks related to the operational continuity of supply chains and contractual relations – responsible procurement approach (1E)/Risk related to the management of large industrial projects – local development of projects (1A)	**Responsible regional development**		Section 3.4.2	Annual rate of procurement from SMEs in France	EDF and Enedis	%	22-26	24.9	23.2	**22.7**
Risk relating to the management of large industrial projects (1A) – Risk related to the development of employees skills – professionalisation action and inclusive employer approach (5A) – Risks relating to the skills of the nuclear industry and associated reinforcement actions (6A)	**Development of industrial sectors**		Section 3.4.3	Achievement rate of supporting actions backed by EDF encouraging relocation and maintaining nuclear industry skills (*France Relance* Programme)	EDF	%	100 in 2023	28.6	71.4	**100**
Transformation capacity in the face of disruptions – digital transformation (5C)	**Data responsible company**		Section 3.4.4	Achievement rate of EDF commitments towards French Responsible Digitalisation Institute (INR)	EDF	%	100 in 2024	18.8	52.5	**93**

* Change in scope: addition of a new entity in 2023 (Framatome)
** Data calculated in 2021 for EDF and Dalkia for a smaller scope of services
*** Data calculated on the basis of the nature commitments for 2020-2023.
**** Indicator calculated on the basis of an average over the last five years
√ 2023 value subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.

(1) https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/reports-and-indicators/non-financial-kpis/esg-indicators

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3.1 Carbon neutrality and the climate

Group accountability and commitment to cut CO_2 emissions

In the first section of its sixth assessment report published in August 2021[1], the Intergovernmental Panel on Climate Change (IPCC) established that the warming of the atmosphere, oceans, and land observed since 1750 is "unequivocally" caused by human activities. Confirming the conclusions of the 2018 special report on global warming of 1.5°C[2], the IPCC calls for a swift, durable, significant reduction in CO_2 and other greenhouse gas emissions and achievement of net zero anthropogenic CO_2 emissions to stabilise the human-caused increase in global temperatures.

The EDF group is committed to combating climate disruption and to playing its role to the full in this respect. It has aligned its ambitions with the Paris Climate Agreement, the aim of which is to keep global warming well below 2°C, preferably at 1.5°C, compared to pre-industrial levels.

The Group's CO_2 emissions reduction trajectory, which will be reinforced in 2023, was validated according to several standards (notably Moody's, SBTi and TPI). The EDF group has set up a dedicated governance structure in line with the best practices recommended by the Task Force on Climate-Related Financial Disclosure (TCFD)[3].

EDF's climate strategy, in line with the Group's strategic orientations, is accompanied by four CSR commitments: an ambitious carbon trajectory, solutions to contribute to carbon sinks, adaptation to climate change, and the development of electricity uses and innovative energy services. These commitments, together with reinforced climate governance for the Group, form the EDF group's climate transition plan, adopted at the May 2022 General Shareholders' Meeting with a majority of 99.87%.

The EDF group is engaged in an accountability process focusing on the 10 Recommendations by the United Nations High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (UN HLEG)[4].

(1) Climate change 2021: scientific components. Contribution of Working Group I to the sixth assessment report of the French Intergovernmental Panel on Climate Change (IPCC), August 2021.

(2) Impacts of global warming of +1.5°C and related global greenhouse gas emission trajectories, special report by the French Intergovernmental Panel on Climate Change (IPCC), October 2018.

(3) See also EDF's press release of 10 December 2020 "Fifth anniversary of the Paris Agreement: EDF steps up its ambitions and takes new climate commitments".

(4) Report from the United Nations High-level Expert Group on the net zero emissions commitments of non-state entities, integrity matters: net zero commitments by businesses, financial institutions, cities and regions (2022): un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf.

37 gCO_2/kWh	**100%**	**100%**	**12.4** Mt
Carbon intensity	Deployment rate of the framework guidelines on carbon contribution solutions	Deployment rate of climate change adaptation plans	CO_2 emissions avoided

3.1.1 Group carbon trajectory

EDF, the world's leading producer of electricity with no direct CO_2 emissions

According to the IPCC, electricity generation technologies can be classified in one of two categories:

- so-called "decarbonised" technologies, with no direct[1] CO_2 emissions (such as hydro, nuclear, wind and solar power);
- "high-carbon" technologies based on fossil fuels (such as gas and coal) in the absence of any carbon capture and storage systems; these generate CO_2 emissions directly.

According to Enerdata's[2] latest annual ranking, the EDF group is the world's leading producer of electricity with no direct CO_2 emissions, due notably to the size of its nuclear and hydropower generation fleet.

3.1.1.1 Group policy

3.1.1.1.1 A "Net Zero emissions" goal

In line with its *raison d'être* which aims to build a CO_2-neutral energy future, the EDF group has set itself the target of achieving "Net Zero" emissions across all its activities by 2050.

This target covers greenhouse gas emissions across all scopes (1, 2 and 3)[3] and all geographical regions[4].

(1) Does not include emissions relating to the fuel supply chain and the life cycle of other components of the production system.
(2) The annual benchmark for electricity producers: power-producers-ranking.enerdata.net/.
(3) For definition of the three scopes, see section 3.6.3.4 "Further details on labour, environmental and societal data from the SNFP".
(4) For further methodological details, see section 3.6.3.4 "Further details on labour, environmental and societal data from the SNFP".

Net Zero by 2050	Reducing the Group's direct greenhouse gas emissions to zero or virtually zero by 2050
	Reducing direct and indirect emissions by at least 90%[1]
	Neutralising residual emissions through high integrity carbon sinks[2]

3.1.1.1.2 Short- and medium-term reduction targets

The EDF group establishes and regularly reviews its short- and medium-term targets for the Group's direct and indirect emissions and translates them into emission trajectories for all the Group's business lines and entities (see section 3.1.4 "EDF climate governance").

In accordance with the recommendations of the High-Level Expert Group on the Net-Zero Emissions Commitments set up by the United Nations, these targets exclude any recourse to voluntary carbon offsetting.

3.1.1.1.2.1 Scope 1 and carbon intensity

In November 2023, the EDF group set new targets for reducing its direct emissions[3] of greenhouse gases. These reinforce the ambition of the targets that the Group set itself at the end of 2020 in terms of absolute Scope 1 emissions and carbon intensity in 2030. They supplement them by setting a 2025 and 2035 milestone for Scope 1 emissions and a 2035 milestone for carbon intensity.

2025 target	60% reduction in Scope 1 emissions compared to 2017, *i.e.* 20MtCO_2
2030 target	70% reduction in Scope 1 emissions compared to 2017, *i.e.* 15.5MtCO_2
	30gCO_2/kWh carbon intensity
2035 target	80% reduction in Scope 1 emissions compared to 2017, *i.e.* 10.5MtCO_2
	22gCO_2/kWh carbon intensity

3.

For further methodological details, see section 3.6.3.4 "Further details on labour, environmental and societal data from the SNFP".

3.1.1.1.2.2 Scope 3

The EDF group has set targets for reducing its indirect Scope 3 emissions by 2030, both for Scope 3 as a whole and specifically for the part of Scope 3 associated with gas sales to its end customers (see the SBTi objective).

2030 target[4]	28% reduction, from 2019 levels, of all Scope 3 emissions by 2030

3.1.1.1.2.3 Labelling of the Group's emissions trajectory

In February 2024, the ambition of the Group's emissions reduction targets presented in the previous paragraphs was assessed by Moody's as being in line with a 1.5°C warming scenario[5].

In December 2020, the Science Based Targets Initiative (SBTi) validated the Group's greenhouse gas reduction targets for 2030, which it had set in 2020, as part of a Well Below 2°C trajectory, based on their methodology specifically developed for the electricity sector[6][7].

These targets are as follows:

2030 SBTi targets[8]	50% reduction compared with 2017 levels for Scope 1 and 2 emissions, also including emissions from non-consolidated assets and emissions associated with electricity purchased (*i.e.* not generated by it) to be sold to end customers
	28% reduction, compared with 2019 levels of emissions from combustion of gas sold to end customers (Scope 3)

The Group considers that the new Scope 1 targets announced in November 2023 and those already validated by the SBTi label for 2030 position EDF on a trajectory aligned with the 1.5°C goal. Moody's has recognised this. The Group has chosen not to submit its new targets to the SBTi without changing its methodology, which as it stands would penalise players like EDF that are already highly decarbonised.

(1) Compared to the reference year used for the definition of the 2030 targets.
(2) Neutralisation after 2030 only, in line with the principles defined in the report of the United Nations High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (November 2022).
(3) As indirect Scope 2 emissions represent less than 0.3% of the Group's greenhouse gas emissions, they are not covered by the new targets.
(4) For further methodological details, see section 3.6.3.4 "Further details on labour, environmental and societal data from the SNFP".
(5) For more details, see Moody's "Net Zero Assessment" report: https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1395660.
(6) Initiative launched in the wake of the Paris Agreement in 2015 by the following four organisations: CDP, UN Global Compact, World Resources Institute and World Wild Fund.
(7) Setting 1.5°C aligned science based targets quick start guide for electric utilities, CDP, June 2020.
(8) For further methodological details, see section 3.6.3.4 "Further details on labour, environmental and societal data from the SNFP"

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3.1.1.2 The Group's results

The Group's climate results were achieved in 2023 against a backdrop marked by the war in Ukraine, threats to gas and oil supplies, and the resolution of the so-called stress corrosion crisis, which had a negative impact on nuclear generation.

3.1.1.2.1 Carbon performance for the climate

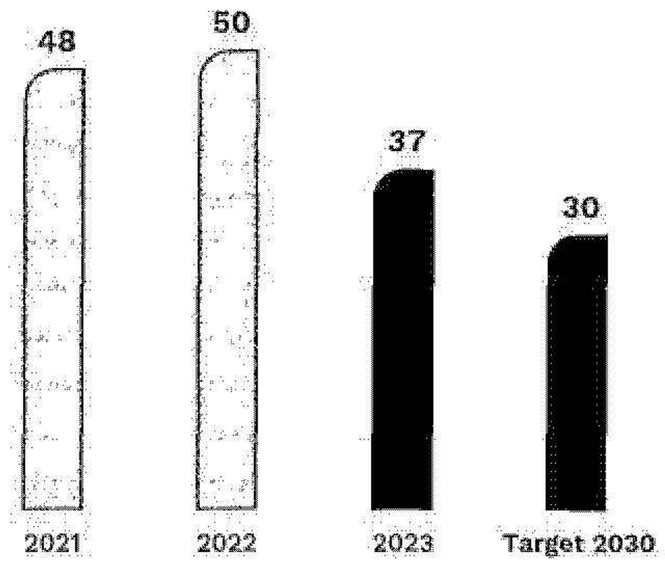
3.1.1.2.1.1 Carbon intensity

The Group's carbon intensity is a key indicator of performance with respect to its carbon trajectory.

Group key performance indicator

The carbon intensity of the electricity and heat produced by the EDF group is around six times lower than the European average (251gCO_2/kWh(1)) and more than 12 times lower than the global average (460gCO_2/kWh(2)).

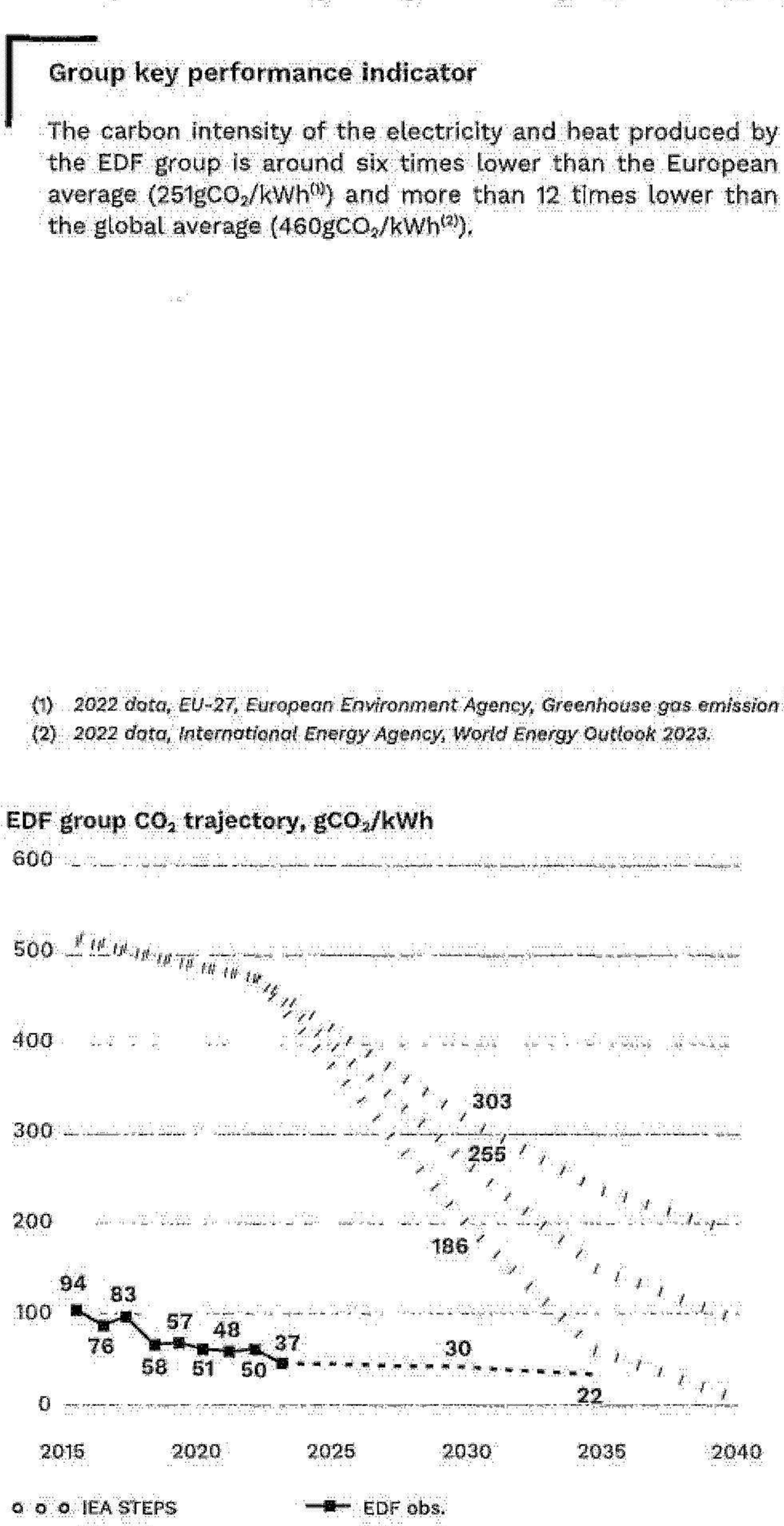
Carbon intensity: specific CO_2 emissions from electricity generation and heat (in gCO_2/kWh) √



√ 2023 value subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.

(1) *2022 data, EU-27, European Environment Agency, Greenhouse gas emission intensity of electricity generation in Europe, October 2023.*
(2) *2022 data, International Energy Agency, World Energy Outlook 2023.*

EDF group CO_2 trajectory, gCO_2/kWh



The STEPS, APS and NZE scenarios are the three global scenarios considered by the IEA in the World Energy Outlook 2023. The STEPS scenario (Stated Policies Scenario) is the trend scenario, leading to global warming of 2.4°C in 2100. The APS (Announced Pledges) scenario corresponds to the implementation of all the climate commitments made by countries, leading to an estimated warming of 1.7°C. The NZE (Net Zero Emission) scenario is the most ambitious scenario, limiting warming to 1.6°C around 2040 before returning to 1.4°C in 2100.

The EDF group's carbon intensity decreased significantly in 2023 (-26% compared to 2022).

This reduction reflects the significant drop in the Group's direct emissions (-20.6%), as well as the increase in decarbonised generation (*i.e.* without direct CO_2 emissions) mainly due to the rebound in French nuclear generation (+15%).

As the graph opposite shows, the EDF group's carbon intensity reduction trajectory is fully in line with the 1.5°C scenario derived from IPCC research; this scenario is based on average carbon intensity for the electricity sector of 100gCO_2/kWh in 2030.

The EDF group's carbon trajectory was recognised as aligned with 1.5°C by Moody's in early 2024. The EDF group also engaged in discussions with SBTi to have the fact that its trajectory is aligned with the 1.5°C goal recognised. However, the sector-based methodology used by SBTi, which essentially sets identical carbon intensity reduction goals for all electricity companies irrespective of their initial carbon intensity (approximately -77% between 2017 and 2030) penalises those players who had already made progress in decarbonisation(1).

3.1.1.2.1.2 Emissions avoided in electricity production

If this performance is compared with average carbon intensity of power generation in Europe (including France), taking into account direct and indirect emissions of power generation, the EDF group's electricity generation worldwide in 2023 resulted in 92MtCO_2 avoided.

This performance is partly due to the very low carbon intensity of EDF's nuclear fleet in operation on French soil, evaluated at 4gCO_2 per kWh according to a life cycle analysis (LCA) conducted by EDF R&D based on 2019 data(2). Published in 2022, this complied strictly with ISO 14040 and ISO 14044 standards and was the subject of a critical review by a panel of independent experts. The method involves taking an inventory of the material and energy flows during the various life cycle phases of the product, from the extraction of raw materials through to waste management.

(1) Moreover, this point has been acknowledged by the TCFD (TCFD, "Measuring Portfolio Alignment", October 2021) and GFANZ (GFANZ, "Measuring Portfolio Alignment", August 2022) which explicitly advises against using the "absolute contraction" approach to assess investor profile alignment.
(2) R&D study published in June 2022: https://www.edf.fr/sites/groupe/files/2022-08/edfgroup_acv-4_synthese-etude_20220823.pdf

3.1.1.2.2 Climate performance for integrated performance

EDF promotes integrated performance, combining financial and CSR performance. The Company's value creation is expressed by a combination of financial and CSR indicators.

Emissions to sales ratio

EDF believes that this indicator accurately reflects integrated performance only if all direct and indirect emissions are taken into account (Scopes 1, 2, and 3). Since 2021, this ratio has decreased by 57%. In 2023, the figure stood at 656tCO_2e per million euros in sales.

Emissions to sales	Unit	2021	2022	2023
Scopes 1, 2, 3	tCO_2e	129,474,942	120,123,567	91,644,836
Group sales	M€	84,461	143,476	139,715
Scopes 1, 2, 3/Group sales	tCO_2e/M€	1,533	837	656

3.1.1.2.3 Summary of the Group greenhouse gas (GHG) report

The following table presents trends in the Group's GHG reports between 2021 and 2023.

EDF group greenhouse gas report *(in $MtCO_2e$)*	2021	2022	2023
Scope 1 emissions √	27	24	19
Scope 2 emissions	0.3	0.4	0.3
Scope 3 emissions	102	96	72

√ 2023 indicator subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.

The following table presents the three most significant Scope 3 items:

Significant Scope 3 items *(in $MtCO_2e$)*	2021	2022	2023
Emissions from electricity purchases to be sold on to end customers (not including upstream emissions)	17	18	7
Combustion emissions from gas sold to end customers (use of products sold)	45	41	35
Emissions from Scopes 1 and 2 of equity accounted assets (investments)	10	8	7

The EDF group's detailed GHG report is published on the EDF website (edf.fr)[1].

The EDF group's carbon footprint (all scopes) continued to decrease in 2023 with a reduction of 28MtCO_2e, a decrease of 24% compared to 2022. The update of the emission factor associated with natural gas should be noted; it had an upward impact on the 2023 footprint, mainly on the Group's Scope 3. The 2021 and 2022 footprints shown above were not recalculated considering this new emission factor value.

- The decrease in the EDF group's direct emissions (Scope 1) compared with 2022 was 5MtCO_2e, *i.e.* a reduction of 21%. This performance stems from lower demand for carbon-based means of generation, due notably to higher decarbonised generation (nuclear and renewable) in 2023, but also to the decarbonisation of the Group's generation fleet (definitive shutdown of coal-fired units in the United Kingdom, conversion of fuel oil to biomass at La Réunion, and shutdown of certain gas-fired cogeneration power plants at Dalkia).
- The decrease in the EDF group's indirect emissions (Scope 3) continued in 2023 (down 24% compared to 2022). This decrease resulted from the emissions reduction strategy implemented by the Group, notably in its electricity and gas marketing activities in North America (sale of EDF Trading North America's retail electricity and gas activities at the end of November 2022) and in its non-controlled assets (sale of the Group's stake in the combined cycle gas turbine in Sloe in the Netherlands in the first quarter of 2023.

The following table shows progress on the EDF group's trajectory towards achieving its 2030 targets, as validated by SBTi:

SBTi indicators	2021	2022	2023	2030 target validated by SBTi
Rate of reduction in emissions relating to the sale of electricity (emissions in Scopes 1 and 2, also including emissions from non-consolidated assets and emissions relating to electricity purchased for sale to end customers, baseline year: 2017)	-28%	-33%	-57%	-50%
Rate of reduction in emissions relating to the sale of gas (emissions from the combustion of gas sold to end customers, baseline year: 2019)	-24%	-32%	-41%	-28%

The EDF group's emissions reduction trajectory (for both direct and indirect emissions) is not only in line with the 2030 targets validated by SBTi in December 2020, it actually does better.

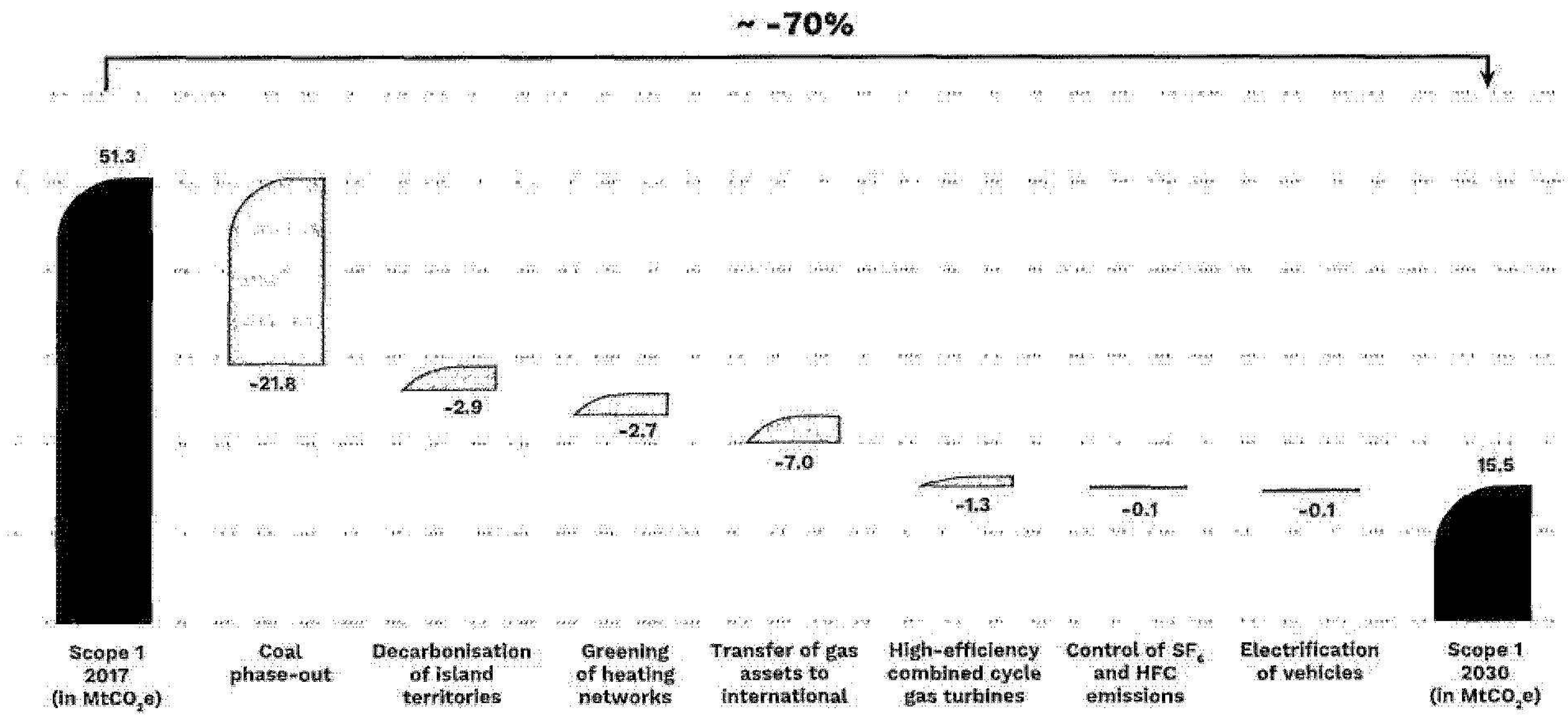
(1) https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/corporate-social-responsibility/reports-and-indicators/greenhouse-effect-gas-emissions

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3.1.1.3 Roadmap for reducing the Group's direct GHG emissions

To achieve the greenhouse gas emission reduction goals it set itself (see section 3.1.1.1 "Group policy"), the EDF group implements an action plan in line with the Group strategy[1]. This action plan is coordinated by the EDF group Carbon Neutrality Strategy project (see the description of climate governance in section 3.1.4.1 "Governance bodies").

The following diagram shows an estimation of the impact of the actions undertaken to reduce the EDF group's direct (Scope 1) GHG emissions.



The following table provides details these actions taken by the EDF group:

*Action**	*Description*	*URD section*
Coal exit	Closure (France, UK), sale (Poland) or conversion (Cordemais) of all coal-fired (and heavy fuel oil) power plants operated by the EDF group by 2030.	3.1.1.3.1
Decarbonisation of island regions	Replacement of light and heavy fuel oil used in non-interconnected zones by liquid biomass, in coherence with multi-year local energy programme.	3.1.1.3.2
Greener heating networks	Greening of the heating networks managed by the Group through the use of biomass, waste heat recovery, geothermal and thalassothermal energy; discontinuation of energy recovery from municipal household waste by Dalkia.	3.1.1.3.3
International transfer of gas assets	Transfer of natural gas electricity generation assets built under "Build Operate Transfer" type contracts with operational control by EDF in Brazil and Vietnam; sale of West Burton B in the United Kingdom.	3.1.1.3.4
High-efficiency combined gas cycles	Discontinuation of the oldest combined gas cycles and replacement by high-efficiency facilities; reduced demand on the grid due to the price of CO_2 and priority injection of renewable energies.	3.1.1.3.4
Controlling SF6 and HFC emissions	Measures to manage and reduce uncontained SF_6 emissions from electrical transmission and distribution systems as well as uncontained HFC emissions from air-conditioning units.	3.1.1.3.6
Electrification of vehicles	Fully electrifying the EDF group's light vehicle fleet in accordance with the EV100 commitment.	3.1.1.3.8

** Note that Enedis is also experimenting with Local Zero Emission Generators (GE ZE), an alternative solution to conventional generators. The diesel engine is replaced with a battery or a hydrogen fuel cell, the use of which locally emits no noise, CO_2, or pollutants. These GE ZEs will supply customers during outages for works on the public electricity distribution network, while reducing the impact on the environment and maintaining the collection of local renewable energies connected to the network. They will contribute to the zero carbon objective.*

These actions make use of tried and tested technology, with good visibility in terms of economic and regulatory environments.

(1) See section 1.3 "Group strategy and objectives".

3.1.1.3.1 Coal-fired power generation, currently representing less than 0.1% of the total power generation, to be reduced to 0 by 2030

For some 20 years now, the EDF group has been implementing and supporting the closure of as many units powered by coal across Europe as possible. Since 2017, the EDF group has been engaged in the Powering Past Coal Alliance, which promotes the phasing out of coal in EU countries by 2030 and in the rest of the world by 2050 in the wake of the Paris Agreement[1]. The EDF group supports the Global Coal to Clean Power Transition Statement[2] signed at COP26. The decrease in the share of coal in total generation observed in 2023 was mainly due to the lower use of these peak resources in France in a context of easing of the supply-demand balance facilitated by a mild winter, as well as to the closure of West Burton A and the increase in the Group's total generation.

Commitment

In 2019, the Group committed to phase out coal-based electricity generation through to 2030, across all regions. The Group also undertook to not finance coal activities that are not present in its portfolio in 2019.

Closures of coal-fired units operated by EDF

82% of the last coal units operated by the EDF group were closed between September 2019 and December 2023.

Results of the coal phase-out policy	
Number of coal-fired carbon units shut down since 1995	35
Coal-based electricity generation capacity withdrawn since 1995 *(in GWe)*	11.8
Estimated reduction in annual emissions *(in $MtCO_2e$)**	45
Coal-based electricity and heat generation capacity, 2023 *(in GWe)*	1.8
Ratio of coal-based electricity and heat generation to total generation, 2023 *(in %)*	0.2
Volume of electricity generated from coal *(in GWh)*	245

** Conservative estimate, assuming an average load factor of 45% for coal-fired power plants.*

3.

Additional information

45Mt reduction in CO_2e emissions

This coal phase-out policy resulted in an estimated reduction of the European electrical sector's annual greenhouse gas emissions by more than 45$MtCO_2e$.

Tightly controlled and ultimately limited operation

Coal-fired heat and electricity generation accounted for 0.2% of the EDF group's total in 2023 output. These generation assets are only used during "peak" periods and crisis situations in the energy market[3].

Pending closures of coal-fired units operated by EDF

Since April 2021, the EDF group only operates two coal-fired units in Europe, located at the Cordemais power plant (Loire-Atlantique). The definitive shutdown of the Cordemais power plant, initially planned for 2022, was postponed in view of the needs expressed by RTE in its latest generation adequacy reports[4]. A partial conversion to biomass has been commenced. See section 1.4.1.2.2 "Issues relating to thermal generation".

High-capability heavy fuel oil boilers

As well as closing coal-fired boilers, the EDF group closed all of its high-capability fuel oil boilers between 2000 and 2018, corresponding to installed capacity of 6.8GWe. These fuel oil boilers with individual capacity of between 250 and 700MWe were kept in operation solely for electricity generation spikes.

Support during closures

All of these closures are accompanied by employee redeployment measures and initiatives within the Group to develop new local economic activities. See section 3.4.3.3.1 "Declining activities and territories".

3.1.1.3.2 Energy transition in island regions

Corsica and the French overseas territories, as non-interconnected zones (NIZ) in terms of the mainland power grid, are covered by specific multi-year energy programmes (Programmations pluriannuelles de l'énergie - PPE), which set ambitious decarbonisation and energy independence goals for them (energy independence of overseas territories by 2030 and Corsica by 2050).

Fossil fuel-fired facilities, mainly oil or diesel generators and combustion turbines (CT), have historically played a major role in these zones. They contribute to the safety of the electricity system and the production of electricity in certain areas, being capable of addressing major seasonal effects in electricity consumption and dealing with the intermittent nature of renewable energy in electricity systems that cannot import in the event of a spike in demand or a shortfall in production.

(1) poweringpastcoal.org/members
(2) ukcop26.org/global-coal-to-clean-power-transition-statement/
(3) The French Constitutional Council (Conseil constitutionnel) authorises increased fossil fuel-fired power generation facility emissions limits only in case of a serious threat to power supply security (Decision no. 2022-843 DC of 12 August 2022).
(4) According to the provisional supply/demand balance for electricity in France published by RTE in 2021, keeping the Cordemais power plant in operation until 2024-2026 provides valuable security in the event of nuclear power not being highly available, no change in the trajectories for renewables, and/or the commissioning of the Flamanville EPR being postponed.

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To achieve low-carbon electrical generation in the Non-Interconnected Zones (NIZ), the EDF group has put the following actions in place:

Replacement of fuel oil

Gradual replacement of fuel oil with liquid biomass between 2023 and 2028 in EDF SEI[1] and EDF PEI[2] thermal power plants, in line with the multi-year energy programme for various regions.

In 2023, for example, the Port Est power plant in La Réunion was converted to bioliquids, enabling EDF to make its generation mix in Réunion 100% renewable[3].

Shutdown of the oldest combustion turbines (TAC) and generators

Gradual shutdown of the oldest oil-fired combustion turbines (TAC) and generators as and when new generation resources with lower emissions become available. As a result, the future Larivot plant in Guyana designed by EDF PEI will be powered with liquid biomass, replacing the Dégrad-des-Cannes fuel plant. Operation of the new power plant with liquid biomass was included in the French Guiana PPE in August 2021.

Energy management systems

Voluntary implementation of an energy management system (ISO 50001 certification) at seven of the eight most important IES fossil fuel-fired generation sites and output optimisation work and energy efficiency initiatives on EDF PEI facilities.

100% renewable energy projects

The development of 100% renewable energy projects for isolated microgrids (e.g. in French Guiana's interior municipalities and Mafate in Réunion Island). Other actions are undertaken by EDF in the islands in question, such as measures to manage energy (e.g. solar water heaters, insulators, air movers, etc.), plans to increase the generation capacity of active hydropower plants, development of networks compatible with the integration of renewable energy (e.g. batteries, synchronous condensers, Energy Management Systems, etc.) (see section 1.4.4.3 "Island Energy Systems").

3.1.1.3.3 Greener heating networks

The EDF group, through its subsidiary Dalkia, manages 330 urban heating and cooling networks. It is one of the leaders in energy services in France. Dalkia has set itself the goal of achieving 65% renewable and recovered energy (R&RE) in its heating networks in France by 2026, and achieved 64.5% in 2023[4].

In particular, this commitment has led to development of the use of biomass, energy from waste, the recovery of fatal heat, and geothermal and oceanic thermal energy conversion. For more illustration, see section 3.1.3.3 "Developing efficient, low-energy, innovative energy services".

Globally, coal accounted for 2.01% of 2023 heat generation by Dalkia, which has committed to no longer use this fuel for its heating activities in France, in line with the provisions of the multi-year energy programme.

The use of renewable energies and energy efficiency services enabled Dalkia to reduce its customers' greenhouse gas emissions and allowed 4.3MtCO_2e to be avoided in 2023 (see section 1.4.6.1.1 "Dalkia").

3.1.1.3.4 Decarbonisation of flexible means of electricity generation

3.1.1.3.4.1 The role of gas activities

Gas activities account for a significant proportion of the EDF group's GHG footprint in relation to the low level of its direct emissions, notably through three activities: the generation of electricity from natural gas, the generation of heat from natural gas and the sale of natural gas to end customers.

Because it emits around half as much CO_2 as coal and can be used to generate controllable electricity, natural gas could play a role in the energy transition in some countries.

The EDF group has defined a set of internal criteria in order to align its gas business with its climate-related commitments:

- the EDF group is constantly working to optimise the energy and environmental performance of its thermal fleet in order to reduce its CO_2 emissions, as well as to provide more services to the electricity system. For example, a thorough overhaul of the Ringvaart combined cycle gas turbine, combined with improved efficiency at this power plant north of Ghent (Belgium), has resulted in a reduction of 3,500 tonnes of CO_2 per year, according to the number of hours of operation;
- all of the EDF group's gas activities fit into the carbon trajectories (covering both direct and indirect emissions) set for each of the Group's entities in line with the Group's 2030 goals. All development projects must demonstrate a contribution to the energy transition of the relevant regions and their business plan must ensure compliance with the Group's 2050 carbon neutral target;
- the Group is committed to the development of new gas projects (combined cycle gas turbine – CCGT), only if the project contributes to reducing the carbon intensity of the electricity system of the country concerned or is related to the country's security of supply. When technically and economically feasible, the project uses solutions enabling reduction of its direct emissions, such as green gas, hydrogen or CO_2 capture and storage (see section on the EDF group's "decarbonised thermal energy" project below);
- in its capacity as gas supplier, the EDF group helps its customers to shift towards more restrained energy use and achieve energy efficiency and lower emissions through its offering, expertise, and specialised subsidiaries. It develops and encourages alternative solutions to fossil fuels whenever available (low-carbon electricity, heat pumps, renewable gas, renewable heat, etc.);
- lastly, the EDF group supports the development of the biogas sector whenever a project's business model is viable in the long term.

3.1.1.3.4.2 Decarbonisation of the EDF group's fossil fuels

The aim of the Group-wide "decarbonised thermal energy" Strategic Project is to identify the various decarbonisation systems or techniques for thermal means of generation (boilers, combined cycles, combustion turbines, engines) that traditionally run on fossil fuels (coal, natural gas and fuel oil). The identification of these decarbonisation techniques should enable the construction of new decarbonised thermal resources in response to calls for tenders or capacity auctions issued by network operators.

(1) EDF SEI: EDF Systèmes Énergétiques Insulaires.
(2) EDF PEI: EDF Production Électrique Insulaire.
(3) Generation excluding TAC (combustion turbines) which can be mobilised in the event of an incident on the network and without the possibility of recovery through another means of generation. The map of our means of generation is available on the EDF website.
(4) 2023 data from Dalkia networks listed with the French National Union for Urban Heating and Air Conditioning (Syndicat national du chauffage urbain et de la climatisation urbaine - SNCU).

The following far-reaching decarbonisation solutions have been identified as being mature in the short to medium term:

- upstream: use of " decarbonised" fuel (solid biomass, biogas, bioliquids, low-carbon hydrogen, synthetic fuels);
- downstream: capture of CO_2 for storage (CCS) and/or use of part of the CO_2 emitted (CCU).

Roadmaps were defined and are currently being implemented to examine all the opportunities for decarbonising existing generation facilities and to manage solutions for developing new decarbonised thermal capacity when the electricity system needs it. For example:

- in July 2023, operating tests with a bioliquid (hydrotreated vegetable oils, in compliance with the RED II directive) were carried out on a combustion turbine. Based on the positive results of this trial, we plan to carry out further trials in 2024 on a machine in the Paris region;
- the transformation of the Cordemais site, which is continuing, *via* the modification of the second unit, which will in turn be able to replace up to 20% of coal with biomass pellets from the winter of 2023-2024. The Group is working to secure this source of biomass supply;
- in Belgium, the combined cycle gas turbine (870MW) currently under construction at Seraing will be able to run on a mixture containing 50% hydrogen, in terms of volume, reducing emissions by 23%. The Seraing site has the space required to deploy pilot technologies for decarbonisation or CO_2 capture. With a 63% efficiency rate, the future power plant will emit around 320kg of CO_2 per MWh generated, *i.e.* 20% less than the current plant. The construction of this plant is part of the capacity remuneration mechanism set up at the initiative of the Belgian federal government, in order to guarantee the security of supply in the country as of 2025-2026.

In addition, carbon sink solutions are being studied to help neutralise residual emissions and thus achieve the objective of zero net emissions (see section 3.1.1.6 "Contribution to carbon sinks").

3.1.1.3.5 Reduction of SF_6 emissions

Fluorinated gases such as sulphur hexafluoride (SF_6) and hydrofluorocarbons (HFC), used as refrigerating fluids, are powerful greenhouse gases. Their emissions in 2023 were estimated for the entire EDF group at a total of 133 ktonnes of CO_2e, *i.e.* approximately 0.7% of EDF group direct emissions (Scope 1). Emissions are produced by leaks during both the production process and life cycle. Wherever technologically and economically possible, the EDF group uses alternative technologies to SF_6. All EDF group business lines are working to cut the carbon impact of HFCs wherever technologically possible.

Existing nuclear fleet

Through a proactive policy, including the implementation, from 2019, of a specific action plan aimed at bringing all its equipment back to their design leakage rate, *i.e.* 1% per year, EDF was able to reduce SF_6 emissions from its nuclear fleet by almost 92% from 2008 to 2023. EDF is deploying a number of technological innovations to confirm its long-term control of emissions: alternative coatings to protect against corrosion, as well as innovative SF6 recovery and clogging systems. EDF's approach is based on the ALARA (As Low As Reasonably Achievable) principle, adapted to the challenges of unit safety and network security. In 2023, the Group achieved its objective collectively for the first time, with an overall rate for the fleet[1] of 0.94% in 2023, compared with 1.45% in 2022.

New Nuclear Projects and Engineering

The air insulation technology adopted for the EPR2[2] project's Energy Removal Platform means that equipment liable to contain SF_6 can be kept to a minimum.

For the Flamanville EPR, it has been decided to locate the equipment in question indoors in order to protect it from sea wind corrosion. EDF has also committed to an R&D programme (Project Zero SF_6) to monitor and test alternatives to SF_6 for its installations.

Distribution

SF_6 emissions by distribution network operator Enedis[3] amounted to approximately 470kg in 2023. The action plan implemented by Enedis to reduce these emissions has focused in particular on the deployment, since July 2021, of a new technical series of high-voltage vacuum breakers (with no SF_6) for new high-voltage switchgear fitted in primary medium- and high-voltage substations. Over 90% of SF_6 from obsolete breakers is recovered and regenerated. Following on from this initial success, Enedis is entering into partnerships with suppliers to evaluate alternative solutions based on alternative gas sources for secondary substations.

3.1.1.3.6 Reducing HFC emissions

HFCs are used as refrigerating fluid in industrial refrigeration units and air conditioning in the service sector. To reduce fluorinated gas emissions, Regulation (EU) No. 517/2014 on fluorinated greenhouse gases (known as F-Gas) is progressively implementing a reduction in HFC emissions within the EU through a quota system and a schedule for a gradual reduction in the quantity of HFCs that importers and producers can market each year. This EU Regulation is currently being amended. The Regulation aims to reduce HFC volumes present on the market by 95% (in CO_2e) by 2030 compared to 2015 levels.

Following the regulatory prohibition on using CFCs and subsequently HCFCs (R11, R12, and then R22), from 2014 onwards EDF has engaged in a programme to replace refrigerating fluids with high global warming potential (GWP) (CFCs and HCFCs) by less harmful refrigerating fluids (HFCs), resulting in a significant reduction in CO_2te emissions. Presently, the most-used refrigerating fluid in EDF's generation fleet (approximately 90%) has a GWP of 1,430 or less. EDF has commissioned studies to evaluate the possibility of converting existing refrigerating units to operate with refrigerating fluid with a lower GWP (< 600).

(1) Leaks, anomalies, and maintenance for the entire fleet, including EPR reactors.
(2) See section 1.4.1.1.3.2 "Other New Nuclear projects".
(3) A distribution operator managed in accordance with the rules of managerial independence.

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3.1.1.4 Roadmap for developing the Group's decarbonised generation

To achieve the goals it has set itself (see section 3.1.1.1 "Group policy"), the EDF group is implementing an action plan in line with the Group strategy[1]. This plan is coordinated by the EDF group *Carbon Neutrality Strategy* project (see the description of climate governance in section 3.1.4.1 "Governance bodies").

EDF, Europe's biggest investor in decarbonised energy

The EDF group is investing massively to prepare for the future and build a CO_2-neutral energy future. The Group's electricity generation mix in 2023 was 77.7% nuclear, 9.1% hydropower, 6.0% other renewable energies, 6.1% gas, 1.0% fuel oil and less than 0.1% coal[2] (see section 1.1 "Key figures").

By 2030, the main actions that will enable the EDF group to achieve its decarbonised generation targets are as follows:

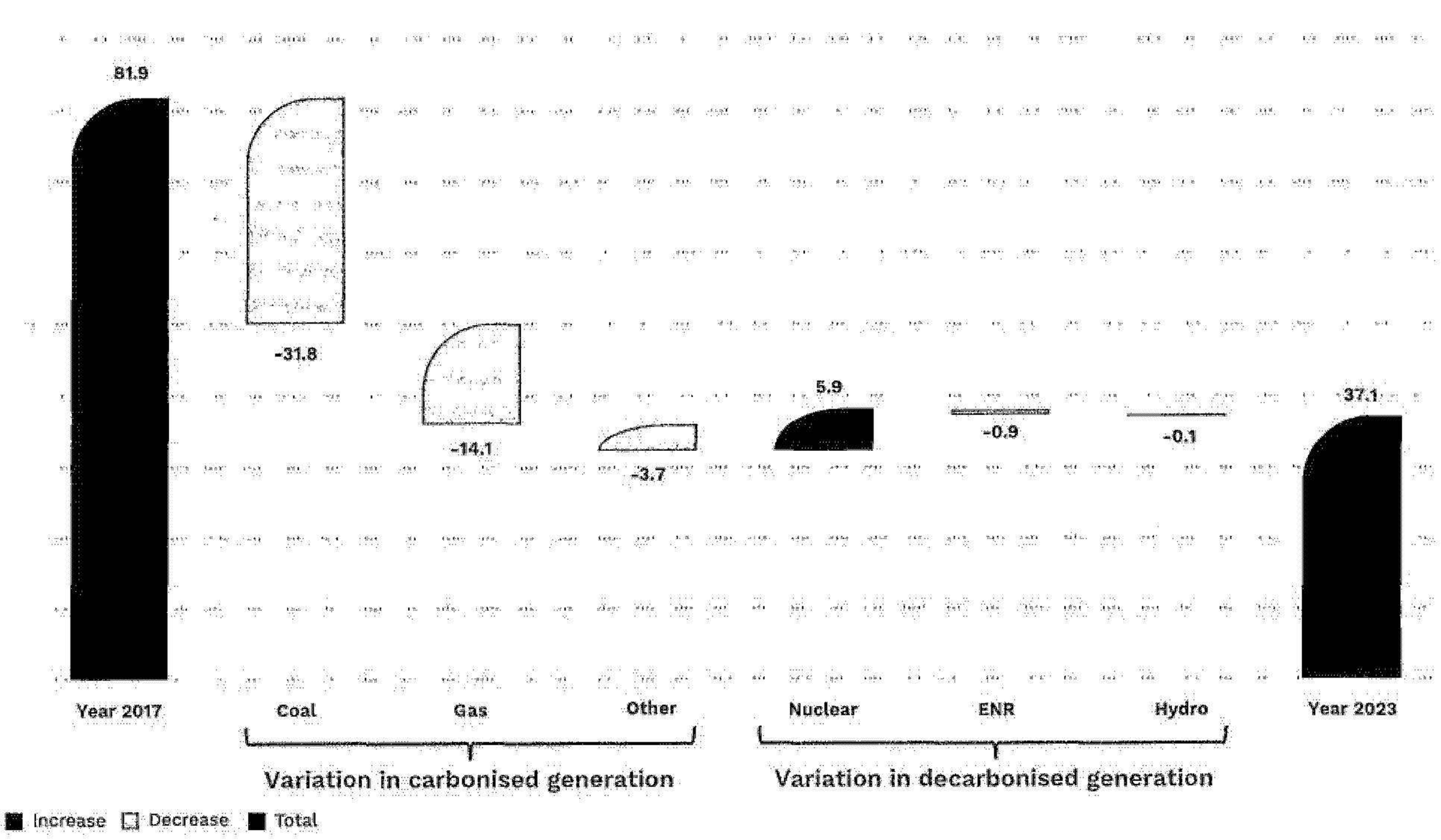
ROADMAP FOR INCREASING THE GROUP'S CARBON-FREE OUTPUT

Subjects	*Equities*	*URD section*
Grand Carénage	Continued operation of France's nuclear power plants beyond 40 years thanks to the *Grand Carénage* programme.	3.1.1.4.2
Nuclear New Build	In February 2022, the French President expressed his desire for six new EPR2 nuclear power generation reactors to be built in France and commissioned from 2035, and for eight additional reactors to be studied. The Head of State also announced the development of the NUWARD reactor and innovative reactors.	3.1.1.4.3
Development of renewables	Development of generation through renewable energies, including hydropower.	3.1.1.4.4
Network development	Development of networks to enable a better integration of renewable energies.	3.1.3.2.1
Flexibility and management of intermittency	Development of electrical storage to improve system flexibility and management of the intermittency of non-controllable renewable energies.	3.1.3.2.2

The implementation of the EDF group's roadmaps to reduce direct emissions (Scope 1) and to increase decarbonised generation by 2030 should enable the EDF group to achieve its carbon intensity reduction target, set at 30gCO_2/kWh in 2030 and 22gCO_2/kWh in 2035.

The following diagram shows the estimated impact to date of the climate transition action plan on the EDF group's carbon intensity.

Evolution of EDF group's carbon intensity (in gCO_2/kWh between 2017 and 2023)



The gradual withdrawal from coal power is the main factor in the decrease of carbon intensity. The reduction in nuclear generation, including the closure of the Fessenheim power station in 2020[3], will mitigate this reduction.

(1) See section 1.3 "Group strategy and objectives".
(2) In consolidated data.
(3) Pursuant to the multi-year energy programme.

3.1.1.4.1 Decarbonised investments

The Group is by far the biggest investor in the energy transition in Europe, accounting on its own for more than 20% of industrial investments in the electrical sector[1].

In 2023, nearly 95% of the Group's investments were made in decarbonised technologies (94% in 2022), *i.e.* €18.2 billion, 56% of which in the nuclear sector, 27% in network activities, 14% in renewables and 3% in customer services and solutions.

For the years 2024, 2025 and 2026, the Group forecasts an increase in annual investments and expects to reach €25 billion per year, at least 90% of which will be allocated to decarbonised activities.

It should be noted that, as of 2024, the absolute amount of investments allocated to low-carbon activities will be at least equal to the amount of decarbonised investments in 2023

3.1.1.4.2 *Grand Carénage*

See section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation".

3.1.1.4.3 New Nuclear projects

See section 1.4.1.1.3 "New Nuclear projects".

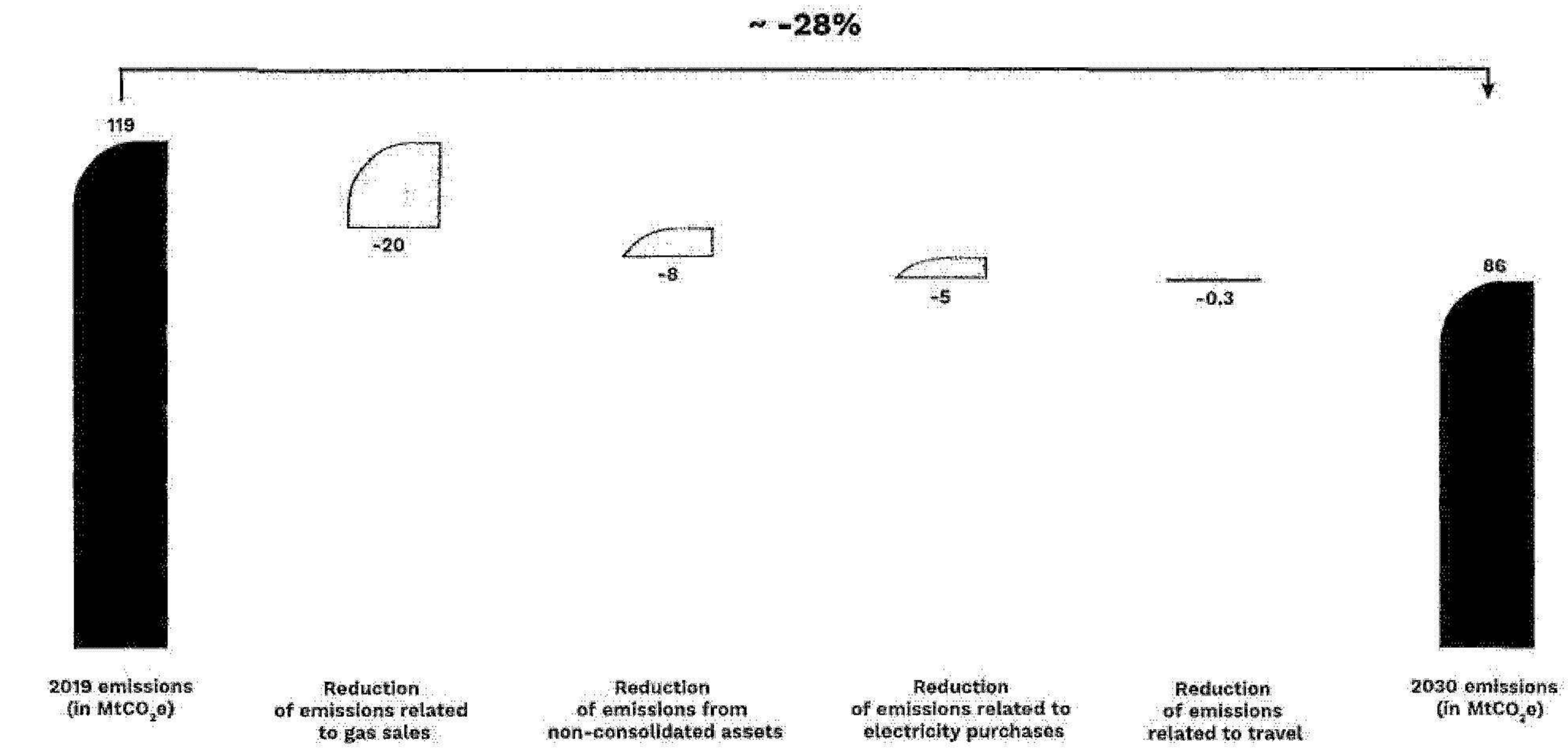
3.1.1.4.4 Development of renewable energy generation

The EDF group is a major player in renewable energy in Europe[2]. The worldwide generation in 2023 was 70.8TWh of electricity and 8.7TWh of *renewable heat, via hydroelectricity, wind power, solar photovoltaic and other renewable energies.*

As part of its strategy, the Group set itself the objective of continuing to deploy renewable capacity and flexibilities to ensure the stability of the networks. Today, the net installed renewable electricity generation capacity is 37.7GW.

3.1.1.5 Roadmap for reducing the Group's indirect GHG emissions

The following diagram shows the estimated impact of the main actions taken to reduce the EDF group's indirect (Scope 3) greenhouse gas emissions.



The following table sets out the actions implemented by the EDF group.

Action	Description	URD section
Reduction in emissions relating to the sale of gas	Gas customer portfolio management; support to consumers in their transition towards energy sobriety, energy efficiency, and the reduction of their emissions *via* Group offers, expertise, and subsidiaries, by promoting alternative solutions to fossil fuels; increased biomethane injection rate into the natural gas distribution network in line with national strategies.	3.1.3
Reduction in emissions relating to the purchase of electricity	Greening (use of renewable energy Power Purchase Agreements) of purchases of electricity for sale to end customers in countries where electricity has a high carbon intensity; portfolio management for customers for whom EDF sells but does not produce electricity.	3.1.3.2.3
Reducing travel emissions	Reducing emissions from employee travel, in view of the roll-out of the EDF group's new travel policy.	
Reduction of emissions from non-consolidated assets	Disinvestment by 2030 from coal-fired power generation assets located in China in which the EDF group has a minority holding.	

These actions make use of tried and tested technology, with good visibility in terms of economic and regulatory environments.

(1) Ninth European energy company financial ratings "Watt's Next Conseil", July 2023: https://wattsnext.fr/wp-content/uploads/2023/07/9eme-barometre-Watts-Next-Conseil-juill2023.pdf

(2) "Climate Change and Electricity, European carbon factor, Benchmarking of CO_2 emissions by Europe's largest electricity utilities", PwC, December 2023. PWC's 2023 survey, based on 2022 data, benchmarked Europe's top 24 electricity producers, accounting for 57% of total generation.

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3.1.1.6 Contribution to carbon sinks

3.1.1.6.1 Policy

For the EDF group, the neutralisation of residual emissions is the final step in achieving zero net emissions. Under no circumstances should the purchase of carbon credits replace a strategy of drastically reducing the Group's direct and indirect emissions.

The EDF group is focusing on the use of "negative emissions" projects to neutralise its residual emissions by 2050, compared to "avoided emissions" projects. This can include technological solutions, such as Bio-Energy with CO_2 Capture and Storage (BECCS), or natural solutions, such as carbon storage in forests and soil.

Pursuant to the carbon accounting rules in force[1], the carbon credits generated by the projects financed are not deducted from the EDF group's greenhouse gas footprint and are accounted for separately.

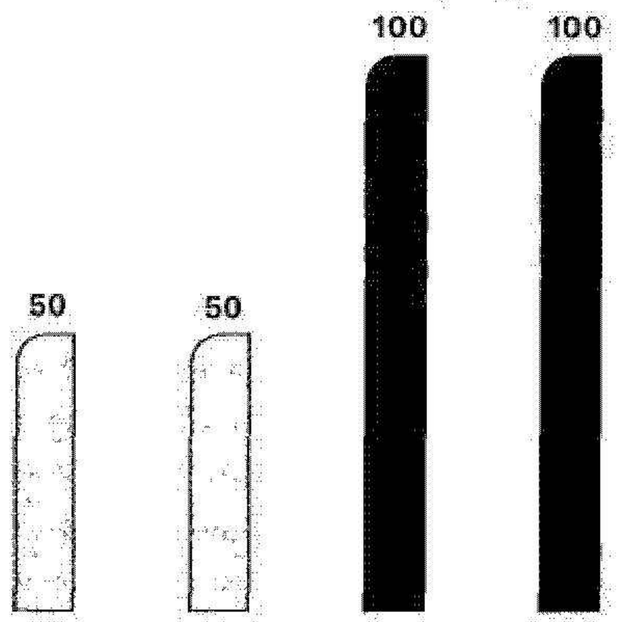
3.1.1.6.2 Group key performance indicator

Group key performance indicator

As part of the implementation of a carbon contribution strategy, the Impact Department finalised an internal application note intended for all Group entities, which aims to define the principles of governance of the EDF group in terms of carbon contributions, notably regarding the quality criteria of carbon credits to ensure that the projects financed are of high integrity. It also defines the reporting method for entities using a carbon contribution practice (Reporting on Sustainable Development Committee*).

The Group decided to use a "transitional KPI" from the end of 2021 to the end of 2023: the deployment rate of the framework guidelines on carbon contribution solutions within Group entities.

Deployment rate of the framework guidelines on carbon contribution solutions (in %)



** See section 3.5.2 "CSR governance bodies".*

In addition, funded projects are screened beforehand to ensure that they meet high integrity criteria, based on the Core Carbon Principles defined by the Integrity Council for the Voluntary Carbon Market (iC-VCM)[2].

An EDF Carbon Offsetting Fund (EDF COF) has been set up as part of the obligation to offset excess greenhouse gas emissions from facilities producing electricity from fossil fuels introduced by law No. 2022-1158 of 16 August 2022. Under this obligation, EDF is required, in its capacity as operator, to pay into the said COF, the purpose of which is to finance projects to reduce or sequester greenhouse gases in France, a fixed amount of €40 or €50 per tonne of carbon dioxide equivalent emitted in excess of 0.6 or 0.7 kilotonnes per megawatt of installed power generation capacity (depending on the period in question).

3.1.1.6.3 Research and development

R&D supports the Group's strategy of contributing to its Net Zero commitment by 2050. Based on an approach combining digital simulation and experimental resources, it evaluates the technical and economic maturity of CO_2 emissions reduction solutions for industrial sources belonging to EDF and its customers, and explores natural and technological negative emissions solutions.

3.1.1.6.3.1 CO_2 capture and storage

The EDF group has considerable expertise in this field, having participated in several international research projects and built a capture demonstrator at its Le Havre site, which captured around 1,900 tonnes of CO_2 from July 2013 to March 2014. Current research is aimed at adapting the post-combustion capture solution tested at Le Havre, which is the most mature, to combined gas cycles and industrial processes with high emissions (cement works, steelworks, aluminium), whose flue gases have different characteristics. A CO_2 capture laboratory is currently being built in Chatou, which will enable small-scale testing from 2024 onwards of the capture processes best suited to these targets.

R&D is also examining the possibility of recovering the carbon dioxide captured in a different chemical form (*e.g.* fuels or materials). A laboratory to investigate CO_2 recovery in the form of e-fuels is under construction at Renardières alongside the existing hydrogen platform.

3.1.1.6.3.2 Negative emissions, BECCS and Direct Air Capture

Applied to bioenergy, CCS is becoming a way to generate negative CO_2 emissions (BECCS) and could play a major role by 2050. The EDF group's R&D assesses the potential of these technologies and their adaptation to various industrial processes. The direct capture of CO_2 from the air or the oceans is another area where R&D is actively monitoring scientific and technical developments. To progress in the understanding of these developing technologies, R&D draws on scientific partnerships and experimental methods. The Chatou CO_2 capture lab will include a DAC technology test facility. In the United Kingdom, EDF Energy continuing to investigate setting up a direct air CO_2 capture demonstrator on the site of the Sizewell C nuclear power plant project.

3.1.1.6.3.3 Solutions based on nature

Afforestation, reforestation, or proper management of pastures and wetlands now appear among the most promising potential ways to increase carbon storage in soil and forests, and accordingly generate negative emissions. The EDF group is the third largest land manager in France, with more than 40,000 hectares of land featuring not only generation sites but extensive natural spaces (including 7,000 hectares of forests). In order to support EDF in its desire to carry out high-integrity projects, EDF's R&D is working to assess the reality and sustainability of carbon storage actions using natural solutions and to define methods to maximise the benefits of such actions on biodiversity and the water cycle. An independent scientific committee has been set up to support EDF in this regard.

(1) GHG Protocol Corporate Accounting and Reporting Standard, WRI-WBCSD, 2015.
(2) https://icvcm.org/the-core-carbon-principles/

3.1.2 Adapting to climate change

EDF's facilities have a technical lifespan potentially easily exceeding 40 years, making it, among non-nationalised companies, one of the major firms most exposed to the physical effects of climate change. This is why the EDF group identified climate risk as a priority in 2018.

Adapting to climate change refers to a procedure to adjust to the current climate, its changes, and its consequences. This means mitigating the harmful effects of climate change and making the most of any beneficial effects and resulting opportunities.

3.1.2.1 Policy

The Paris Climate Agreement assigns the same level of importance to the goal of adapting to climate change as to mitigation. However, given the lack of simple, shared indicators, the regulatory framework for adapting to climate change is still considerably less developed than that for mitigation.

France's current National Climate Change Adaptation Plan[1] aims to ensure an effective adaptation to a regional climate in mainland France and its overseas territories that is consistent with a global temperature rise of between 1.5 and 2°C compared with the 19th century. This plan does not establish any regulatory requirements that are directly applicable to businesses. The EDF group has set itself a series of commitments which are integrated into the policy as part of a proactive and responsible approach.

Pursuant to this policy, the EDF group undertakes to:

- evaluate the impacts of climate change on future and existing activities;
- adapt existing facilities to make them less sensitive to climatic conditions and more resilient to extreme weather events;
- incorporate climate change scenarios in the design of new installations;
- adapt the Group's solutions, internal operations and know-how in light of climate change;
- take into account the ecosystemic dimension of climate change.

In particular, this policy states that entities most exposed to the physical consequences of climate change should draw up a climate change adaptation plan and update it every five years.

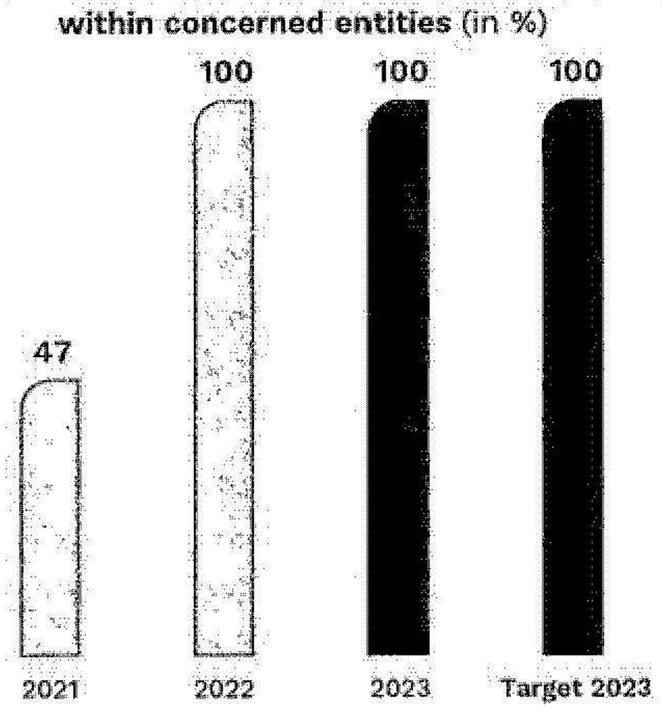
In 2024, France should finalise the third version of its National Climate Change Adaptation Plan, built around a Reference Warming Trajectory for Climate Change Adaptation (TRACC) corresponding to a warming of +4°C in France by 2100, or +3°C globally. The EDF group is preparing for the implementation of this plan.

3.1.2.2 Adaptation monitoring indicators

Group key performance indicator

The deployment rate of the new climate change adaptation plans reflects the structuring, prioritisation and industrialisation of actions undertaken as close as possible to the Group entities exposed to the physical risks of climate change, in compliance with the requirements of the TCFD. Depending on the entities concerned**, this involves producing an adaptation plan using a qualitative and/or quantitative approach, which is to be integrated into the environmental management system by the end of 2023. The scope has been updated to include a new entity (Framatome).

Deployment rate of new climate change adaptation plans within concerned entities (in %)



** Scope for 2023: Nuclear and Thermal Fleet Department, EDF Hydro, EDF PEI, EDF SEI, EDF UK. CO23, Luminus, Edison, New Nuclear Engineering and Projects Department, EDF-R, Transformation and Operational Effectiveness Department, Framatome.*

ACT adaptation

EDF was one of the 13 companies that took part in the road test conducted by ADEME to develop the ACT Adaptation method, one of the first on the adaptation front. The finalised method was published in November 2023 ahead of COP28[2], incorporating elements of EDF's feedback. It complements the ACT Mitigation method, which ranked EDF fourth out of 68 electricity companies, and provides a comprehensive assessment of a company's climate strategy. EDF received a score of 18.4/20, reflecting a certain maturity in the various areas of its adaptation approach: long-term strategy, raising issues to the highest levels of governance, exhaustive risk analysis (both in terms of scope and the level of detail of the data used) thanks to the R&D climate service, which provides the Group's various business lines with climate data to quantify risks and draw up their adaptation plans. These adaptation plans provide details of a roadmap for the implementation of systemic adaptation solutions. They are updated every five years as part of the continuous improvement process required to keep pace with changes in the Group's physical risks.

(1) National Climate Change Adaptation Plan for 2018-2022, known as PNACC-2.
(2) https://actinitiative.org/methodologie-act-nouvelle-methodologie-adaptation/

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The EDF group's adaptation expenses

The expenses incurred in adapting to climate change reflect the expenses that contribute to the resilience of the Group's activities. Defining the scope of such costs is not trivial: it is difficult to isolate what specifically relates to climate change in investments whose main objective is safety or in measures to increase the flexibility of the fleet in response to the effects of physical climate hazards on deliverability.

The expenses carried forward for 2023 are therefore limited to the operating and investment costs of the nuclear and hydropower plants in mainland France, which are specifically linked to climate change and variability. For nuclear, CAPEX is part of the *Grand Carénage* programme and covers notably the "*Grands Chauds*" ("Heat wave") project (see 3.1.2.5 "Summer" operation"), cold sources, dykes (submersion) and tornados. For the hydropower activity, expenses mainly concern the water intake of the Bois power plant and the adaptation to changes in low-flow periods. OPEX expenses mainly cover R&D studies.

These values reflect both the robustness of the Group's industrial tools, which incorporate the most pessimistic climate scenarios from the design stage onwards, and the predominance of operational performance and safety factors as design drivers in relation to climate change. These investments, which are not listed here, nevertheless take account of climate hazards and their evolution over a long period under the same weather conditions, thus making a substantial contribution to the resilience of infrastructures. EDF continues to invest in R&D in order to ensure a detailed understanding of the impact of climate change on its activities.

Adaptation expenses for investments and operations (in millions of euros):

Business line	CAPEX	OPEX
Nuclear	61.2	2.8
Hydropower	4.1	1.8

3.1.2.3 From the "Climate Hazards" plan to a global resilience strategy

By 1999, the storms Lothar and Martin had already led EDF to work on mitigating the physical impact of climate change on its activities. The EDF group developed a "Climate Hazards" plan in 2004, followed by a climate change adaptation strategy in 2010.

The EDF group adaptation strategy covers generation facilities with a lifespan of over 40 years, such as nuclear power plants and hydropower dams. All EDF group entities are required to take account of climate risks (including both physical risks and "transition" risks) when mapping their risks(1). For its impact and dimensioning studies, the EDF group systematically takes into account the IPCC's worst-case scenario in terms of global warming; currently, this is the RCP 8.5 scenario.

3.1.2.4 The ADAPT programme and the CEMA action plan(2)

The ADAPT programme aims to secure generation at France's thermal and nuclear power plants by anticipating the consequences of climate change.

The approach is based on three pillars:

- understanding climate disruption and its effects at local level, taking into account its systemic nature in predictions of future climate conditions in various localities;
- evaluating the impacts of climate disruption on facilities and on power plants' local ecosystems;
- taking action to mobilise internal and external stakeholders in view of the changing, systemic nature of climate disruption and its consequences, and taking action to adapt and contribute to the habitability of localities.

ADAPT is developing a systemic approach to adaptation to climate disruption:

- taking into account stakeholders and involving them in the definition of resilience criteria and adaptation measures;
- incorporating contractual and non-contractual contacts.

The programme is structured around the habitability of localities. It does this by looking at biodiversity, carbon storage, and the adaptation of environments. It endeavours to respond to the induced effects on the labour and societal acceptability of its activities. ADAPT identifies "immediately attractive" commitments and investments.

In this context, and in view of the feedback from the summer of 2022 and the constraints related to the design of systems and equipment, the iCube approach identifies appropriate investments. It targets the impacts of climate change that are already visible, particularly in terms of optimising generation and reducing water consumption.

ADAPT aims to incorporate the issue of climate disruption in all processes, in particular in forthcoming 10-year inspections of the units in question.

ADAPT seeks to ensure that attenuation and adaptation measures are long-term and not "maladaptations"(3). Over and above engineering works, the analysis also considers the systemic and changing nature of the consequences of climate change.

The ADAPT programme has launched an initiative called "Chooz 2050" to produce a "climate monograph" that can be used to help prepare adaptation strategies for the region concerned (Ardennes). This study provides a full-scale analysis of all aspects of the project, from industrial facilities to contractual and non-contractual ecosystems. The methodology used for the Chooz site is currently being extended, for example to Gravelines, Belleville-sur-Loire and Chinon.

At the end of 2023, the rate of regional monographs was 33%, compared to the target of 100% by 2025(4).

(1) See section 3.1.4.2.2 "Identifying climate change risks and opportunities".
(2) CEMA: Comprehend – Evaluate – Mobilise – Act.
(3) "Maladaptation" refers to the situation in which strategies to adapt to climate change produce harmful, undesirable effects for certain populations and/or their environment, in particular when their implementation makes populations even more vulnerable to climate change.
(4) For details of how this indicator is calculated, see section 3.6.3.4 "Further details on labour, environmental and societal data in the SNFP".

3.1.2.5 Summer operation[1]

Lessons learned from the exceptional summers of 2003 and 2022:

- in 2003, some power plants had to reduce output so as not to further heat river water, leading to a generation loss of 5.5TWh, equivalent to 1% of EDF's generation that year. The aim of the adaptation actions launched by EDF, has been to increase the safety margin and maintain generation levels during such periods;
- the need to have legislation that is more geared to climate change has emerged, in particular in respect of discharge water temperature thresholds, either in terms of values (the mean temperature of watercourses has increased by approximately +2°C in France since 1970) or in terms of the application period. For most watercourses, dry spells are becoming longer, starting earlier and finishing later.

Measures taken:

- the "*Grand Chaud*" ("Heat wave") plan launched in 2008 resulted in EDF making improvements to cooling efficiency (cold source) for some of its power plants, and hardening reactor building electronics so that they can withstand temperatures in excess of 50°C;
- all EDF group power plants currently under construction (including Flamanville 3 and Hinkley Point C) have been designed taking into account the most recent climate scenarios; in particular, this has involved revising the rise in sea levels upwards;
- for the first time in 2022, temporary changes to temperature limits on discharges were requested (and agreed to) by the ASN and the Ministry for the Ecological Transition (*Ministère de la transition écologique*, MTE) for the Blayais, Bugey, Golfech, Saint-Alban and Tricastin nuclear power plants. The initial feedback from the enhanced environmental monitoring implemented by the operator as part of the temporary modifications did not reveal any significant changes in physico-chemical and microbiological parameters and no unusual fish mortality was observed;
- for the fossil fuel thermal fleet, the regulatory requirements for drought periods were implemented in the summer of 2023, and experiments to reduce building temperatures were carried out to make power plants more resilient to climate change[2].

3.1.2.6 Adaptation of hydropower facilities

The adaptation plan for the hydropower fleet, known as "ARCHE" (*Adaptation et Résilience Climatique de l'Hydraulique à EDF* – adaptation and climate resilience of hydropower at EDF), which covers more than 400 power plants and over 350 dams in mainland France, is structured around the following three major issues:

1. ensuring the safety of facilities and people;
2. ensuring a high level of economic and environmental performance;
3. ensuring an essential contribution to the management of multiple water uses (which concerns two-thirds of concessions) in France (storage in/removal from reservoirs, flood mitigation, *etc.*).

To this end, the plan sets out four main areas broken down into around 30 actions:

- adapting knowledge: scenarios for changes in hydro-climatic parameters and other water uses, improvement of weather forecasts;
- adapting the portfolio: enhanced monitoring, assessment of extreme hazards and vulnerability, structural modifications;
- adapting operations: business continuity, business model (water management, storage, flexibility), development, environmental performance;
- adapting positioning and communication: externally (role of hydropower generation, development potential, regional resilience), and internally (ARCHE support).

As part of this adaptation plan, the EDF group is implementing an assessment process and actions to adapt to extreme events. Nine reassessments on the maintenance of the capacity of structures to evacuate these extreme floods were carried out in 2023 by EDF DTG. These studies are input data for the Dam Hazard Studies (regulations relating to the safety of hydropower structures and sent to the housing authorities [DREAL]). EDF launched the CREDOH programme as part of the process of bringing its facilities into compliance with regulations, which will incorporate these extreme flow reassessments into the flood control works programme.

The EDF group must also deal with an increase in hydrometeorological variability, which, without taking into account climate change, could lead to an annual variation of the deliverable of +/-50% in mainland France. One of the major adaptation actions consisted in rebuilding the water intake at the Centrale des Bois on two occasions (2010-2011 and 2023-2024), to cope with the accelerated melting of the Mer de Glace glacier.

3.1.2.7 Adjustment of distribution networks

Enedis drew up a Climate Hazards Adaptation Plan for the distribution network in order to reduce the vulnerability of its 1.4 million kilometres of networks. This mainly consists in burying high-voltage overhead lines to avoid risks of falling trees, wind, snow and frost, beginning with the most exposed facilities. In 2023, 2,400km of high voltage overhead lines and 3,800km of low voltage overhead lines were removed[3].

Enedis set up[4] the Electricity Rapid Intervention Force (*Force d'intervention rapide électricité*, FIRE), enabling resources and staff to be redeployed nationwide to restore electricity supply as quickly as possible. FIRE is one of the EDF group's key measures to respond to extreme weather risks. FIRE currently has 2,500 technicians trained for crisis situations and 11 logistics storage facilities across the country, allowing the deployment of 1,800 high-power generators (over 60kVA) and 1,000 low-power generators (10kVA), meeting the power needs of low voltage networks during significant climate incidents. In Corsica and French Overseas Territories, EDF IES draws on solidarity between Corsica and Overseas territories and on FIRE as and when weather events have a major impact on the network.

In 2023, the Ciarán and Domingos storms mobilised over 4,400 Enedis employees and service providers to restore electricity to the affected households as soon as possible (1.2 million households).

(1) In respect of extreme phenomena, see in particular section 3.1.4.2.3.1 "Physical risk scenarios".
(2) See section 3.2.3.3.1 "Impact of climatic conditions on electricity generation".
(3) Furthermore, new medium voltage lines are installed underground, while low-voltage (LV) lines are installed underground or unobtrusively. See also section 3.2.2.1.1.1 "Changing land and sea use".
(4) Following the 1999 storms.

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3.1.3 Developing low electricity consumption and innovative energy services

With largely decarbonised electricity, the development of uses of low-energy, innovative electricity uses and services is a key vector for work to combat global warming.

The EDF group is contributing to this goal by means of offers tailored to various markets, including promoting the use of heat pumps, electric mobility, and energy efficiency solutions. See section 3.1.3.3 "Developing efficient, low-energy, innovative energy services".

Electrifying sectors that produce the most CO_2 entails having conditions that are favourable to this development. See section 3.1.3.2 "Setting the conditions for the efficient development of sober electricity uses".

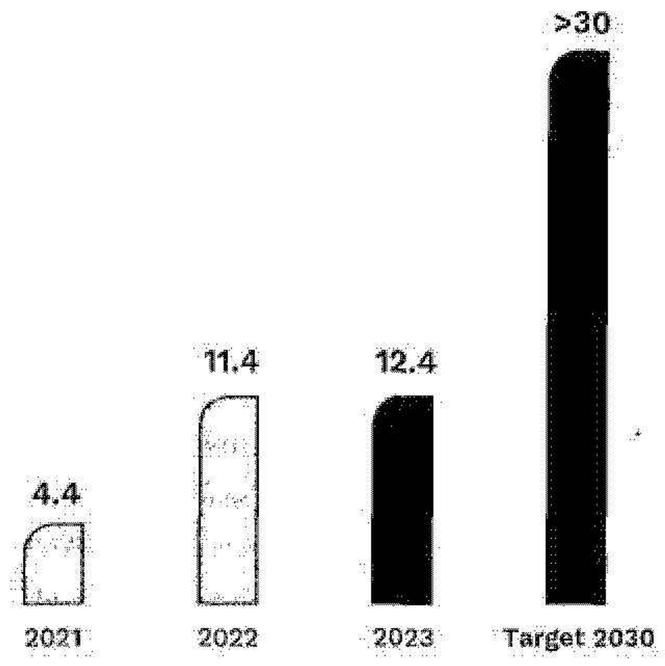
3.1.3.1 Commitment to supporting customer decarbonisation

Group key performance indicator

One of the key indicators in combating global warming is the quantity of CO_2 emissions avoided. To date, there is no recognised external reference that can be used to determine the amount of emissions avoided by customers thanks to the products and services EDF sells. However, EDF can follow principles for such calculations according to the most frequently observed practices in this respect. At the same time, EDF is engaged in French and international research seeking to develop this type of benchmarking method. The aim is to avoid 30 million tonnes of CO_2 emissions by 2030(1).

The 2023 results only cover some of the products and services marketed by EDF. The figures should increase in the coming years, subject to possible changes in method in order to remain in line with third-party practices.

Avoided CO_2 emissions thanks to our sales of innovative goods and services (in $MtCO_2$)



(1) *The target has been doubled compared to 2021 due to the increase in both geographical and functional scopes; for more details, see section 3.6.3.3 "Details on performance indicators (KPI)".*

3.1.3.2 Setting the conditions for the efficient development of sober electricity uses

The reduction in final energy consumption is based on two main levers: sobriety and energy efficiency. In 2022, EDF conducted energy efficiency awareness-raising actions among its customers (demand response, Tempo offers, consumption monitoring tools), which contributed to the 10% reduction in electricity consumption in November and December in France, a trend that continued in 2023. Energy efficiency requires the electrification of uses supported by a flexible network and innovations for sober and efficient use.

3.1.3.2.1 A more robust, intelligent and flexible network

Quality of service is one of Enedis' main objectives. In 2023, the average outage duration experienced by low voltage customers was 73.2 minutes. It exceeds the target set at 62 minutes by the incentive regulation as part of the TURPE, due to the very numerous and violent cyclical climate hazards. The year was marked by multiple storms at the start of the year (Gérard, Fien, Larisa and Mathis) and by stormy episodes.

[redacted]	2021	2022	2023
SAIDI (min.)*	56	59.5	73.2
CAIDI (min.)	92.5	85.9	104.3
SAIFI (min.)	0.61	0.69	0.7

* *SAIDI: System Average Interruption Duration Index; CAIDI: Customer Average Interruption Duration Index; SAIFI: System Average Interruption Frequency Index.*

3.1.3.2.1.1 More "intelligent" (smart)

In terms of smart grid technology, the 20kV high-voltage network is already smart since it is supervised and equipped with automated power restoration. It has been further improved with the incorporation of smart fault detectors on the aboveground network and remotely operated control mechanisms. For the LV network, the deployment of smart meters by Enedis now enables us to have a real-time vision of the characteristics of the electricity at each delivery point. In areas not interconnected with continental Metropolitan France, and outside Europe, Enedis and EDF are continuing to install connected electricity meters, allowing consumers to monitor their electricity consumption.

[redacted]	2021	2022	2023
Number of smart meters installed *(in millions)**	37.6	40.6	42.6

** For the methodology used for this indicator, see section 3.6 "Methodology".*

As of the end of 2023, 42.6 million metres had been installed, including almost 37.9 million in France[1], as well as in the United Kingdom and India *via* EDF UK and EDF International Networks.

3.1.3.2.1.2 More flexible

In 2020, Enedis, in its capacity as distribution network operator, published its roadmap for the transformation of network scaling methods and integration of flexibilities. The new version of the Contract for Access to the Public Distribution Network (CARD – *Contrat d'accès au Réseau Public de Distribution*) for generation facilities connected to the high-voltage network came into force on 1 January 2023[2]. It takes into account network flexibility and availability, thus allowing a maximum amount of energy to be dispatched while also factoring in operating constraints and public grid maintenance.

Since end-2021, Enedis may offer an alternative connection offer with power modulation, also known as the Smart Connection Offer, to all high-voltage producers on request. In addition, Enedis is testing a new method for sizing regional plans for the grid connection of renewable energies at eight source substations in the Landes and Somme regions. The goal is to free up connection capacity through flexibilities.

Enedis is ranked first out of 80 network operators worldwide in the international Smart Grid Index benchmark (SGI 2021 and 2022), which assesses the degree of "intelligence" of electricity networks worldwide[3].

In 2023, the "CartoLineBt" tool was named one of the best AI solutions for smart grids at the ISGAN (International Smart Grid Action Network) awards.

3.1.3.2.2 Better management of intermittence, flexibility and storage development

3.1.3.2.2.1 Innovative solutions for load balancing

Customers receiving high-voltage supply are invited to sign up to a load balancing contract, under the terms of which customers reduce their electricity use as requested by EDF in return for compensation. Specific market offerings have been marketed for private individuals, as well as for manufacturers and service sector consumers.

3.1.3.2.2.2 Innovative solutions for storage

The storage development strategy initiated in 2018 resulted in 1.7GW of projects completed or secured at the end of 2023 and a cumulative volume of storage commissioned of 0.6GW. In 2023, the Group commissioned battery facilities in the United Kingdom and the United States for 140MW, began the construction of new projects, and secured the development of projects in France, the United Kingdom, the United States, Saudi Arabia and South Africa for a volume of 0.8GW. EDF group storage projects involve pumped-storage hydropower plants (STEPs), hybridisation of batteries with renewable energies, batteries directly connected to the network, and storage with customers.

3.1.3.2.2.3 Innovations to manage energy consumption

As an expert in data recovery, Datanumia, a wholly-owned EDF subsidiary, develops innovative digital solutions (web portals, applications) to monitor and optimise the energy consumption and carbon footprint of individuals and professionals in the service sector, of the industry and of local authorities. Multi-fluid and multi-site, the energy management platform dedicated to professionals is a veritable dashboard to enable everyone to achieve their energy savings goals.

Dalkia Analytics provides an energy and environmental performance coordination service for industrial facilities. Deployed on over 100 sites, the science data service captures new sources of energy savings by using AI to analyse generation and consumption data. It can also be used to support ISO 50001 and decarbonisation certification procedures.

3.1.3.2.3 Technical and financial innovations

One of EDF's goals is to supply sustainable electricity at a reasonable price. Based on its strong public service values, EDF considers that electricity, as an essential asset, must be accessible to all and in all areas. In France, over 20 million homes and 1.5 million businesses have chosen to adopt the regulated sales tariff (*tarif réglementé de vente*, TRV). In an increasingly competitive market in which over 2 million domestic customers have already opted for EDF market offerings, the Group has diversified its range to address demand[4].

Contractual and financial innovations[5] are some of the levers allowing the development of sober and efficient uses of electricity, such as the fixed price electricity contract, the Power Purchase Agreement (PPA)[6] or financial support through EDF Entreprises's energy savings bonus.

3.1.3.2.4 Earning trust through quality of service

3.1.3.2.4.1 Customer relations

EDF's customer service quality is acclaimed. More than nine out of 10 customers are satisfied with their contact with EDF advisers. Since 2021, EDF became the first energy supplier to obtain "Relation Client France" certification, awarded to French companies that decide to locate all of their customer service facilities in France.

Domestic customer complaints are treated as opportunities to restore confidence and improve processes. Customer service staff are trained to detect and deal with customer complaints. Complaints analysis allows processes to be improved and handling quality to be maintained.

(1) Scope: Enedis and SEI.
(2) Enedis.fr/media/1895/download
(3) www.spgroup.com.sg/sp-powergrid/overview/smart-grid-in
(4) One example is the launch of the "energy sobriety" challenge in 2022 for residential customers as a market offering: edf.fr/groupe-edf/espaces-dedies/journalistes/tous-les-communiques-de-presse/edf-lance-un-challenge-sobriete-energetique-pour-ses-clients-particuliers-en-offre-de-marche
(5) See also section 1.4.2.2 "Activities of the Customer Division".
(6) A PPA is an agreement between an electricity purchaser and a renewable-origin electricity producer (which can also be a customer) at a price agreed for the entire duration of the contract.

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3.1.3.2.4.2 Digital accessibility

EDF & Me: The EDF & Me application is viewed as one of the best on the energy supplier market, with over 16.6 million downloads. Already in 2021, EDF & Me was nominated for a Webby Award. The app is regularly the highest-ranked of all apps made available by energy suppliers.

Turning consumers into engaged stakeholders: The EDF group's action to develop digital resources has provided greater access to information. The rapid rise in the number of consultations of online energy use monitoring platforms illustrates the cultural change under way with the sharp increases in energy costs.

[redacted]	2021	2022	2023
Number of customer visits on digital consumption monitoring *platforms (in millions)**	74.3	157.5	198.2

** For the methodology used for this indicator, see section 3.6 "Methodology".*

On the basis of recent statistics, almost 6.2 million customers logged on to these solutions at least once during the year. Over 800,000 of them connected at least six times in the last six months. On average, users connected a little over 11 times. This trend increased in 2023, confirming the commitment of customers to consume less and better.

3.1.3.3 Developing efficient, low-energy, innovative energy services

The development of different uses of electricity and their expansion constitute a major source of leverage to assist customers towards carbon neutrality. With this in mind, the EDF group has committed to developing a broad range of offers suitable for different markets(1).

3.1.3.3.1 Decarbonisation solutions for housing

The new RE2020 environmental regulation entered into force on 1 January 2022. It mainly addresses new residential construction for individual and collective housing, as well as tertiary buildings used for offices and education. EDF is fully persuaded of the urgent need to make the construction industry low-carbon through electrification and the promotion of virtuous heating networks; it took part in all the consultation sessions organised by the authorities. Going forward, support for the various outstanding issues is required, in particular life cycle analysis, more especially for heat pumps, and in respect of questions relating to certification, a pressing concern at present.

Decarbonisation solutions for customers in houses and apartments (including insulation, heat pumps, thermodynamic and solar-powered water heaters, and water consumption and energy management solutions) are developed by EDF and its affiliates(2).

These offers cover two main decarbonisation topics:

- energy renovation: IZI by EDF developed its range by creating new offers for global energy renovation, such as wall insulation from the outside, air-air heat pumps, etc.;
  - > self-consumption: the EDF EnR subsidiary allows the customer to consume the energy generated by their own solar panels and to be able to store part of it to consume it when they need it.

3.1.3.3.2 Decarbonisation solutions for industry

3.1.3.3.2.1 Decarbonisation consultancy

The EDF group launched a decarbonisation consultancy offering consisting of Décarb'On (destined for SMEs and LEs) and Décarb'On Expert (for large enterprises and major account customers). This allows the EDF group to support these customers in the review and analysis of their carbon emissions (Scope 1, 2 and 3), the definition of targets, emissions reduction strategies, and the implementation of an operational roadmap for the actions to be put in place. The EDF group is also a partner of the CEE PACTE Industrie programme, which aims to support French industrial companies in training and building their decarbonisation trajectory.

3.1.3.3.2.2 Process electrification

The priority for the decarbonisation of industry involves switching from fossil-fuelled heating to mature electrical solutions. EDF is deploying high temperature and very high temperature industrial heat pumps for its customers, as well as resistance furnaces, conduction furnaces, infrared furnaces, induction and arc furnaces (to replace fuel oil or gas), and mechanical steam compression.

3.1.3.3.2.3 Low-carbon heat

Dalkia is a leading player in low-carbon heat. As part of the recovery plan, the EDF group was the successful bidder for a number of biomass boiler projects to replace fossil fuels.

3.1.3.3.3 Decarbonisation solutions for agriculture

To support the sector as it combats climate change, the EDF group has introduced offers such as the installation of solar panels, the production of electricity and heat using biogas, the improvement of agricultural equipment energy efficiency, the heating of environmentally-friendly greenhouses by recycling household waste, and the use of a hydrogen fuel cell to power milking machines.

3.1.3.3.4 Decarbonisation solutions for the tertiary sector

The EDF group offers customised services to companies and professionals that wish to optimise their energy flows to improve their economic performance and reduce their environmental footprint.

(1) For France, see also section 1.4.2 "Sales and supply activities in France".
(2) See also the "My sustainable heating" offer in section 3.3.4.2 "Combating energy poverty".

3.1.3.3.5 Decarbonisation solutions for local authorities

The EDF group is extensively engaged in the energy transition as it applies to cities and local authorities, through several solutions:

- heating networks with heat recovery, as in Maubeuge, and a 100% renewable energy heating network in Lunéville;
- energy and environmental performance solutions for lighting;
- collective self-consumption solutions.

3.1.3.3.6 Decarbonisation solutions for transport

3.1.3.3.6.1 Goals of the electric mobility plan

With the electric mobility plan, launched in October 2018, EDF is aiming for a 30% market share in the supply of electricity to electric vehicles in the Group's four major markets (France, the United Kingdom, Italy and Belgium), the deployment of 550,000 charging points and the operation of 27,000 smart charging points by 2025. By the end of 2023, the EDF group had deployed nearly 340,000 charging points, including over 280,000 in the UK and almost 40,000 in France, as well as 20,000 smart charging points.

3.1.3.3.6.2 Development of recharging infrastructure

As part of the electric mobility plan, the EDF group provides a complete range of offerings for all uses: individuals in individual or collective housing, businesses, local authorities and public charging (on roads or at their destination).

IZIVIA

IZIVIA is the No. 1 operator for public charging on roads among local authorities and the No. 3 operator for public charging at destination. IZIVIA equips companies and local authorities wishing to be equipped with supervised terminals, for their own needs or to allow public charging on their land. IZIVIA offers several financing models, including third-party financing, to its customers.

IZIVIA signed a major contract with the McDonald's restaurant chain to equip all their sites with ultra-fast charging stations: nearly 2,200 charging points of 150kW will be installed by 2025 at 850 sites.

Charging management services

IZI by EDF and DREEV have jointly developed a commercial offering to manage charging for private users, IZI Smart Charge, which allows real-time monitoring and management of charging by the user, to optimise the cost of charging and reduce CO_2 emissions related to electricity consumption.

IZI by EDF

In the residential market, IZI by EDF offers charging solutions to private individuals in individual or collective housing and to VSE/Pro customers. IZI by EDF also supports companies wishing to equip the homes of their employees who run electrically (service or company vehicle) with an end-to-end offering: installation of the terminal, monitoring of consumption and reimbursement of electricity expenses for employees.

IZI by EDF expanded its range of offers in 2023 with the launch of a communicating terminal offer for fleet managers, and the launch of the "Top-Up Operator" offering for condominiums wishing to install a private collective infrastructure in their car parks. This offering complements IZI by EDF's existing solutions for collective residential, through offers without pre-financing and *via* the Enedis electric car network.

Solar power and charging stations

EDF ENR and IZIVIA offer an integrated solution to companies and local authorities to install solar canopies fitted with charging stations. By way of illustration, in February 2023, a 3.3-hectare shaded park combined with charging infrastructure was brought into service at a Sanofi site: it covers 17.5% of the site's annual electricity needs and provides 40 charging points for electric vehicles.

Heavy mobility

IZIVIA and Dalkia are taking part in the transition from heavy goods vehicles to electric vehicles by equipping sites and local authorities with charging solutions specific to heavy transport.

3.1.3.3.6.3 Partnerships

Since 2018, a number of partnerships have been developed with stakeholders in the sector (manufacturers, equipment manufacturers, leasers, leasing companies, charging station manufacturers) to propose custom electric mobility solutions. By way of illustration, in 2023, IZIVIA was referenced by Renault Trucks for the installation of terminals on the sites of the manufacturer's customers.

3.1.3.3.6.4 EDF's commitment for its vehicle fleet (EV100)

The EDF group is the first French group to sign the "EV100", which aims at having a fleet of 100% electric light vehicles by 2030. This project covers almost 45,000 vehicles and charging infrastructure on almost 2,500 sites worldwide, around 60.0% of which had already been equipped by the end of 2023.

EV100 commitment	2030 target	2021	2022	2023
Proportion of electric vehicles in the EDF group's light vehicle fleet *(in %)**	100	17.3	22.6	29.3

** For the methodology used for this indicator, see section 3.6 "Methodology".*

Electrification is clearly visible across the whole of the EDF group with significant levels of electrification as at the end of 2023 at Luminus (62.3%) and EDF SA (38.4%), as well as 29.7% at EDF UK and 14.4% at Edison. Enedis is also committed to the electrification of its own vehicle fleet. At the end of 2023, its fleet of light and light commercial vehicles, comprising approximately 18,000 vehicles, was more than 31% electrified.

For a focus on hydrogen solutions, see section 1.4.6.3 "EDF's hydrogen plan".

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3.1.4 EDF climate governance

3.1.4.1 Governance bodies

The EDF group's climate strategy governance forms part of its sustainable development governance (see section 3.5.2 "CSR governance bodies"). This is supervised, in accordance with the independent management of the network's infrastructure managers, at the top Group-level.

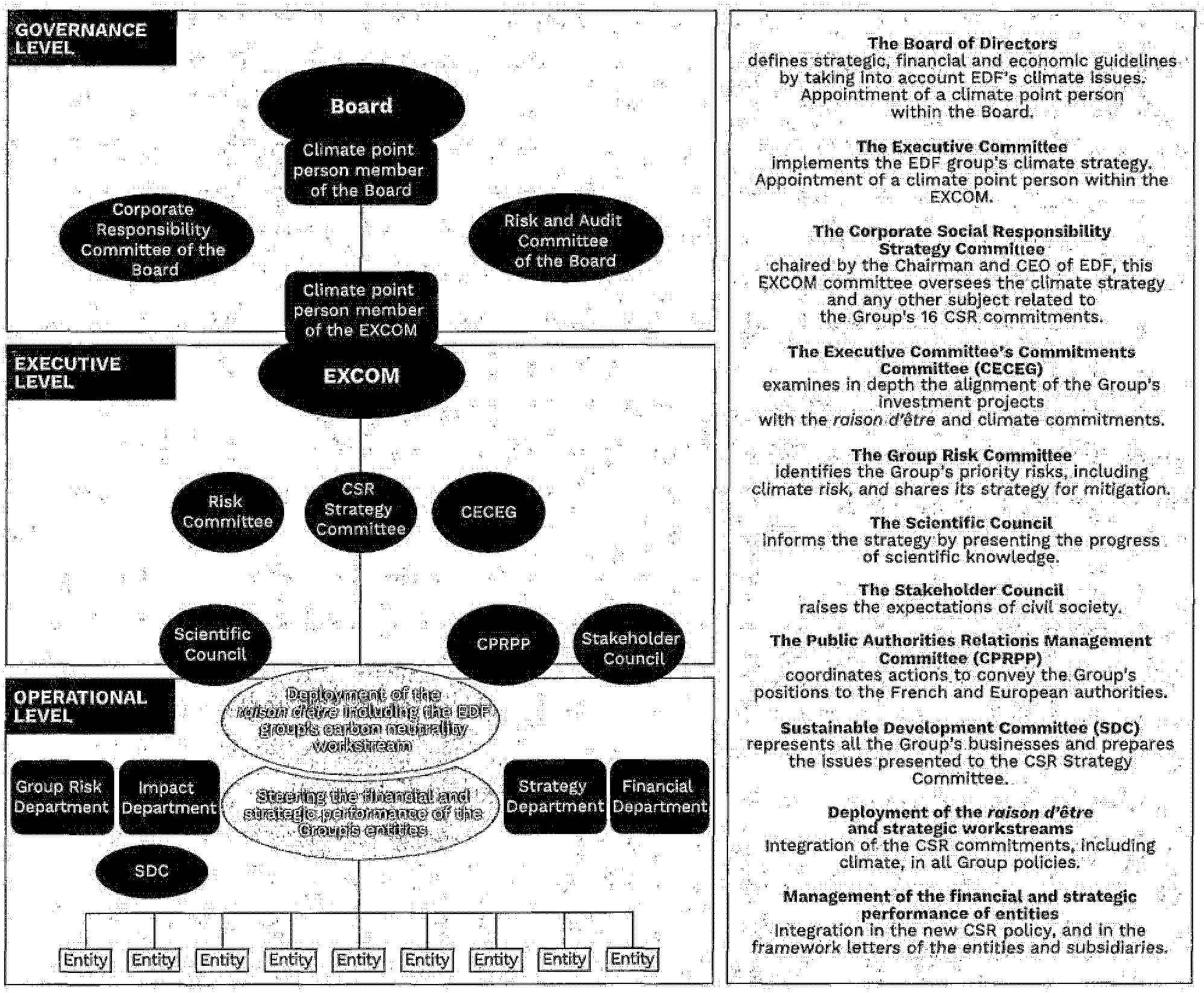
3.1.4.1.1 Governance reinforced recently

In line with the TCFD's best standards, over the past three years, the EDF group has had Climate Focal Points on its Executive Committee and Board of Directors[1]. The Group's Executive Director in charge of Innovation, Corporate Responsibility and Strategy is the Climate Focal Point on the Group's Executive Committee. As such, he represents the Group's net zero emissions goal on the Board of Directors' Corporate Responsibility Committee and on the Board itself. The Chairwoman of the Corporate Responsibility Committee is the Climate Focal Point on the Board. Together with the Chairman of the Board of Directors and the Executive Committee's Climate Focal Point, she ensures that the Board identifies all the impacts of climate change for the Group. She also ensures that the Board's work and the strategy it defines take into account climate change issues.

In 2022, for the first time, EDF submitted a resolution on the climate (Say on Climate) to the General Meeting. The EDF group's climate transition plan was adopted by 99.87% of the vote at the General Shareholders' Meeting.

Moreover, as soon as the first IPCC report was published in 1990, the EDF group chose to develop internal expertise on climate issues, in collaboration with leading organisations such as Météo France. This took the form of the EDF R&D climate team, which acts as a bridge between climate science and the EDF group's business lines. This expertise draws on the new governance, which provides the Group's various business lines with climate data to quantify the risks related to climate change and develop their adaptation plan. For its impact and dimensioning studies, the EDF group systematically takes into account the IPCC's worst-case scenario in terms of global warming; currently, this is the SSP5-8.5 scenario.

3.1.4.1.2 Climate governance map



(1) EDF press release of 10 December 2020 "Fifth anniversary of the Paris Agreement: EDF steps up its ambitions and takes new climate commitments".

3.1.4.2 Implementation of Task Force on Climate-Related Financial Disclosures (TCFD) recommendations

3.1.4.2.1 The EDF group and the TCFD

3.1.4.2.1.1 TCFD Supporter

The Task Force on Climate-Related Financial Disclosures (TCFD) is a working group of the G20 Financial Stability Board (FSB) which was established during COP21 in 2015. It aims to improve the financial transparency of companies in terms of climate matters. The EDF group was one of the world's first organisations to support this approach and is officially listed as a "TCFD supporter"[1].

3.1.4.2.1.2 TCFD Reporting

The TCFD recommendations[2] set out the climate reporting components that companies are expected to provide in their Universal Registration Documents, in four broad areas: governance, strategy, risk management, and indicators.

3.1.4.2.1.3 Alignment of the EDF group

For its reporting commitments, the EDF group is in line with TCFD recommendations, as detailed in the report "Implementing the Recommendations of the Task Force on Climate-Related Financial Disclosures", TCFD, June 2017:

	URD Sections
Governance	
a) Role of the Board of Directors in oversight of climate-related issues within the organisation	3.1.4.1.1
b) Role of Management in oversight of climate-related issues within the organisation	3.1.4.1.1
Strategy	
a) Climate-related risks and opportunities over the short, medium, and long term	3.1.4.2.2 and 2.2.3
b) Impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	3.1
c) Evaluation of the resilience of the organisation's strategy, taking into consideration different climate-related scenarios	3.1.4.2.3
Risk management	
a) Processes for identifying and assessing climate-related risks	3.1.4.2.2 2.1 and 2.2.3
b) Processes for managing climate-related risks	3.1.2 and 3.1.4.2 2.1 and 2.2.3
c) Integration into the organisation's overall risk management processes	2.1
Indicators and goals	
a) Financial and non-financial metrics used by the organisation for its climate-related strategy	3.1.4.3 and 3.6
b) Reporting of Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas emissions	3.1.1.2.4
c) Climate-related targets used by the organisation and performance against targets	3.1.1.1 and 3.1.1.2 3.1.2.1 and 3.2.2.2

3.1.4.2.2 Identifying climate change risks and opportunities

Climate risk was recognised as a priority risk across the EDF group in 2018. It was the subject of a report by the Group's Scientific Council in March 2019, as well as a detailed analysis presented to the EDF group's Executive Committee and the Audit Committee of the Board of Directors in October 2019.

In its analysis of climate risks, the EDF group has adopted the classification put forward by the TCFD, which draws a distinction between physical risks and transition risks[3].

3.1.4.2.2.1 EDF group physical risks

Risk category	Description	Potential impact for the EDF group
Risks related to extreme events	Increase of heat waves and droughts	Generation: decline in nuclear generation linked to the cold source, low water levels in dams in southern countries, accelerated ageing of materials. Transmission and Distribution: drop in network capacity, fire risk. All business lines: rise in the cost of insurance; deterioration of working conditions for employees and service providers.
	Increase of strong wind events, storms, tornados and floods	Generation: deterioration or even temporary stoppage of means of generation, impact of more intense floods. Transmission and Distribution: Power outages.
Risks related to chronic events	Increase of average temperatures/Increase of sea levels	Generation: change and drop in hydropower generation, decreased yield of nuclear and thermal power facilities, risk of submersion of infrastructures on seacoasts (particularly island regions), proliferation of organisms that plug water intake, risk of microbial growth in cooling circuits. Transmission and Distribution: diminished capacity of transmission lines. Marketing: drop in heating demand, increase in air-conditioning demand.

(1) fsb-tcfd.org/tcfd-supporters
(2) Recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), June 2017.
(3) These risks are also listed in section 2.2.5 "Group transformation and strategic risks", risk factor 5B, "Adaptation to climate change: physical and transition risks".

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3.1.4.2.2.2 Transition risks and opportunities for the EDF group

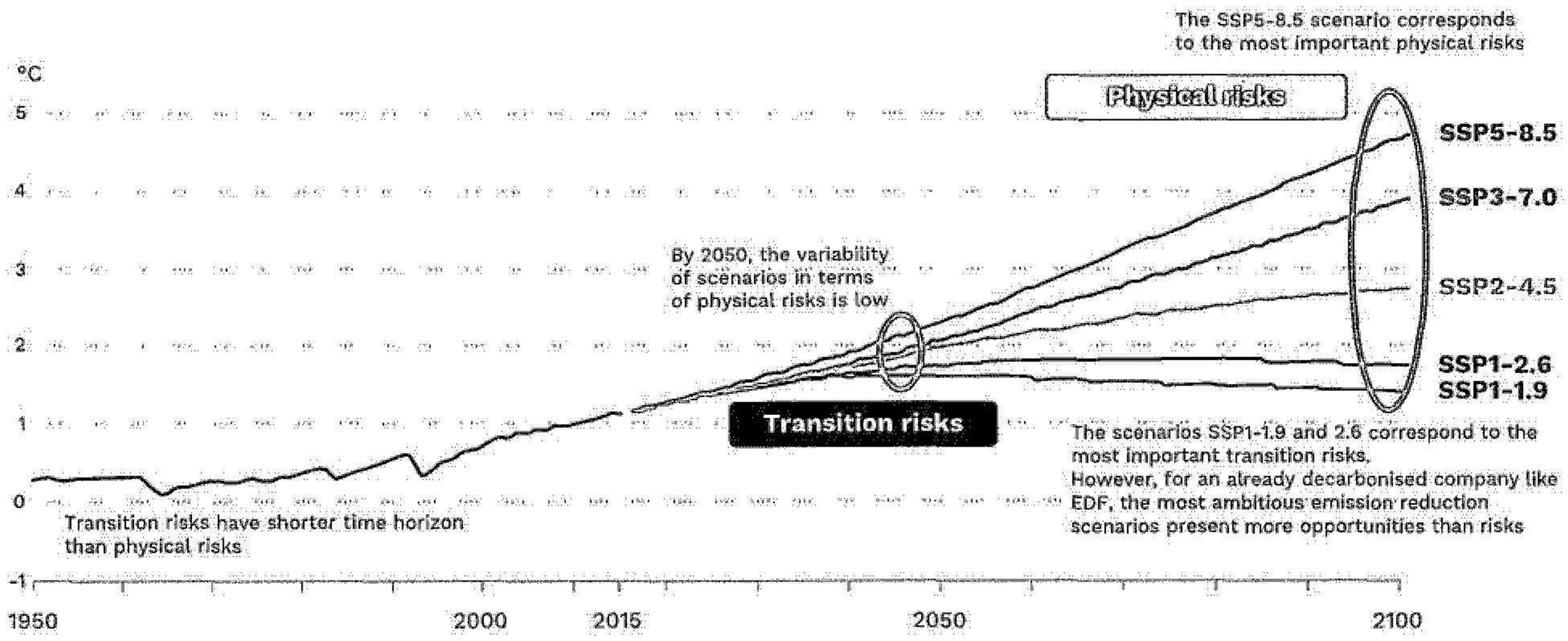
Risk category	Description	Potential impact for the EDF group
Legal risks	Climate-related litigation	Risk of cancellation of licences, risk of litigation following exceptional climatic events, risk of litigation related to the EDF group publications, particularly as regards the duty of vigilance.
Political and regulatory risks	Tension over uses of water	Risk involved in the sharing of water resources due to multiple uses and multiple stakeholders in a context of increasing water scarcity.
	Tension over access to land and use of soils	Risk involved in the necessary land resources for renewable energy due to regulation (biodiversity, agricultural lands) and the legitimacy of sharing with numerous stakeholders.
	Political difficulties to achieve the objectives of the Paris Agreement	Opportunity: as a low-carbon* leader, the EDF group is called on to play a key role in decarbonisation of the European economy.
Customer – market risks	Change in customer expectations	Opportunity: increased demands of own consumption, energy efficiency, electric mobility, green deals and low carbon.
	Change in uses of electricity	Opportunity: decarbonised electricity is recognised as an indispensable means to decarbonise the economy.
Technological risks	Stability and security of electricity networks	Risk/Opportunity: risk of instability to the system in case of a high penetration rate of renewable energies; key role of nuclear energy usable together with renewable energies to ensure stability of the network.
	Transition technologies	Risk/Opportunity: potential emergence of technologies such as CCSU, thermal solar, small modular reactors, storage or in the area of negative emissions.
Financial risks	Access to competitive financing	Risk/Opportunity: risk of non-alignment of investors with the 1.5°C criteria. Opportunity to provide the EDF group with sustainable financing (Green Bonds, positive incentive loans).
	Stranded assets	Risk of stranded thermal assets after regulatory changes or carbon price increases.

** See section 3.1.1 "Group carbon trajectory".*

3.1.4.2.3 Climate risk and opportunity scenario analysis

3.1.4.2.3.1 Physical risk scenarios

For the quantitative assessment of the physical risks related to climate change (chronic and acute), the EDF group uses simulations resulting from the CMIP (Coupled Model Intercomparison Project) exercises, the results of which feed into the IPCC assessment reports. For the fifth CMIP5 exercise, these were simulations forced by the RCP (Representative Concentration Pathways) scenarios used for the fifth assessment report. The impact studies conducted by EDF are gradually updated with the simulations of the past financial year, CMIP6, on which the latest IPCC assessment report (AR6) is based. They are forced by the SSPX-YZ scenarios (Shared Socioeconomic Pathways – X being the scenario number, YZ being the radiative forcing value at the end of the century). These scenarios are characterised by the value of the radiative forcing resulting from cumulative greenhouse gas and aerosol emissions through to 2100, as well as land-use changes. The higher the greenhouse gas emissions, the more they induce an increase in radiative forcing compared to the pre-industrial era (1850-1900) characterised by warming and disruption of the climate system. Only the most ambitious scenarios in terms of reducing greenhouse gas emissions (SSP1-2.6 and SSP1-1.9) offer projections which on average make it possible to limit the increase in global average temperatures at the end of the century to, respectively, 2°C and 1.5°C warmer than during the pre-industrial period. The climate projections forced by the highest emissions scenario (SSP5-8.5) lead on average to an increase of more than 5°C by 2100 compared to the pre-industrial era.



Scenarios used	EDF prescribes the preferred use of simulations produced by 19 models forced by three reference scenarios for climate impact studies of the Group's facilities: SSP2-4.5, SSP3-7.0 and SSP5-8.5 (the most impactful scenario), *i.e.* 19x3 simulations. The choice of scenario/model combination is crucial. EDF now relies on CMIP6 simulations, by updating the impact studies already carried out based on the CMIP5 simulations.
Scope	Global climate projections with statistical downscaling used in each study with respect to the installation under consideration.
Main phenomena considered	Air temperature (performance of nuclear and thermal power plants, distribution network transport capacity, risk of fire, photovoltaic generation capacity). River flow rates and temperatures (producible hydro and nuclear power, risk of flooding). Sea level and surface temperature (submersion of infrastructure and nuclear generation capacity). Wind and radiation (wind power and photovoltaic). Extreme events: storms and floods, heat waves, severe low water levels (damage to means of generation and distribution, nuclear and hydropower generation plants).
Time horizon considered	Medium to long-term (2050-2100) due to the long technical lifespan of EDF's electricity generation and distribution infrastructures. It should be noted that the emissions scenarios only result in significantly differing impact evaluations from 2050 onwards, due to the inertia of the climate system and the foreseeable impact of historic emissions.

ADAPT scenarios

The objective for the ADAPT project is to find the most penalising situations in terms of heat waves and low water levels. To do this, it is necessary to implement statistical techniques to extend the observed or projected distribution of possibilities. The proposed approach is based on the use of stochastic models, the application of which to all scenario model pairs is not feasible in practical terms. It was therefore necessary to select in advance three or four pairs of scenario models to best sweep the range of possibilities. The first studies were carried out on the Chooz and Civaux[1] nuclear power plants using CMIP5 projections and then updated with CMIP6 projections. The stochastic simulation strategy was improved to better represent heat wave extremes and to model rainfall.

Examples of results obtained

The results obtained for Chooz with the high scenario identified in the CMIP5 set of projections show that a frequency of a heat wave of more than 10 days would increase from approximately once every 200 years in the climate of the years 1981-2010 to almost once every two years over the 2036-2065 period. These results are part of a systemic approach to adapting to change, structured around the region's habitability.

EDF group nuclear power plants under construction (Flamanville 3 and Hinkley Point C) have all been designed taking into account the findings of climate impact studies, in particular the prospect of rising sea levels and exceptionally large waves. For instance, for Hinkley Point C power plant in Somerset, UK, a 13.5 metres sea wall has been built to address an estimated increase in wave heights to 4.6 metres within the next 100 years. This time horizon covers both the operation and decommissioning of the facility. For Sizewell C in Suffolk, UK, the sea wall height has been set at 10.2 metres due to the lower tidal range in the North Sea compared to the Bristol Channel.

With respect to exposure to extreme events such as storms, cyclones, flooding and fires, EDF group activities identified at being most at risk are firstly, power distribution networks (Enedis) and secondly EDF's island activities (IES and PEI), especially in the most pessimistic scenarios such as SSP5-8.5. Nuclear power plants already have very high levels of safety and their adaptation to the most extreme physical events is reviewed every 10 years.

The impact of climate change on electricity demand has been modelled, in particular at national level with the Futurs énergétiques 2050 ("Energy Futures 2050") study carried out by French grid operator RTE. The study confirms the relevance of nuclear and renewable energy, seen as complementary, and reveals an increase in electricity demand in summer (with the increasing use of AC) and a decrease in winter (less heating), tending to suggest that demand for electricity will fluctuate less on a seasonal basis.

3.1.4.2.3.2 Transition risk scenarios

To assess the resilience of its strategy with regard to climate risks, notably those related to the transition (legal, technological, market and reputational risks), the EDF group uses the scenarios developed by the Network for Greening the Financial System (NGFS). These scenarios, developed by leading academic players on behalf of central banks and NGFS network supervisors, are publicly available and recognised for their relevance. The scenarios are based on three models, each of which incorporates the economy-energy-climate dimensions (Integrated Assessment Models, IAMs); this multi-model approach makes it possible to minimise the model risk and to account for the strong uncertainties surrounding the effects of transition policies towards a low-carbon economy. Compared to more granular models focused on the modelling of the electricity system, the macro-economic loopbacks, which are explicitly included in the NGFS scenarios, make it possible to conduct the resilience assessment exercise within a sufficiently global framework.

In line with the TCFD recommendations and future CSRD requirements, the EDF group relies, for this analysis, on three NGFS scenarios drawn from the three families in which the climate scenarios are usually categorised:

- the Hot House World or Too Little Too Late scenarios, which lead to temperature increases at the end of the century that are not compatible with the Paris Agreement;
- the Paris-aligned scenarios, which comply with the Paris Agreement (Well-Below 2°C by 2100);
- the Paris Ambitious scenarios, which aim for global carbon neutrality by 2050 (1.5°C by 2100 with or without temporarily exceeding the target to make up for an accumulated delay).

The choice of a scenario among each family makes it possible to cover a wide range of possible futures. The Below 2°C scenario, whose underlyings are close to the Group's internal reference scenario for energy market risks, was chosen as the central scenario. The analysis involves evaluating the financial impact for EDF of a slower (Hot House World) or faster (Paris Ambitious) transition, by estimating the EBITDA differential in these scenarios compared to the central scenario.

(1) The scenarios considered are as follows: high scenario (GFDL-CM3/RCP8.5), low scenario (MRI-CGCM3/RCP2.6), intermediate scenarios (NorESM1-M/RCP4.5) and (BNU-ESM/RCP4.5).

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The EDF group reiterates that achieving carbon neutrality in an economically and socially efficient way requires a sufficiently high CO_2 price signal to guide use and investment towards decarbonised solutions. This also implies that the prices of the various energies reflect their CO_2 content; and as electricity generation in Europe still relies in the short and medium term on carbon-based means of generation, the price of electricity includes a CO_2 component, which is high in the optimal trajectory towards carbon neutrality (Net Zero). The price of CO_2 is therefore the best indicator of the climate goal of the various scenarios. Consistently, the NGFS scenarios order CO_2 prices according to this goal: the price of CO_2 is higher in the Paris Ambitious scenarios, and the price of CO_2 is lower in the Hot House World scenarios. And correspondingly, in the most ambitious scenario from a climate point of view (Net Zero, Paris Ambitious), the price of electricity is higher than in the central scenario, because it is this public policy that minimises the cost of the overall energy system while achieving carbon neutrality. More specifically, the following quantitative estimates are based on the MESSAGEix-GLOBIOM modelling of Phase 4 of the NGFS scenarios, because it is the modelling that leads to the most consistent energy mix and energy prices.

The resilience assessment exercise is conducted for 2035, which corresponds to a medium-term strategic horizon for the Group, and it is a horizon that already makes it possible to differentiate climate scenarios according to their effects, notably for G4 countries (France, Great Britain, Italy, Belgium).

Scenarios	**Rapid transition: Net Zero 2050 scenario** – ambitious climate policies leading to global carbon neutrality in 2050 and an average temperature increase of +1.4°C in 2100, with little or no overshoot of the target. Net Zero 2050 corresponds to an orderly transition based on the rapid implementation of decarbonisation policies and technological innovation. **Central: Below 2°C scenario** – gradual increase in the ambition of climate policies leading to an average temperature increase of +1.6°C in 2100. Global carbon neutrality is achieved after 2070. Below 2°C is an orderly transition scenario with an inter-regional homogeneity of climate policies. **Slow transition: Current Policies scenario** – only currently implemented policies are preserved, and few technological innovations emerge, leading to a temperature increase of +3°C in 2100 and high physical risks.
Model	NGFS scenarios, MESSAGEix-GLOBIOM modelling.
Scope	G4 countries: France, Great Britain, Italy, Belgium.
Main variables considered	Final energy demand, share of electricity demand, share of the energy mix produced by decarbonised solutions (by country). Price of CO_2. Price of electricity.
Time horizon considered	Medium-term (2035): Europe and most of the countries where the EDF group operates are committed to achieving carbon neutrality by 2050. 2035 corresponds to the intermediate point on the 2050 trajectory. This is a major milestone for the Group's medium-term strategy, and the climate scenarios are already producing differentiated effects over this horizon.

The table below presents the results of the quantitative estimate, carried out as part of the scenario-based analysis of the Group's electricity generation assets through to 2035.

EDF group business model	Indicator	*Vs* Alignment with the "Below 2°C" scenario	
		Net Zero 2050 – Rapid transition	Current Policies – Slow transition
Generation and sales of low-carbon electricity	2035 EBITDA	>+€5 billion	<-€5 billion

Decarbonised electricity: the main vector towards the economy's carbon neutrality

The optimal decarbonisation strategy consists of: i) removing fossil fuels from the energy mix, above all by electrifying uses and reducing final energy demand; ii) producing the necessary electricity using decarbonised technologies. By decarbonising the electricity and heat generation sector, we are acting on the world's largest emitter of greenhouse gases, which alone accounts for around 23% of global emissions.(1) In France, thanks notably to the EDF group's carbon performance, the electricity and heat generation sector represents not 23% but less than 6% of national anthropogenic greenhouse gas emissions(2). The EDF group, the world's leading electricity producer in terms of the volume of decarbonised electricity generated (without direct CO_2 emissions)(3), has an atypical profile in terms of its exposure to transition risks compared with other energy companies. For the EDF group, the reinforcement and acceleration of climate policies aimed at achieving carbon neutrality are consistent with the Group's business model, and therefore represent opportunities rather than risks for the valuation of its business, which is based on the generation of carbon-free electricity (nuclear energy and renewable energies) and support for decarbonised uses.

In line with this, the NGFS Net Zero 2050 scenario illustrates that an orderly strategy for achieving carbon neutrality at global level is based on: i) accelerating the electrification of uses, which will make a massive contribution to improving energy efficiency and thus, combined with sobriety in behaviour, to reducing final energy demand; and ii) decarbonising electricity generation. Implementing this strategy optimally requires assigning a high price signal to CO_2 emissions, commensurate with their externality on the climate. The high price of CO_2 favours the generation of decarbonised energy: this is why the EBITDA of the Group's decarbonised electricity generation activities (nuclear energy and renewable energies) is higher in a more ambitious climate scenario such as Net Zero 2050, compared with the Below 2°C reference scenario, and vice versa for the Current Policies scenario. The Net Zero 2050 scenario also sees a reduction in the share of gas in the European electricity mix by 2035. However, the impact on low-carbon activities is largely preponderant compared to the other activities.

(1) IPCC, AR6.
(2) CITEPA, SECTEN 2023.
(3) https://power-producers-ranking.enerdata.net/

Examples of strategic decisions taken by the EDF group to mitigate transition risks

The EDF group has set itself the goal of contributing to the fight against climate change ever since its first environmental policy in 2005. Integration of this issue at the heart of the Group's strategy has become much faster in the wake of the Paris Agreement (2015), the recommendations of the TCFD (2017) and most recently, the adoption of the Group's *raison d'être* (2020). This approach has led the EDF group to make the following decisions and strategic commitments: achieving net zero emissions by 2050 for all greenhouse gas emission scopes and all its activities, phasing out coal-based electricity generation by 2030; major overhaul ("*Grand carénage*") to continue operating existing nuclear power plants, the leading means of decarbonised electricity generation in France; launch of the programme to build six EPR2; launch of Nuward; launch of the Solar Plan, the Storage Plan, the Electric Mobility Plan, and the Hydrogen Plan; creation of the Innovation and Pulse Programme Division (DIPP); creation of subsidiaries dedicated to solutions to help customers achieve net zero emissions (decarbonisation strategy, hydrogen, carbon sequestration, *etc.*). An analysis of transition risks and opportunities (see section 3.1.4.2.2.2) is carried out annually by the EDF group. This confirms that the EDF group's strategy is fully in line with the political goals set out by the Paris Agreement, as well as the resilience of the EDF group's business model to the various scenarios envisaged.

3.1.4.2.4 Use of carbon price to guide investments

Achieving carbon neutrality in an economically and socially efficient way requires a sufficiently high CO_2 price signal, which takes account of the external impact on the climate and helps to steer usage and investment towards decarbonised solutions. The EDF group's investment projects are screened for its strategy and its commitment to net zero emissions for all its direct and indirect emissions through to 2050.

For all the countries covered by the EU-ETS (European Union Emissions Trading Scheme) and the United Kingdom (UK-ETS equivalent), which account for the bulk of the EDF group's investments, the sensitivity of the profitability of generation projects is also assessed on the basis of medium-to-long-term scenarios including various anticipated emission allowance price trajectories up to 2050.

These scenarios are developed taking account of various parameters, particularly GDP growth, commodity prices, technology costs, and climate and energy regulations. They also incorporate contrasting assumptions about the medium- and long-term trajectories of EU-ETS prices, resulting from a process involving modelling and contributions from experts. The carbon price range currently used by EDF in its scenarios is around €40 to €180/tCO_2 by 2040, with a median price of €150/tCO_2. By enabling identification of project risks and opportunities and testing their climate change resilience, this analysis, based on scenarios integrating different carbon price trajectories, contributes to guiding the Group's investments.

For investments in areas not regulated by a carbon price, carbon emissions are taken into account in the choice of technologies. EDF carefully examines the technologies used in each country and strives to choose the best available technologies that are in line with future decarbonisation trajectories.

3.1.4.3 Financing to promote decarbonisation

3.1.4.3.1 Alignment with European taxonomy

For full details, see section 3.7.4 "European taxonomy".

3.1.4.3.2 Use of Green and Social Bonds

For full details, see section 6.7 "Information on the allocation of the funds raised as part of EDF's green financing".

3.1.4.3.3 Use of credit lines indexed on the Group's ESG indicators

For full details, see section 6.1, note 18.4 "Unused credit lines" to the consolidated financial statements for the financial year ended on 31 December 2023.

3.1.4.4 EDF's commitment to transparent, responsible lobbying

EDF promotes public policies that encourage actual carbon reduction in the economy.

The assessment of its lobbying involves a review process that triggers follow-up actions, where necessary. It notably involves annual reviews and assessments of EDF's partner professional associations, based on their alignment with EDF's, with the Paris Agreement and its goal of limiting global warming to 1.5°C, compared with pre-industrial levels, and with the principles of just transition. If a gap is detected between the principles of an association and what the Group promotes in its *raison d'être*, the goals of the Paris Agreement and the principles of Just Transition, EDF provides an analysis of the degree to which it can continue to promote its values whilst remaining a member of the association in question.

Once this analysis has been completed, if it reveals material misalignments, EDF's position is to encourage the association in question to adopt a more proactive approach in terms of climate advocacy. EDF firmly believes that it can be more effective in bringing about change from within than from without. However, if EDF deems the probability of any positive change to be low, the review process may lead to the Group reconsidering its membership of certain organisations and/or considering joining new ones[1].

3.1.4.4.1 On a national level

EDF is working to hasten France's energy transition and end its dependency on fossil fuels. EDF is a member of the French Electricity Union (UFE), which promotes a set of reforms to prepare the future of the energy system as it moves towards "zero emissions"[2].

In August 2019, EDF joined MEDEF's "French Business Climate Pledge" initiative[3]. EDF supports the implementation of an ambitious national legal and regulatory framework to see France become carbon-neutral by 2050.

EDF is also involved in the development of the French Energy and Climate Strategy (SFEC). It is France's roadmap to achieving carbon neutrality by 2050 and ensuring that our society can adjust to the impacts of climate change. EDF responded to the public consultations in 2023 relating to the adoption of a national trajectory for climate change adaptation ("TRACC", September 2023) and relating to the draft French energy-climate strategy (SFEC, December 2023).

(1) For further actions in respect of transparency, see section 3.3.2.2.1 "Anti-corruption programme".
(2) ufe-electricite.fr/transition-energetique-au-service-des-francais/
(3) medef.com/fr/communique-de-presse/article/french-business-climate-pledge-les-entreprises-francaises-engagees-pour-le-climat

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As part of to the "Sport Sponsors Climate Pledge" initiative[1], in May 2023, EDF committed to making any decision to sponsor a sporting event conditional, from 2025 onwards, on the implementation by the event of carbon reduction targets aligned with the Paris Agreement.

3.1.4.4.2 On a European level

EDF's EU lobbying means the promotion and defense of the Company's interests by its representatives to EU institutions, in line with EDF's *raison d'être* and with the aim of influencing proposals and decisions that may have an impact on the climate and on the business of the Company.

EDF's European Affairs Department coordinates EDF entities' engagement with professional associations and think-tanks, and examines their alignment with EDF's *raison d'être* and consistency with the principles of Just Transition and the goals of the Paris Agreement. The European Affairs Department set up a review of associations working in Brussels[2].

3.1.4.4.2.1 EDF is particularly active in the EU

EDF participates both in its own name (through its permanent office in Brussels) and through Eurelectric, the association representing the ordinary interests of the electricity industry in Europe. EDF's commitment to a robust European greenhouse gas market system and an ambitious long-term energy climate strategy supported by the Commission is recognised by stakeholders, including by non-governmental organisations (NGOs). Thus, in 2023, the think tank InfluenceMap[3] once again ranked EDF as one of the companies most actively promoting climate issues in political discussions[4]; EDF acts within the framework of transparent and responsible lobbying (see section 3.3.2 "Ethics, compliance and human rights")[5].

3.1.4.4.2.2 EDF fully supports the European Green Deal and the FitFor55% package

EDF, through its Chairman and CEO, has been working since 2022 to promote the Green Deal as a social, industrial and strategic opportunity for all Europeans, around four pillars: embracing an affordable, low-carbon electric lifestyle by fighting discriminatory energy taxation; ensuring that a full range of low-carbon technologies contributes to cost-effective decarbonisation, promoting the deployment of renewables, smart grids and the use of electrolytic hydrogen; demonstrating the resilience and flexibility of electricity as a key asset for the Green Deal, while promoting smart integration and highlighting the benefits of digitalisation.

3.1.4.4.3 On an international level

As the world's leading producer of electricity without direct CO_2[6] emissions, EDF is one of the leading non-state actors in international discussions on climate change.

Promoting the coal phase-out

Since 2017, EDF has been engaged in the Powering Past Coal Alliance[7], which promotes the phasing out of coal in EU countries by 2030 and in the rest of the world by 2050 in the wake of the Paris Agreement. Since 2021, EDF lent its support to the Global Coal to Clean Power Transition Statement launched during the UK presidency of the COP26 summit; this statement has already been signed by 23 countries[8].

To accelerate the development of decarbonised energies (renewable and nuclear) and to contribute to energy efficiency

On the occasion of the UN General Assembly and New York Climate Week in September 2023, EDF joined the "Global Renewable Alliance" initiative calling for a tripling of renewable energy capacities globally by 2030. This initiative, endorsed by more than 120 countries, made it possible to include this goal, as well as that of doubling the annual rate of improvement in energy efficiency, in the final decision of the COP28, which was held in Dubai from 30 November to 12 December 2023.

EDF also committed to working towards tripling the global nuclear capacity by 2050 by signing the "Net Zero Nuclear Industry Pledge" in September 2023, an initiative endorsed by more than 20 countries in a formal declaration at COP28[9].

3.1.4.4.4 Acting in a consistent manner with external stakeholders

EDF has set up specific governance to ensure the consistency of the positions promoted by the Group. The EDF group makes sure not to support initiatives promoting positions not in line with its own aims in terms of combating climate change. EDF ceased to be a member of Business Europe on 1 November 2020.

All of EDF's key positions on climate issues, with the exception of those concerning the network operators as defined by the French Energy Code, are approved by the Public Authorities Relations Management Committee. This Committee, co-chaired by the General Secretary and the Group Senior Executive Vice-President in charge of Innovation, Corporate Social Responsibility and Strategy, meets every week and features, among others, the Public Affairs Division, the European Affairs Division, the Regulation Division, and the Legal Affairs Division.

(1) Sport supports climate commitment – ChangeNOW.
(2) https://www.edf.fr/sites/groupe/files/2023-05/edfgroup_2022_lobbying-process_review_20230524_va.pdf
(3) influencemap.org
(4) InfluenceMap Corporate Climate Policy Engagement Leaders, 2023.
(5) The activity reports of the EDF European Affairs Department are accessible online: https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/corporate-social-responsibility/reports-and-indicators/reports
(6) See section 3.1.1 "Group carbon trajectory".
(7) poweringpastcoal.org/members
(8) ukcop26.org/global-coal-to-clean-power-transition-statement/
(9) https://www.edf.fr/sites/groupe/files/epresspack/6678/PR_EDF-COP28.pdf

3.1.4.5 Involvement of employees and executive officers in carbon neutrality

The EDF group implements actions to enable all its employees and corporate officers to adopt the Group's *raison d'être* and climate commitments. These actions involve employee training[1], collective intelligence and remuneration.

3.1.4.5.1 Remuneration linked to combating climate change

Executive officer bonuses for 2023

See section 3.5.4.6 "CSR and remuneration policy for executives".

2023 employee profit-sharing agreement

See section 3.3.3.7.2 "Variable remuneration plans to boost performance".

3.1.4.5.2 Innovation and collective intelligence focused on climate action

EDF is implementing initiatives directly focused on combating global warming.

In line with the "Climate Fresk" awareness-raising workshop and as part of the "Fighting CO_2, it starts with us" initiative, the Group continued its action to raise employee awareness of the challenges of climate change, with the launch in 2023 of a new training course, "Committed to the planet", which is 100% online and aims to *mobilise and take action.*

3.1.4.5.2.1 The "Carbon neutrality passport"

Launched at the end of 2020 as part of the "Combating CO_2, it starts with us" programme, the "carbon neutrality passport" was intended to test knowledge on climate change, assess the carbon footprint, and take action based on challenges in the fields of energy use, housing, power supply, transport, responsible digital development, or energy savings.

Carbon neutrality passports	2023
Number of passports obtained	38,977
Number of challenges taken up	83,618

3.1.4.5.2.2 The "Climate Fresk"

The EDF group has set itself the goal of making as many employees as possible aware of climate issues through the "Climate Fresk". It is a tool based on collective intelligence, which facilitates the understanding of the reports of the Intergovernmental Panel on Climate Change (IPCC)[2].

Climate Fresk	Target	2021	2022	2023
Number of employees who participated to the Climate Fresk	171,490*	22,000	60,000	80,000
Number of employees who animated the Climate Fresk		780	1,600	1,800
Number of sessions		3,500	6,000	11,000

** Group workforce at the end of 2023; see section 3.3.3.9 "Detailed information on the Group's workforce".*

3.1.4.5.2.3 "Employer sustainable mobility plans" developed by employees

Through the France-wide EDF group agreement on sustainable mobility unanimously signed in November 2019, a commitment was made to develop an "Employer sustainable mobility plan" for sites with more than 100 employees. As of the end of 2023, 121 employer mobility plans had been finalised across the EDF group in France.

3.1.4.5.2.4 Employee training and awareness-raising

See section 3.3.3.6.5 "Skills development in the area of sustainable development".

3.1.4.6 Innovation and R&D for the energy transition

At the end of 2023, EDF's R&D will have 1,799 employees in France, with a budget mainly dedicated to the energy and climate transition. In France, 99% of EDF's R&D operating budgets are dedicated to decarbonisation and the transition of energy systems[3]. In particular, expenditures covered energy efficiency, uses of electricity as a substitute for fossil fuels, renewable energies and their insertion into the grid, energy production and storage, decarbonised hydrogen and its applications for decarbonising the economy, the local impacts of climate change and other environmental issues such as biodiversity, water quality, and the mitigation of disturbances.

(1) See section 3.3.3.6.5 "Skills development in the area of sustainable development".
(2) This tool developed in 2015 by Cédric Ringenbach has already been used to train more than 230,000 employees worldwide.
(3) See section 1.5 "Research & development, patents and licences".

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3.2 Preserving the planet's resources

EDF is committed to limiting its environmental footprint throughout the life cycle of its facilities and activities by optimising the use of natural resources. The four main CSR commitments identified in this set of issues concern biodiversity, responsible land management, integrated and sustainable water management, the circular economy and waste management.

43%	60%	0.83l/kWh	85.3%
Act4nature achievement rate	Innovative land solution implementation rate	Water intensity	Annual rate of conventional waste for recovery

Nature (land, water, air) is home to "environmental assets" comprising living and non-living natural elements. Ecosystems make up a large share of these assets, making the provision of ecosystem services, such as supplying freshwater, possible. The Company has both positive and negative impacts on nature. Short-term impacts on nature can cause changes to the quality and resilience of environmental assets, which in turn generate medium- and long-term risks for organisations, due to their dependency on them. This is the subject of the four upcoming sections (3.2.1 "EDF's nature issues, commitments and governance"; 3.2.2 "Biodiversity and responsible land management"; 3.2.3 "Integrated and sustainable water management"; 3.2.4 "Radioactive and conventional waste, and circular economy").

3.2.1 EDF's Nature issues, commitments and governance

The Group's or EDF's policy guidelines regarding the preservation of natural resources are based on an analysis of physical and transition risks, and take the form of public commitments(1).

3.2.1.1 Physical and transition risks related to nature

The Group organised an assessment of "nature" issues along the full value chain, including upstream and downstream from its activities (Scope 3).

This biodiversity risk assessment, carried out using the double materiality method on dependencies and impacts, was based on the ENCORE database (Exploring Natural Capital Opportunities, Risks and Exposure). The main issues concern operations and activities upstream from the EDF group value chain. This is the case for supplies of certain fuels and materials, which present issues of dependence on nature (resources, regulatory services) and pressures thereon (for example on ecosystems and water resources). It appears from the risk materiality assessment (physical and transition risks) that risks are correctly identified and covered with some room for improvement.

3.2.1.1.1 Physical risks(2)

Risk category	Description	Potential impacts for the EDF group
Acute risks	Decline in water resources due to increased severe droughts	Generation: drop in generation capacity for hydropower and nuclear power in relation to the orders regarding prevention of effluent discharge.
	Increase of strong wind events, storms, tornados and floods	Generation: degradation or even temporary stoppage of means of generation, impacts of more frequent and more intense abnormal natural events (floods, storms, *etc.*). Transmission and distribution: slow down or power outages.
Chronic risks	Scarcity of natural resources (metals, minerals)	Risks: Difficulties in sourcing the resources needed to build new energy infrastructure (generation, transmission and distribution) and to maintain it, rising costs. Opportunities: increased resource efficiency.

(1) See section 3.2.1.2.1 "Nature commitments for 2023-2025".
(2) According to the classification of version No. 1 of the TNFD (Task Force on Nature-Related Financial Disclosures) published in September 2023.

3.2.1.1.2 Transition risks

Risk category	Description	Potential impacts for the EDF group
Political and regulatory risks	Tension over uses of water	Risk involved in the sharing of water resources due to multiple uses and multiple stakeholders in a context of increasing water scarcity. Regulatory constraints on water flows/withdrawals (particularly in periods of water stress – resource sharing). Risk of an increase in the water agency fee. Water reuse: additional requirements for reuse of industrial wastewater (additional cost). Risk of restriction of operating permits and increase in litigation.
	Tension over access to land and use of soils	Risk associated with access to land and use of land required for renewable energy resulting from regulations (ZAN[1]) and sharing for different uses. Risk of increased pressure on land belonging to the Group by external players (notably local authorities).
	Enhanced environmental regulation of mineral resources (*e.g.* restricting access by defining protected areas)	Difficulties in sourcing the mineral resources needed to build new infrastructure, manufacture modules/turbines (PV/wind) and uranium and gas fuel.
	Environmental regulatory developments	Regulatory compliance of the Group's facilities.
	Enhanced REACH regulations	Difficulties in the supply of essential chemicals and production stoppages.
Market risks	Access to competitive financing	Risk in case of failure to adapt to the TNFD[2] or to the future CSRD reporting regulation[3]. Opportunity to provide the EDF group with sustainable financing (Green Bonds, positive incentive loans).
Reputational risks	Environmental impact of projects and uncontrolled media impact	Difficulties in developing new projects which are being challenged in public debates.

(1) Zero net land development.
(2) Task Force on Nature-Related Financial Disclosure (TNFD).
(3) Corporate Sustainability Reporting Directive (CSRD).

3.2.1.2 The Group's public commitment

With its long-standing commitment to biodiversity[1], the EDF group systematically aims to minimise the impact of its activities on biodiversity. Today, this goal is reflected in the Group's participation in two initiatives: *Entreprises engagées pour la nature* (EEN) and Act4nature international.

3.2.1.2.1 2023-2025 Nature Commitments[2]

Renewal of 2023-2025 Nature Commitments	**In France:** the "EEN" (*Entreprises engagées pour la nature*, *i.e.* companies committed to nature) initiative organised by the OFB (Office français de la biodiversité, *i.e.* French biodiversity office).	**Commitment themes:** Reducing the contribution of our activities to IPBES pressure factors; protecting, restoring and regenerating, strengthening and sharing knowledge; transforming our processes, organisation and skills.
	Internationally: Act4nature International initiative set up by the French non-profit EpE (*Entreprises pour l'environnement*, *i.e.* Enterprises for the Environment).	

These commitments cover several Group business lines, various geographical regions, and the scope of operational activities with biodiversity issues. The new commitments notably relate to the Group's value chain.

(1) In 2006, EDF adopted a policy to promote biodiversity (provide a reference, such as a public press release).
(2) The KPI for this commitment is based on 18 indicators. 14 of them are published in this section. The remaining four are as follows: No. 4: Maintaining EDF Hydro's performance in water resource management; No. 14: Carbon sequestration pilots; No. 17: 150 million customer connections based on energy consumption; No. 18: internal awareness-raising activities (1,500 in 2023).

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3.2.1.2.2 Environmental footprint

Methods testing

As part of the Generation Environmental Footprint (GEF) R&D project launched in 2021, one approach has been to select and test the Product Biodiversity Footprint (PBF) method involving experts in life cycle analysis (LCA) and ecological fields, while at the same time participating in its development. An application case study was used to assess and compare the potential impacts on biodiversity of the life cycle of photovoltaic (PV) and combined-cycle gas (CCG) electricity generation. The work enabled the method to be positioned in the electricity generation sector, its robustness to be tested, and appropriate developments to be made for this sector.

SBT for Nature (SBTN)

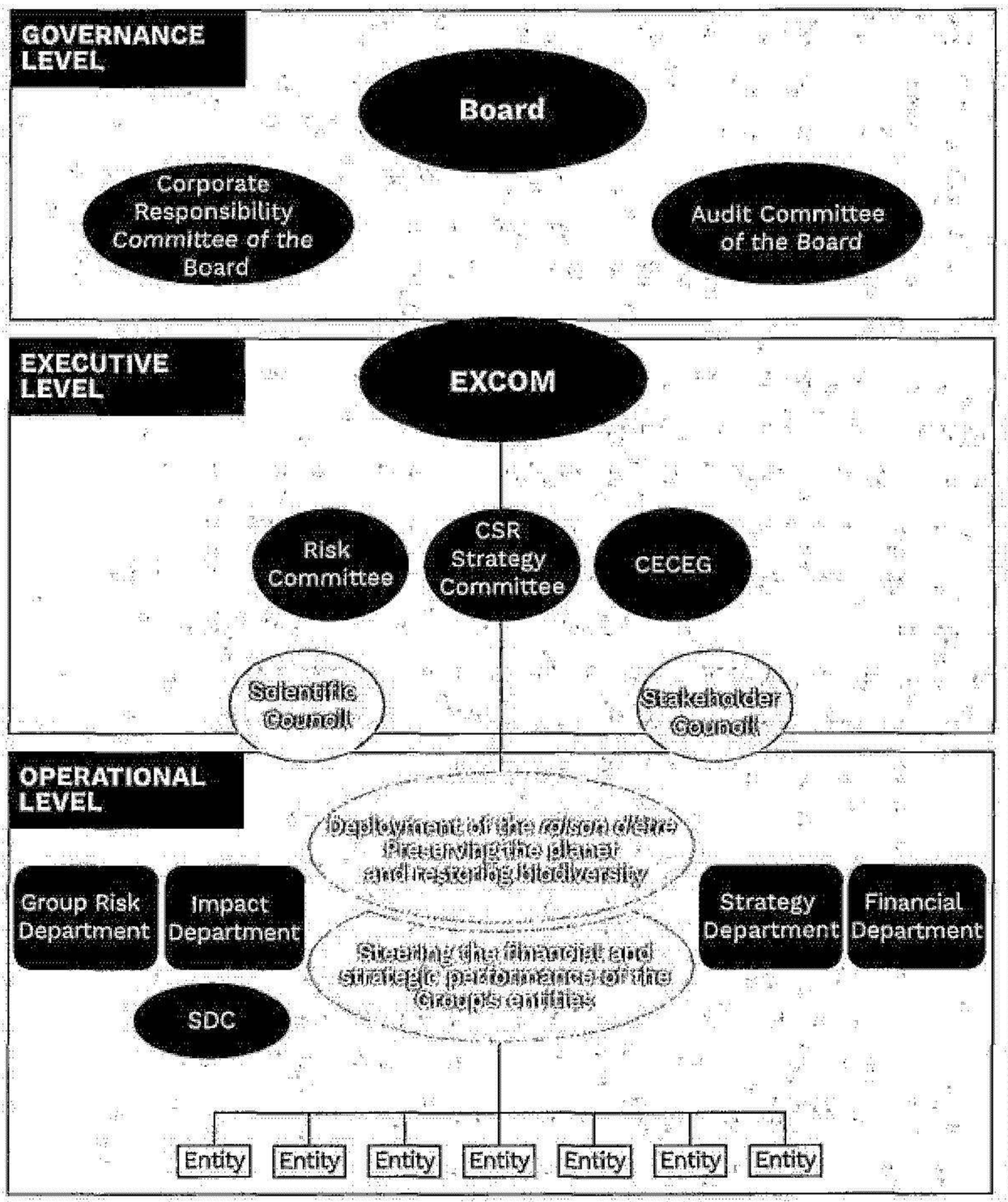
EDF is mindful to use a science-based action methodology and, along with a collective of French businesses, is testing the first stages of the SBT for Nature method on a reduced scope. A report on these works has been published by the collective in 2022(1).

3.2.1.3 Governance

3.2.1.3.1 Governance bodies

The EDF group's Nature governance forms part of its sustainable development governance (see section 3.5.2 "CSR governance bodies"). This is supervised, in accordance with the independent management of the network's infrastructure managers, at the top Group-level.

3.2.1.3.2 Nature governance mapping



The Board of Directors
defines strategic, financial and economic guidelines by taking into account the Group's Nature issues.

The EXCOM
defines Group priorities on Nature.

The Corporate Social Responsibility Strategy Committee (CSRSC)
oversees the implementation of Group priorities on Nature as well as delivery of voluntary commitments (*Act4nature* and *EEN* schemes).

The Executive Committee's Commitments Committee (CECEG)
examines the alignment of the Group's investment projects with the *raison d'être* and CSR commitments (including Nature).

The Group Risk Committee
identifies and determines the management of Nature-related risks and shares its strategy for mitigation.

The Scientific Council
informs EDF's approach by presenting the progress of scientific knowledge.

The Stakeholder Council
gives an opinion on EDF's approach to the preservation of natural resources.

The Sustainable Development Committee (SDC)
represents all the Group's businesses and prepares the issues presented to the CSR Strategy Committee.

Deployment of the *raison d'être*
Inclusion of Nature / CSR commitments in all Group policies.

Management of the financial and strategic performance of Group entities
integrates Nature criteria into the entities' medium-term plans.

At the operational level, nature-related risks are integrated into the Group's Environmental Management System (ISO 14001 standard) (see section 3.5.4.2 "Environmental management system").

(1) https://www.bl-evolution.com/publication/science-based-targets-for-nature-retours-dexperience-de-la-phase-pilote/

3.2.1.3.3 EDF's attendance of the Task Force on Nature-Related Financial Disclosures (TNFD) Forum

In 2021, EDF joined the Task Force on Nature-related Financial Disclosure (TNFD) Forum. The TNFD aims to provide better information that will enable financial institutions and companies to integrate nature-related risks and opportunities into their strategic planning, risk management and asset allocation decisions.

TNFD

EDF participated in an inter-company pilot project in 2022 and 2023 aimed at contributing to the development of TNFD requirements, and is included in the list of TNFD early adopters.

Green Bonds

For a complete discussion on the use of Green Bonds for the purpose of preserving natural resources, see section 6.7 "Information on the allocation of the funds raised as part of EDF's green financing".

3.2.1.3.4 Certifications

Several certification systems have been set up at national or local level, such as the AFNOR NFX 32-001 standard covering the biodiversity approach of organisations. EDF La Réunion is certified to this standard for all its *in situ* activities, excluding post-operations. The solar power plant project at Saint-Romain-en-Gal (Rhône) was awarded the "Positive Biodiversity Project" label by Schéma de cohérence territorial (SCOT) des Rives du Rhône.

3.2.1.3.5 Enhancing dialogue with stakeholders

Dialogue with biodiversity stakeholders is based on setting up partnerships and taking part in relevant think tanks. This is supplemented with in-field dialogue with local bodies.

3.2.1.3.5.1 Partnerships

Partnerships make up a significant share of the actions carried out in favour of biodiversity.

Nationwide (France)

The Group prioritises the Company's historic partners and major players in the sector: Muséum national d'histoire naturelle (MNHN), Ligue pour la protection des oiseaux (LPO), Comité français de l'union internationale pour la conservation de la nature (UICN), Fédération des conservatoires botaniques nationaux (FCBN), Fédération des conservatoires d'espaces naturels (FCEN), Institut national de recherche en sciences et technologies pour l'environnement et l'agriculture (INRAE) and Institut français de recherche pour l'exploitation de la mer (IFREMER). These partners meet as a group every two years to scrutinise EDF's commitments on biodiversity.

At the local level

Locally, more than 100 partnerships aim to help sites in their approach conducted in favour of biodiversity. The partnership with the FNPF (*Fédération nationale de la pêche en France, i.e.* National Federation of Fishing in France) continues through the financing and management of actions in favour of aquatic environments (one framework agreement and nearly 50 local agreements with departmental federations). Numerous actions are also carried out within the nuclear fleet in partnership with local players.

United Kingdom

EDF is one of the five companies to have met the Wildlife Trusts' Biodiversity Benchmark. EDF has been collaborating for more than 20 years with the Suffolk Wildlife Trust in Sizewell, the Lancashire Wildlife Trust in Heysham, the Wildfowl & Wetlands Trust in Hinkley Point C and with the Romney Marsh Countryside Partnership in Dungeness. In 2023, the Biodiversity Benchmark approval was *maintained for the management of the unused land of the six EDF* Energy nuclear power plants in operation.

3.2.1.3.5.2 Think Tank

In 2023, EDF participated in the discussions of think tanks such as OREE[1], EpE[2], CILB[3], WRI[4], RECORD, as well as in the CDC Biodiversity[5] working group which is developing an ecological footprint methodology (global biodiversity score).

3.2.1.3.5.3 Local governing bodies

The EDF group is involved in local biodiversity governing bodies, such as: River Basin Committees, River Committees and Regional Biodiversity Committees in France. It develops a policy for cooperation with non-profits, scientific organisations, and institutions.

3.2.1.3.6 Training and awareness raising

3.2.1.3.6.1 For the employees

For nature, environment and sustainable development training in general, see section 3.3.3.6.5 "Skills development in the area of sustainable development".

3.2.1.3.6.2 For the general public

Via its Foundation or business lines, the Group supports biodiversity-related philanthropic actions.

[redacted]	2021	2022	2023
Number of biodiversity projects	44	43	25
Amount of funding *(in euros)*	687,150	544,852	273,180

(1) oree.org/objectifs-et-missions.html
(2) https://www.epe-asso.org/en/
(3) cilb.fr
(4) World Resources Institute.
(5) cdc-biodiversite.fr

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3.2.2 Biodiversity and responsible land management

3.2.2.1 Group action

3.2.2.1.1 Reducing the activities' contribution to major pressure factors

The IPBES report[1] in 2019 identifies five major pressure factors: changing use of land and sea, overexploitation of resources, climate change, pollution and invasive alien species. EDF group has developed its action programme to limit its impact on each of these factors.

3.2.2.1.1.1 Changing land and sea uses

All segments included

The Group applies the principles of the mitigation hierarchy[2], or the regulations of the country where it is located if these are more stringent (notably in Europe). Group companies apply the PMO (prevent, minimise, offset) hierarchy for all projects and facilities in operation[3]. The environmental and societal impact assessments are completed prior to projects, pursuant to the current regulations and best practices (such as IFC Performance Standards if they are more restrictive).

For its new projects, the Group optimises its footprint and positions new industrial developments preferably on sites that have been subject to soil artificialisation. Appraisal and site restoration operations are carried out by the Group's internal engineering entities with the assistance of external service providers. Regarding investment decisions, 100% of the projects presented to the CECEG[4] are screened for risks related to biodiversity.

Impacts of structures currently in operation, in particular nuclear structures, on the environment and biodiversity are the subject of monitoring conducted by EDF teams and scientific organisations such as IFREMER or IRSN (Institute for Radiation Protection and Nuclear Safety).

In the field of centralised production systems

Nuclear and traditional thermal sector

Mapping and zoning of land areas for industrial use are systematically carried out on nuclear and thermal facilities in France. In the context of the post-Fukushima works, the built-up areas for the 56 buildings housing the emergency diesel generators are located on existing land take. The EPR under construction in Flamanville stands alongside the pre-existing Flamanville 1-2 facilities.

The land strategy put in place assists with the conversion of old thermal sites for new industrial uses. Two former thermal power plant sites have been converted into EDF Renewables solar power plants: the area of the former factory block of the former Ambès plant (Gironde) and a derelict area of the former Artix plant (Pyrénées Atlantiques). The Ottmarsheim solar power farm (Haut-Rhin) was commissioned in 2023.

Sobriety and recycling of rehabilitated land

To meet its industrial needs, EDF must have access to land without increasing soil artificialisation. This is why its land strategy is driven by the need for sobriety and recycling of rehabilitated land. EDF is monitoring the level of soil sealing during the conversion of *former continental thermal power sites, with a view to limiting it in* the long term.

In this context, an initial assessment of the amount of land sealed was carried out using data on sealing rates from the Corine Land Cover[5] database. Approximately 20% of this land is estimated to have a waterproofing rate of over 50%.

In 2023, EDF continued to implement this action:

- taking into account the feedback from the decommissioning of several legacy thermal power plants, which led to the initiation of a process of capitalising on and banking data on the soils following these operations (in order to better qualify their impermeability in the context of new projects);
- continuation by R&D of thesis work initiated at the end of 2022 in partnership with the Geological and Mining Research Bureau (Bureau de recherches géologiques et minières - BRMG), the University of Lorraine, and the French National Institute of Applied Sciences (Institut national des sciences appliquées - INSA) at Centre Val de Loire (in order to develop a methodology for assessing soil functionality in different contexts).

Furthermore, in 2023, EDF signed a partnership agreement with Conservatoire des espaces naturels (CEN) Occitanie, for the implementation of a biodiversity management plan adapted to the Aramon site, a former thermal power plant, now at the post-operation phase. CEN Occitanie was also entrusted with the implementation of a management plan for a "lône" (isolated tributary), located on the Aramon site.

Removal of waterproofing

At site level, a number of sites were recently decontaminated; for example, eight hectares of the former coal park at the Vitry-sur-Seine power plant (Seine-et-Marne) were temporarily decontaminated; almost 10 hectares of the former Ambès thermal power plant (Gironde) were permanently decontaminated and converted into a solar power plant; and around four hectares of the former Artix thermal power plant (Pyrénées Atlantiques) were converted into a solar power plant.

Management plans

EDF carries out management plans at its nuclear and thermal generation sites. In 2023, five nuclear sites and seven thermal sites in France, and two thermal sites in Belgium, developed a management plan.

Uranium suppliers

The Nuclear Fuel Department (NFD) is committed to accelerating dialogue with EDF's major uranium suppliers on biodiversity issues and levers in order to establish a biodiversity action plan by the end of 2025. In 2023, four exchange workshops were held with major uranium suppliers.

Hydropower sector

Hydropower facilities can affect ecological continuity in aquatic environments. The Group has implemented over 250 schemes to facilitate fish migration on sites with ecological implications *(specifically on listed waterways). These include dam crossing* facilities (such as "fish passes"), dismantling of trapping/ transportation river weirs and targeted turbine shutdowns.

In September 2023, Luminus presented the results of the Life4Fish programme, subsidised by the European Commission, in the presence of numerous international experts. This programme, launched in 2017, has made it possible to test and validate several pilot solutions (downstream migration model, disposal route, electrical deterrent, etc.) for the protection of migrating fish when passing through six hydroelectric facilities located on the Meuse.

(1) IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.
(2) Principles based on Performance Standard 6 of the International Finance Corporation (IFC, a World Bank organisation) dedicated to Biodiversity Conservation and Sustainable Management of Living Natural Resources.
(3) *The French biodiversity law of 2016 requires companies to implement offsetting measures regarding harm to biodiversity designed to avoid a net loss, and,* preferably, even make a net gain in biodiversity.
(4) Group Executive Committee Commitments Committee (CECEG).
(5) Biophysical inventory of changing land cover in 44 classes.

Wind and Solar sector

The EDF group, the IUCN (International Union for Conservation of Nature), EDP (Energias de Portugal) and Shell worked together to develop and publish guidelines[1] to prioritise mitigation measures and the best available measures to reduce impacts on biodiversity *from onshore and offshore wind projects and photovoltaic projects*. This work continued in 2023, notably with regard to cumulative impacts.

EDF Renewables is committed to implementing an environmental management plan in France for all its ground-mounted solar power plants presenting a biodiversity issue. In 2023, 100% of farms presenting a biodiversity issue will have this vegetation management plan. Furthermore, EDF Renewables is committed to reusing, recycling and recovering the blades from the wind farms they control at the end of their operation, and gradually integrating easily recyclable blades into future farms. Luminus has drawn up a Green Charter which aims to minimise the impact of wind farms on biodiversity during the construction phase. This charter incorporates the recommendations of the international IUCN guidelines. It was tested on a Walloon wind farm construction site in 2023.

Other facilities

The Climate and Resilience Law[2] indicates that, for this first 10-year period, natural or agricultural spaces occupied by a solar power farm are not counted in the consumption of natural, agricultural and forest spaces if the ecological functions of the land are not permanently affected and if the facility remains compatible with agricultural or pastoral activities[3]. For EDF Renewables projects, the feasibility of grazing is systematically assessed based on the nature of the site, biodiversity issues or the presence of interested breeders.

Agri-PV

With regard to the development of ground-based photovoltaic projects involving agricultural land within the territories, EDF Renewables, the French Chambers of Agriculture and the FNSEA signed a charter of best practices, focusing on responsible and coordinated land use. It is to the same end that EDF Renewables also joined the French Agri-photovoltaics Producers Federation (Fédération française des producteurs agrivoltaïques, FFPA).

Regulatory changes were under way in the last quarter of 2023 on this subject, as part of the law to accelerate generation from renewable energies.

Floating photovoltaic plants

Floating solar is developing internationally and nationally and is now a promising technology for the entire photovoltaic industry. The commissioning of the first floating solar power plant on a hydroelectric reservoir in France, the Lazer power plant, has been in effect since July 2023. Other sites are currently being studied. Furthermore, several EDF hydro entities are currently developing innovative initiatives and participating in Research & Development programmes in this field.

Electricity grids

In the geographical areas operated by Enedis, new medium-voltage (MV) lines are being built underground, using underground or discrete techniques for low-voltage (LV) in compliance with local regulatory requirements and taking into account as much as possible the CO_2 impact.

3.2.2.1.1.2 Overexploitation of resources

EDF's activity is partially dependent on the availability of freshwater. EDF has worked for years to reduce its water footprint. See section 3.2.3.2.4 "Optimising water usage". The same applies to raw materials and rare metals. See section 3.2.4 "Radioactive and conventional waste and the circular economy".

Forest resources

In terms of forest resources, EDF reviewed its Group-wide biomass policy, to include new biodiversity commitments, particularly specifying that neither direct nor indirect deforestation were permitted to meet the Group's biomass-energy needs.

3.2.2.1.1.3 Climate change and biodiversity

To enable the Group to achieve carbon neutrality by 2050, EDF R&D began work focused on carbon contribution. The challenge was to favour solutions that promote CO_2 sequestration in natural ecosystems. The Group's first initiatives are described in section 3.1.1.6 "Contribution to carbon sinks".

3.2.2.1.1.4 Pollution

For a full overview of pollution issues (air, water, soil), see sections 3.2.4 "Radioactive and conventional waste and the circular economy", 3.2.3.2.4 "Optimising water usage" and 3.3.1.6 "Air quality".

Prevention of soil and subterranean water impacts

The environmental policies of the Group entities aim to optimise the *use of land and protect soils and subterranean water against any* impacts. Land use and subterranean water use is monitored as part of groundwater monitoring and biodiversity actions (see section 3.2.2 "Biodiversity and responsible land management").

The prevention of impacts relies on an "in-depth defense" approach[4], including several levels of security built into the protection methods in place at all industrial sites[5].

Management plans

For years, EDF has adopted a proactive approach to checking the quality of soil, sub-soil and subterranean water on different production fleet sites (thermal and nuclear). The actions undertaken include, for example: identifying activities likely to have an impact on the quality of soil and groundwater; setting up a piezometric monitoring network on and around the facilities; and carrying out management measures if necessary.

In the field of phytosanitary products

Ahead of its goals, and since July 2022, Enedis will no longer use phytosanitary products to maintain Source Substations[6], except for zones where treatment is necessary for security reasons (HVB zones). For the new Source Substations, experiments are being carried out with a view to building Zero Phyto Source Substations.

As of 2022, EDF stopped using phytosanitary products on all areas of the mainland industrial sites, on areas that are not sensitive to safety and security issues (DIG). Other entities no longer use these products[7].

(1) portals.iucn.org/library/node/49283
(2) French Law 2021-1104 of 22 August 2021 combating climate imbalance and increasing resilience faced with its effects (JORF [*i.e.* Official Journal of the French Republic] number 0196 of 24 August 2021).
(3) See Article 194 III 5° and 6°.
(4) This involves three levels of protection: prevention, to avoid failures; monitoring, to anticipate failure or detect it immediately; and control, to limit the consequences of a failure.
(5) See also section 3.2.3.2.4 "Optimising water usage".
(6) Industrial electrical structure at the junction of high and medium voltage power lines.
(7) Cyclife, Edison, Luminus, EDF Norte Fluminense; ÉS no longer uses any glyphosate-based products.

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Preventing light pollution

In 2023, supported by its R&D experts notably, EDF tested a method for inventorying and characterising light sources by drone. A mapping of the night-time light impact of the Blénod thermal site was carried out. Superimposed on the site's biodiversity issues, this mapping will be the basis for recommendations to the site in order to limit light impact while taking into account operating requirements.

3.2.2.1.1.5 Invasive Alien Species (IAS)

Invasive alien species are usually detected during surveys carried out on sites. The use of local plants when re-naturalising sites can be a resilience factor limiting the future development of invasive alien species.

EDF SEI and EDF PEI

In Corsica and French overseas departments and territories, where the issue is particularly important, EDF SEI[1] and EDF PEI[2] are intensifying the fight against invasive alien species on their projects. All of EDF SEI's investment projects that passed through the Commitment Committee were screened, including, where applicable, a request for a diagnosis of IAS and, if necessary, the fight against IAS. In 2023, SEI carried out 10 diagnostics on new projects in Corsica and Overseas Territories, which led to the prescription of management measures on four projects. Moreover, three management plans were implemented at SEI and EDF PEI, resulting in the elimination of one IAS in Corsica (SEI) and two IASs (EDF PEI) *via* green space maintenance contracts in Réunion and Corsica.

Local plants

Since 2015, EDF is a partner of the "Local vegetation" programme organised by the OFB[3] and French Botanical Conservation Bodies. EDF has undertaken to preferentially use wild plants of local origin for all the Group's projects. From 2020 to 2022, 17 planting operations using local plants or seeds were carried out on more than 20 hectares. In 2023, the French entities set up more than five new planting operations using plants of local origin.

3.2.2.1.2 Recreating spaces and conditions conducive to biodiversity

Environmental preservation and restoration

Positive ecological management

The Company manages natural sites belonging to the land it owns in partnership with local associations. EDF notably employs positive ecological management practices such as late mowing or eco-grazing. Part of the land owned is allocated to spaces dedicated to the protection or recreation of biodiversity, *via* management plans tailored to the site's issues.

To consolidate the approach, EDF relies on several levers such as the certification of sites in whole or in part, or the signing of real environmental obligations[4], for example on the former site of *Ambès* (about 42 hectares).

Environmental preservation/restoration

EDF is committed to contributing to the preservation and restoration of natural environments with local partners on 12 sites through to the end of 2025. In 2023, this involved over seven sites. For example, in the *Volcans d'Auvergne regional national park*, the decantation and phyto-purification of the EDF reservoir were improved by the construction of a grit trap and a lagoon area, thus creating an additional two hectares of wetland. This project is considered, by the French Water Authority, as a Nature-based Solution.

Equally, EDF is committed to promoting knowledge, cohabitation and the development of high-stakes species on 18 sites through to 2025. In 2023, more than two sites contributed to this objective. Thus, EDF and the Écrins National Park signed a 2023-2024 agreement on the preservation of yellow-bellied ringers (monitoring of the species, awareness-raising and support for the plant grouping at construction sites). Furthermore, over 70 bat nesting boxes were installed by EDF Hydro on an EDF housing estate and several plants in the Provence-Alpes-Côte d'Azur region.

Protected areas and endangered species

Several EDF sites contribute to achieving the preservation targets in the Natura 2000 areas and to implementing the Natura 2000 contracts. The Group takes action *via* multiple programmes dedicated to preserving biodiversity (*e.g.* Life+).

In Laos, Nam Theun 2 Power Company is maintaining its policy of protecting biodiversity in the river basin in conjunction with the Nakai-Nam Theun National Park (formerly the Watershed Management Protection Authority), the authority managing it. The stakeholders are committed to having Nakai Nam Theun National Park put on the IUCN Green List of Protected Areas by the end of 2025[5].

3.2.2.1.3 Improving and sharing knowledge

Research and biodiversity

The BIODIV project brings together most of EDF's biodiversity research actions. From 2018 to 2021, this project produced 50 publications, including one in the Nature Communication journal, as well as 52 conference papers. The project has a €25 million budget for the 2022-2025 period.

The Renewables Environment and Sustainability (REES) project led by EDF Renewables and carried out by R&D aims to develop innovative and effective solutions to reduce the impacts of wind (onshore and maritime) and solar power on the environment and biodiversity, while optimising generation.

Since 2009, EDF's R&D and INRAE[6] have set up the joint HYNES team in order to collaborate on the development of ecological approaches to aquatic environments. Renewed in 2019, the themes of the HYNES team have been extended to land environments.

In 2023, these two projects enabled the elaboration of three new publications, five communications at international conferences, and the completion of four theses.

(1) *EDF SEI: EDF Systèmes Énergétiques Insulaires.*
(2) EDF PEI: EDF Production Électrique Insulaire.
(3) OFB: Office français de la biodiversité (French Biodiversity Office).
(4) Codified in Article L. 132-3 of the French Environment Code, Real Environmental Obligations are enshrined in a contract under which the owner of a property establishes environmental protection attached to the property, for a period of up to 99 years. To the extent that the obligations are attached to the asset, they continue even in the event of a change of ownership. The purpose of the contract must be the maintenance, conservation, management or restoration of biodiversity or ecosystem services.
(5) International Union for the Conservation of Nature.
(6) inrae.fr

Awareness of the ecological quality of land

The Company integrates biodiversity as one decision-making criterion in its industrial choices. The vast majority of EDF production sites are located close to protected sites and remarkable natural areas. Mandated by the Company, UNEP – WCMC carried out a vast study to assess the ecological sensitivity of places where the Group's 1,000 industrial sites are located[1]. In Italy, Edison carried out an ecological sensitivity analysis for all its grid-scale sites, periodically updated with new sites on the Edison scope[2]. EDF has a clear overview of the ecological status of its land, *via* a dedicated database, populated *via* both regulatory and voluntary inventories. EDF has also contributed to developing and implementing the French National Museum of Natural History EPI and EQI[3] indexes. In France, EDF voluntarily transmitted to the INPN[4] some of its data from inventories collected, *i.e.* approximately 50,000 occurrence data, in addition to the 15,000 occurrence data stemming from EDF's mandatory contribution.

3.2.2.2 Results in 2023

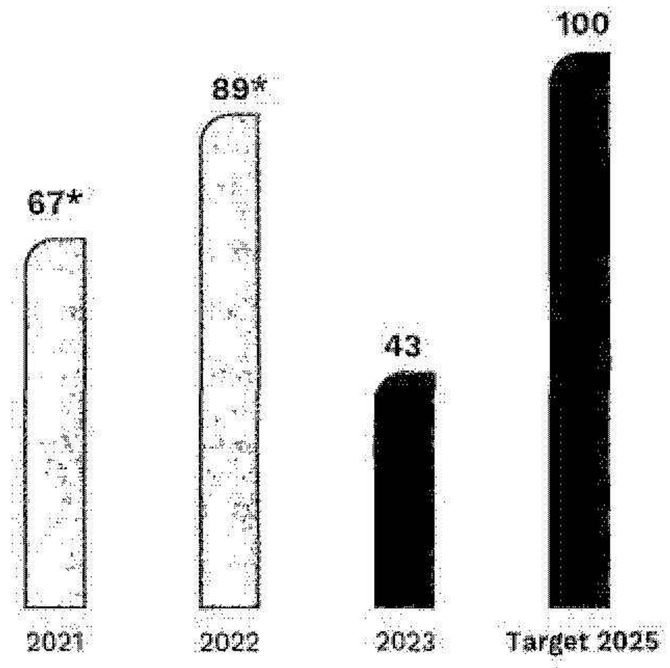
3.2.2.2.1 Key Performance Indicator for biodiversity

Group key performance indicator

The key indicator for the Group is based on the fulfilment of actions taken in accordance with Whistleblowing system Act4nature international. This achievement rate relates to the 18 actions that meet the Group's 2023-2025 commitments in terms of:

- reducing the activities' contribution to major pressure factors;
- preservation, restoration, regeneration;
- improving knowledge and sharing it;
- transforming our processes, our organisation and our skills.

Achievement rate of Act4nature international commitments (in %)



** Data calculated on the basis of the nature commitments for 2020-2023*

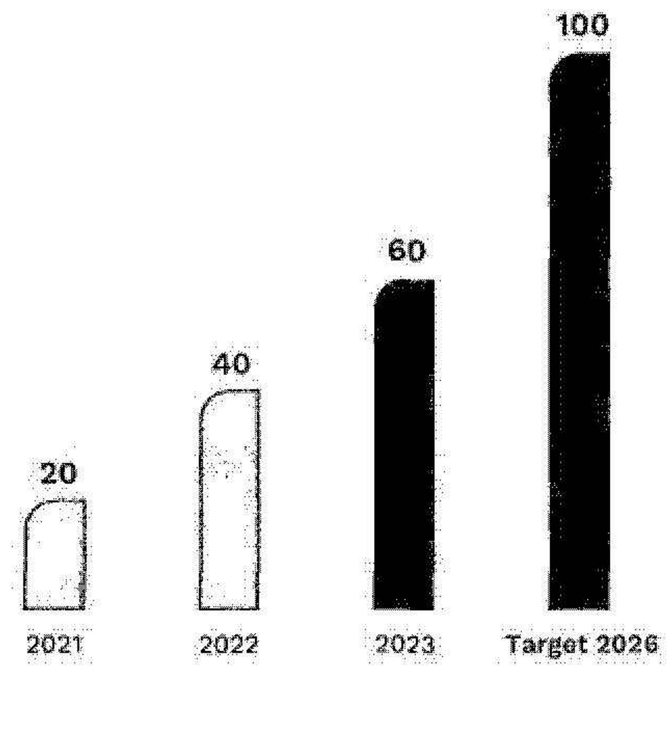
3.2.2.2.2 Key Performance Indicator for Land Management Issues

Group key performance indicator

The key performance indicator selected for the commitment to responsible land management relates to the installation of solutions in favour of multiuse of land. This indicator more specifically focuses on the issue of reconciling agriculture and the development of carbon-free power generation, as well as setting up floating solar power plants.

For details of the implementation of these innovative solutions, see 3.2.2.1.1.1 "Change of land and sea use, other Agri-PV and floating PV sites".

Implementation rate of innovative solutions encouraging multifunctional land use (in %)



(1) Analysis carried out in September 2018 by the World Conservation Monitoring Center (WCMC) for EDF, EDF Renewables EDF in the UK, Edison, EDF China and the International Division (Luminus, MECO, Nachtigal, EDF Norte Fluminense, NTPC, SLOE, and SINOP).
(2) Grid-scale: generation facilities connected to the grid.
(3) Ecological Quality Index (EQI) and Ecological Potential Index (EPI).
(4) The National Inventory of Natural Heritage (INPN) is the portal of French biodiversity and geodiversity, both in metropolitan and overseas France. It disseminates knowledge on animal, plant and fungal species, natural environments, protected areas and geological heritage. All of this reference data, validated by networks of experts, is available to all, professionals, amateurs and citizens.

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3.2.3 Integrated and sustainable water management

3.2.3.1 Water, a resource for energy production

Water is an essential resource to generate most types of power, either to cool nuclear and thermal power stations, or to drive hydroelectric power stations. It is an issue identified in the Group materiality matrix. Under the terms of the French Environment Code, water is the "nation's ordinary heritage". Water management therefore requires that collective rules be drawn up based on mutual support between upstream and downstream. This is why the Group is committed, in its CSR policy, to protecting and managing water in an integrated and sustainable manner, both quantitatively and qualitatively[1] and to consulting with the territories in which it operates, by fully integrating the local dimension of water, including various water uses under increasing climatic constraints[2]. Sharing of water for multiple uses is an intrinsic characteristic of hydropower and the dams operated by EDF allow billions of m3 of water to be stored. They play an essential role in certain areas during periods of drought and heat waves. 70% of EDF Hydro's 286 concessions have regulatory or contractual obligations to access water for other users.

Expertise

Since 1946, EDF has been developing cutting-edge expertise in meteorological and hydrological monitoring and forecasting. A department has been set up to measure, model and forecast hydro-meteorology for the EDF fleet, drawing on more than 1,000 measuring stations and 75 years of data.

Offshore Coordinator

Even if current concern is focused on freshwater resources, there is only one water cycle, from source to sea. Because of its strategic, geopolitical and economic stakes, the Ocean, following on from Climate and Biodiversity, has become the third major environmental and international issue. The EDF group has a long-standing relationship with marine life: construction of the Rance tidal power plant in the 1960s, thermal and nuclear generation facilities by the sea, and more recently the development of offshore wind power and the decarbonisation of ports. The Executive Committee named an EDF group "Offshore Coordinator" to define a strategy and coordinate the Group's different entities on this theme.

3.2.3.2 Water, a resource to be preserved and saved

The Group is committed to preserving and protecting water in terms of both quantity and quality. Notably, this involves continuing to improve performance in terms of water withdrawal and consumption at existing power plants and to conducting research into the most efficient way to use water across the regions and major river basins. These efforts are directly linked to the expectations of the French government's Water Plan as set out in March 2023.

3.2.3.2.1 Exposure to water stress

The evolution of water stress is one of the criteria used to evaluate the water component of any new project presented to the Group Investments Committee (CECEG).

3.2.3.2.1.1 Nuclear and thermal power generation

The water stress exposure of the Group's generation facilities was assessed (in 2018 with an update in 2022) with four different international reference tools (WFN's Blue Water Scarcity[3], WRI's Aqueduct[4], WULCA's AWARE[5] and EEA[6]'s WEI+[7]) at annual and monthly time steps. These tools do not identify freshwater withdrawals from stressed areas in France, with the exception of Aqueduct.

According to Aqueduct and as an annual average, three nuclear power plants (NPPs), including one using seawater, are located in areas of high-water stress (40%<BWS<80%) and seven NPPs face a medium high risk (20%<BWS<40%). One combined cycle gas turbine (CCGT) site is located in an area of extremely high water stress (BWS>80%) and two sites are located in an area of high water stress (40%<BWS<80%). These last three power plants comply with the specific regulatory requirements applicable to them in periods of drought. They mainly operate in winter, and during periods of drought; they implement specific actions in compliance with national regulatory requirements (see below). The results provided by Aqueduct give an initial assessment, which needs to be tempered due to the accuracy of the tool, both in terms of time (the interval is monthly at best) and in terms of spatial resolution (10×10km unit).

EDF has a hydro-meteorological centre that records local data in real time for all its power plants in order to have greater accuracy in measuring water stress. Reviewing this data does not confirm the indications provided by Aqueduct. Changes in water stress up to the year 2040 have also been studied using the three scenarios proposed by Aqueduct. There is no trend towards a general increase in water stress across the entire nuclear and thermal fleet, nor a specific alert for a given site (e.g. a change from a high to an extremely high level of stress). These results will be consolidated, notably, for France, by using the results of the Explore2 programme, whose objective is, by mid-2024, to update knowledge on the impact of climate change on French water resources based on the latest IPCC publications.

3.2.3.2.1.2 Hydropower generation

EDF relies on its hydrometeorological centre, with its own evaluation and forecasting tools at the local level. Regular reassessments of site yields are made on the basis of changes in hydrology and temperature due to climate change. Prospective studies, looking ahead to 2030 and 2050, and taking into account local societal changes (water uses for example), have been carried out in several basins with the support of R&D and the assistance of external players.

(1) See section 3.2.3.2 "Water, a resource to be preserved and saved".
(2) See section 3.2.3.3 "Water: a shared resource and a powerful marker of climate change".
(3) WFN: Water Footprint Network.
(4) Aqueduct, developed by the World Resources Institute, is a mapping tool for determining the risk associated with water resources on a global scale. Aqueduct researchers calculated 12 indicators including access to water, water stress, drought, pressure on groundwater, etc.
(5) WULCA: Life Cycle Initiative project on the assessment of water use and depletion in the context of life cycle assessment (LCA).
(6) EEA: European Environment Agency.
(7) WEI+: Water Exploitation Index.

3.2.3.2.2 Water withdrawal, consumption and intensity

3.2.3.2.2.1 Group water withdrawals

At the Group level, around 40 billion m³ of water were used to cool thermal power facilities, of which 99% was reusable and returned virtually instantaneously to the natural environment. As such, EDF withdraws significant amounts of water, but consumes a moderate amount of it[1]. Drinking water is not used for cooling systems but only for various forms of water process for a share lower than 0.1%. Most of the water withdrawal for the cooling systems and for the industrial circuits of its facilities takes place in France (81%) and the United Kingdom (17%) in areas where water stress is limited (low to medium, see section above).

A large number of nuclear and thermal facilities are located by the sea and therefore do not use freshwater for their cooling system but rather sea water (without quantitative constraints); 68% of the water used for cooling purposes by the Group comes from the marine or estuarine environment. This percentage is almost 61% in France, over 99% in the United Kingdom and close to 95% in Italy.

As regards the volumes of freshwater used by the Group, the quantity taken from groundwater is marginal, around 2hm³ or 0.02% of the freshwater withdrawn from the surface.

3.2.3.2.2.2 Freshwater consumption

97% of the freshwater withdrawn in France is returned directly to the natural environment. The water consumed is essentially water evaporated by the cooling systems of nuclear power plants in closed circuits (with cooling towers). In terms of absolute value, this represented 375hm³ in 2023.

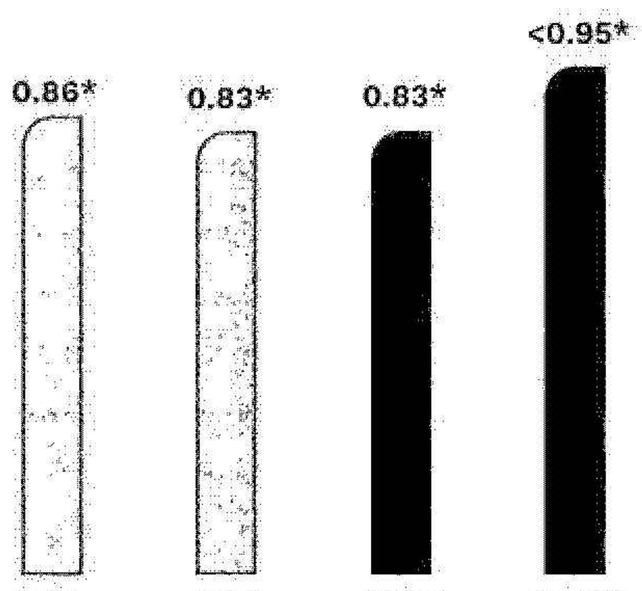
3.2.3.2.2.3 Water intensity

Group key performance indicator

Water intensity is the specific consumption of evaporated water per kilowatt-hour of electricity generated. The Group's objective for this indicator is not to exceed the target of 0.95l/kWh on average over the last five years. The goal is to gradually reduce specific water consumption by 2030 (as compared to 0.96l/kWh, the 2015 reference value). Taking into account the planned evolution of the means of electricity generation and the actions to optimise the use of water, water intensity at Group level is expected to decrease in the years to come.

The key performance indicator, based on the average of the last five years, is 0.83l/kWh, constant compared to 2022.

Water intensity (in l/kWh) √



* *On average over the past five years.*
√ 2023 value subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.

3.2.3.2.3 Water quality and reduction of pressure on the environment[2]

3.2.3.2.3.1 Monitoring around industrial sites

EDF monitors land and aquatic ecosystem quality parameters, including subterranean groundwater around its industrial sites, particularly by measuring, controlling and analysis effluents on all sites. Monitoring the temperature of water upstream and downstream from thermal power plants is an important parameter with regard to biodiversity. The pH of water, its conductivity, chemical oxygen demand (COD), biochemical oxygen demand (BOD5), nitrogen and phosphorus are also controlled and measured according to a regulatory environmental monitoring plan for each site. Hydrobiological monitoring is carried out each year at certain sites presenting significant environmental challenges (*e.g.* Cordemais and Martigues) in order to ensure long-term monitoring of receiving environments.

3.2.3.2.3.2 Specific monitoring for nuclear power plants

Each nuclear power plant has a specific authorisation defining, based on its characteristics and its environment, the water withdrawal conditions, and chemical, thermal and radioactive effluent discharge limits (mainly tritium and carbon-14). All these effluents are collected, treated, then transported to storage tanks where they are analysed, before being disposed of, in accordance with regulations to prevent any potential impact on aquatic ecosystems. Each year, over 10,000 environmental monitoring and control analyses are carried out at each nuclear power plant. The analyses are carried out by internal and external laboratories. The results of this monitoring are provided to the relevant local authorities and used in documents available to the public.

There were no significant water-related environmental events or new disputes in 2023.

(1) The cooling of thermal power plants represents 12% of consumption, compared to 58% for agriculture and 26% for drinking water supply, based on 2010-2019 averages; source: https://www.statistiques.developpement-durable.gouv.fr/english-contents

(2) Regarding the regulatory framework for water quality monitoring, see the complete guide "Power plants and the environment, water withdrawals and discharges, 2020" available on the edf.fr website: https://www.edf.fr/en/the-edf-group/producing-a-climate-friendly-energy/nuclear-energy/shaping-the-future-of-nuclear

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3.2.3.2.4 Optimising water usage

The optimisation of water used in EDF's generation activities serves to ensure management of water resources and to honour the Group's commitment to guarantee multi-purpose water resources (drinking water, water for irrigation, tourism, etc.) and to meet the needs of local authorities. The EDF group is working on several factors to optimise its water use and reduce pressure on the environment, by reducing its water consumption, reusing and/or recycling it, and using seawater desalination processes.

With regard to nuclear generation, the strategy to reduce the pressure on water resources is described in the Water Sobriety Plan for the nuclear sector scheduled to be finalised in early 2024. These water sobriety efforts contribute to meeting the expectations of the government's Water Plan, announced in March 2023, which aims notably to reduce withdrawals in France by 10% by 2030.

3.2.3.2.4.1 Better recognition of withdrawals and consumption

Nuclear fleet

The nuclear fleet has undertaken actions to improve the metrological monitoring of the flows withdrawn and consumed and to map the water flows of the entire industrial process (a first flow mapping began in 2023 for the Golfech site; this approach will be extended to a representative group of NPPs), the aim being to identify the most significant action levers and adapt the sobriety strategy to the specific characteristics of the sites.

French thermal fleet

Since 2020, all thermal facilities (Cordemais, Martigues, Blénod and Bouchain) have been subject to a review of water withdrawal and consumption in order to identify opportunities to reuse and recycle water. In 2023, the year was marked by the finalisation of the Martigues CCGT and the Blénod CCGT study.

3.2.3.2.4.2 Reduction of consumption and withdrawals

The Group has developed a number of systems and processes to reduce water consumption and limit withdrawals:

- engine cooling systems using air with "dry coolers", and not water, as is planned for the EDF PEI Larivot biomass plant in French Guiana and for the gas thermal power plant project near Norte Fluminense in Brazil;
- dry cleaning of solar panels in areas exposed to high water stress;
- the modernisation of the demineralisation process, for example, at the nuclear power plant in Angleur in Belgium;
- specific measures to reduce the need for process water, notably during the restart phases of the nuclear power plants in France and in Chile for the Nueva Renca plant.

3.2.3.2.4.3 Water reuse and recycling

The reuse of process and cooling water is implemented at the Group as soon as possible and wherever relevant. In addition, the Group has deployed several non-conventional water recovery systems (rainwater and water from wastewater treatment plants).

Nuclear fleet

To go beyond the recirculation of water from closed cooling circuits (with cooling towers), a roadmap will be drawn up for each NPP based on water flow maps (previous paragraph), to build a strategy to recycle and reuse process water that is adapted to each nuclear site.

With the support of R&D and the General Technical Division, the ADAPT programme is piloting a prototype for the recovery of water evaporated in air coolers. In 2024, the prototype will be installed at the Mistral test facility at Bugey in order to carry out performance tests.

In order to reduce the impact on freshwater withdrawal, the possibility of using water from pumped-storage hydropower plants[1] and rainwater as a complementary water source are studied when designing new nuclear reactors. For example, there is a plan to pool the existing demineralisation station for Penly 1/2 and the two future EPR2 units for the production of industrial water and demineralised water using wastewater from the treatment plant, as well as rainwater collected *via* storm basins and water from a drain at the foot of the cliff.

French thermal fleet

Some power plants have facilities allowing the recycling of rainwater, by design for some or since their industrial commissioning for others. This is the case for the thermal power plants in Cordemais and Bouchain, which recover rainwater and reuse a part of process water. The Martigues plant has also been recycling some of its industrial effluents since the end of 2022. Lastly, the Blénod thermal power plant is studying a system to recycle rainwater and process effluents, which could be implemented shortly depending on the results of the feasibility study.

Dalkia

In Dalkia's large biomass combustion facilities, process wastewater is used to cool bottom ash to limit the volume of liquid effluent to be treated.

Framatome

Earlier this year, Framatome inaugurated a rainwater collection and use system at its Montbard metallurgical site, with significant savings of 4,500m³ out of an annual consumption of 15,000m³.

International

In China, the Fuzhou ultra-super-critical power plant reuses all its process water sequentially and according to the quality of the water (from cooling to watering ashes and gardens). In Brazil, the Norte Fluminense thermal power plant set up a system for the recovery and use of rainwater a few years ago, making it possible to reduce its annual withdrawals from the river by 2%.

3.2.3.2.4.4 Desalinating sea water

A desalination unit has existed in Flamanville since 2016 to produce demineralised water. EDF is also conducting several desalination experiments for process water at its sites. In Guadeloupe, the power plant in Jarry Sud has a sea water desalination facility, which has made it possible to stop using tap water and save around 50,000m³ of freshwater per year. In order to optimise the use of water in areas of high-water stress such as southern Italy (Candela in Puglia, Altomonte in Calabria and the new Presenzano plant in the Campania region), Edison's thermal power plants are equipped with an air cooling system for condensation of the power plant's steam *or, if necessary, the use of desalinated seawater as a substitute for* freshwater (Simeri Crichi in Calabria).

(1) Wastewater treatment plant.

3.2.3.3 Water as a shared resource and a powerful marker of climate change

Water is at the heart of the challenges involving climate change: it is both one of the resources most vulnerable to climate disruption and a risk vector for the regions and their inhabitants, in view of the rise in the frequency and intensity of extreme weather events such as floods and droughts. Moreover, under the effect of climate change, the increase in air temperatures will induce an increase in evapotranspiration. Although changes in precipitation in France are uncertain, with marked variations from season to season (increase in precipitation in winter and decrease in summer) and from region to region (decrease in the south and increase in the north-east), overall it will lead to a decrease in annual volumes of hydrological flows: they should decrease by 10% to 40% by 2050 compared to the 1960-1990 period. Low water levels will last longer, take place earlier and become more intense (-30% to -60%)[1]. At the same time, the increase in temperatures will generate increasing water requirements (for agriculture, for example), thus intensifying the challenges of sharing available water resources. In addition to these issues in relation to the amount of water, water resources will also change in quality with a rise in water temperatures in large rivers and increasing issues of eutrophication and dilution of human-induced chemical discharges. These expected changes in water resources will exacerbate competition among the various uses of water and therefore intensify the need for the concerted management of the resource.

3.2.3.3.1 Impact of climatic conditions on electricity generation

In 2023, the heat waves and late low water levels had no impact on safety and had a limited impact on the nuclear fleet's generation (158GWh, *i.e.* a third of 2022 generation). No request for a temporary modification of the thermal discharge limits of the nuclear power plants was examined; the NPPs operated within their normal regulatory limits.

In terms of the thermal generation fleet, the two heat wave episodes temporarily impacted the full availability of output from the Martigues CCGT. The drought had no impact on the availability of the thermal fleet.

The water consumption assessment studies mentioned above, carried out for the Cordemais, Bouchain, Blénod and Martigues power plants (and in progress for the Combustion Turbines Operating Centre) will make it possible to refine the procedures to be followed in the event of a drought alert.

3.2.3.3.2 EDF met its commitments to stakeholders thanks to good management

EDF does not own the water stored in its dams; it uses it as part of a public service mission to generate energy on the basis of the available resource while incorporating other uses as best as possible.

The water in these reservoirs is not only used to generate hydropower, but depending on the reservoir, it can be used for drinking water supply, irrigation, navigation, tourism, recreation and the preservation of biodiversity. This availability of water for other uses can have an impact on hydropower generation, a renewable and carbon-free energy that contributes to climate change mitigation.

A balance must therefore be sought through close and continuous consultation with local stakeholders, including governmental services, which are the last resort in the event of arbitration on the prioritisation of water uses.

3.2.3.3.2.1 Management of water resources

EDF constantly ensures that its hydropower facilities are managed in consultation with the stakeholders (the French government, local authorities, water agencies, associations, *etc.*). As such, EDF plays a part in national and local water governance and management bodies (national water committee, basin committees, local water commissions, *etc.*).

In France, EDF is represented by the French Electricity Union[2] at meetings of each of the river basin water governing authorities.

EDF participates in several international works on water (IHA Board of Directors[3], Board of Directors of the Partenariat français de l'eau [French Water Partnership], member of the World Water Council, *etc.*), and is also directly involved, as UFE representative to Eurelectric, in working groups at the European level (for example, on the Water Framework Directive).

Since 2003, EDF has had an internal water coordination body whose operational management is entrusted to EDF Hydro's management. An internal body (the Water Management Group, GGE) is responsible for continuously monitoring hydro-meteorological indicators, water reservoirs and local situations in order to implement actions which are shared and consistent among the various generation business lines as regards local consultation and multi-use water management.

3.2.3.3.2.2 Keeping commitments

In France, in 2023, after a dry winter and an early spring, the situation, while remaining in deficit, improved during the spring except in the south-east (Alpes du Sud, Ardèche) where, nonetheless, water supplies could be built up before the summer thanks to the storms of May and June. EDF Hydro was thus able to provide summer support despite the heat waves of July and August, in particular thanks to its expertise in anticipating hydrometeorological situations and through dialogue with the State services (last resort arbitrator in the event of need) and other stakeholders.

In order to meet the various needs of water users under the terms and conditions of hydroelectric concessions or water-sharing agreements, in 2023 EDF Hydro released around 590Mm³ from the reservoirs it operates for the benefit of third parties, *i.e.* around 15% more than the 2015-2021 average, but a long way from the record of +60% in 2022.

An IGEDD-CGAAER mission conducted on the contribution of hydroelectric reservoirs to supporting low water levels in the Loire-Bretagne basin[4], published in June 2023, concluded that the hydropower facilities at the basin were already largely mobilised and recognised in particular the low-water support provided by EDF in the Vienne basin, which "proved its effectiveness, including during the dry summers of 2019 and 2022".

As regards the sharing of water resources more generally, it is also worth mentioning the biomass power plant project (27MW) in Villanueva in Colombia: in order to address the questions presented by local communities, a dedicated hydrological study was carried out in 2023 to assess the impact on water resources of the cultivation of the 5,000 hectares of eucalyptus trees needed to supply the power plant. The study shows that there is no significant change compared to the previous grass cover.

3.2.3.3.2.3 Access to water in international projects

With regard to water access, hygiene and sanitation, better known as "WASH" (Water Access to Sanitation and Hygiene) and as it constitutes the main target of the SDG6 for water, EDF guarantees such access to all employees and workers on 100% of its facilities or offices. In 2013, EDF was one of the first companies to sign the WBCSD's[5] advocacy to make a pledge to WASH. EDF goes beyond this pledge by applying it to temporary sites such as remote mobile hydropower worksites (*e.g.* Nam Theun 2 in Laos).

(1) Explore2070 project. This information will be updated with the Explore2 results, expected in mid-2024.
(2) Union française de l'électricité (*i.e.* French electricity union).
(3) International Hydropower Association.
(4) Conditions for mobilising hydroelectric reservoirs to support low water levels in the Loire-Bretagne basin | IGEDD (developpement-durable.gouv.fr).
(5) WBCSD: World Business Council on Sustainable Development.

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Thus, the Nachtigal Hydropower Project in Cameroon strives to improve access to water for the people in the project area, as was successfully done for the Nam Theun 2 project in Laos.

On the theme of integrated and shared water management, please also refer to section 1.4.1.3.1.4 "Issues relating to hydropower generation" and particularly "water management and access".

3.2.4 Radioactive and conventional waste, and circular economy

The Group is committed to honouring its responsibilities with regard to radioactive waste; promoting a circular economy approach; avoiding the generation of conventional waste and promoting, in order, the reuse, recycling and recovery of products/materials throughout the value chain (material recovery, energy recovery); using its waste by reallocating uses within the company during new developments, or in approved recovery channels.

3.2.4.1 Assuming its responsibility for radioactive materials or waste

Nuclear power plants generate radioactive waste from the operation of power plants, recycling of spent fuel, or decommissioning of permanently shut-down plants:

- 95% of the volume of radioactive waste produced by EDF is "short-lived" waste (period less than or equal to 31 years). It mainly comes from filtration systems, and maintenance and servicing operations. The majority of radioactive waste from plant decommissioning works is also short-lived waste;
- "long-lived" waste (period greater than thirty-one years) is generated by processing spent nuclear fuel, disposing of certain metal parts from reactors, and waste from decommissioning of metal parts close to the core, as well as graphite from natural uranium graphite gas nuclear reactors. This "long-lived" waste accounts for approximately 5% of the volume of radioactive waste eventually produced by EDF.

In addition, the operation of nuclear power plants generates spent fuel (potentially recoverable radioactive materials), the quantity of which is limited due to the implementation of treatment-recycling.

EDF has created the Cyclife Group, a group of subsidiaries specialising in decommissioning and waste management. In particular, Cyclife offers melting and incineration solutions to reduce the volume of short-lived radioactive waste and, depending on local regulations, to recycle very low-level metal waste.

3.2.4.1.1 France

In France, EDF, in its capacity as a nuclear operator, is responsible for what happens to its spent fuel and how it is processed and for the related waste, without any possibility of transfer of responsibility or limitation in time. Orano is responsible for processing spent fuel and ANDRA for the storage of final waste, in accordance with the Article L. 542-12 of the French Environment Code. More generally, the safe and sustainable management of radioactive materials and waste is coordinated by the French government through the National Radioactive Materials and Waste Management Plan (PNGMDR). Updated every five years[1] with contributions from industry, associations, the general public, authorities and governmental representatives, it incorporates the provisions of the Multi-Year Energy Programme (PPE), which is itself regularly updated. EDF actively participates in all the working groups associated with the PNGMDR.

EDF sets aside provisions to cover future waste management expenses (see section 6.1, note 15 "Provisions related to nuclear generation and dedicated assets" to the consolidated financial statements for the financial year ended on 31 December 2023), in accordance with Article L. 594-2 of the French Environment Code and its implementing regulations. This regulation specifies which liabilities are not associated with the operating cycle and must therefore be covered by dedicated assets (see section 6.1, note 15.1.3 "Coverage of EDF's long-term nuclear obligations" to the consolidated financial statements).

EDF has set up a system for managing waste from the operation and dismantling of its power plants which now allows all waste from nuclear power generation to be handled in dedicated, operational and secure industrial facilities, with due respect for the environment and the health of the populations and personnel concerned, under the control of the French Nuclear Safety Authority.

The regulatory changes stemming from the PNGMDR[2] resulted in setting up, at the start of 2022, the legal framework allowing for the recycling and recovery of very low activity metals from nuclear facilities, thereby harmonising French regulations with those of other European countries. The aim of this development was to save natural resources and storage capacity at the Industrial Gathering, Storing, and Stockpiling Centre (Centre industriel de regroupement, d'entreposage et de stockage – CIRES). In partnership with Orano, EDF is studying a project, named the Technocentre project, for an industrial facility to recover metallic VLLW materials for reuse in conventional industry. The aim of this facility is to produce, after treatment, melting and testing, ingots whose radiological characteristics guarantee that they can be used without any impact on health and the environment, regardless of how they are used. In addition, the Cyclife subsidiary is continuing to develop in order to expand its range of waste treatment solutions.

As regards long-lived waste of the HLW and ILW type (see the glossary in chapter 8 "Additional information"), the Group is committed to working alongside ANDRA, the project owner for the Cigéo project, to ensure the success of this geological storage facility, which will provide future generations with a safe management option for the very long term, freeing them from any active waste management constraints. The project involves storing waste in tunnels built 500m underground in a layer of clay that has been stable for more than 150 million years and has the required containment properties. The decree declaring Cigéo to be in the public interest (DUP) and the decree declaring Cigéo to be an Operation of National Interest (OIN) were published in July 2022[3]. On 17 January 2023, ANDRA submitted the request for authorisation to create Cigéo to the Ministry of Energy Transition.

As for the management of spent fuel, EDF's operation of its nuclear power plants in France currently results in the storage of approximately 100 additional tonnes of spent fuel each year. This level is limited compared to the quantity of spent fuel discharged from reactors (1,200 tonnes per year), due to the implementation of spent fuel processing-recycling. Most of the spent fuel (about nine-tenths) is processed by Orano at La Hague for reuse in reactors, and the remaining 10th, which is not processed in the short term because it is already derived from reprocessed fuel, must be stored for several decades pending its later recovery (or, failing that, pending its final disposal). EDF currently recycles spent fuel once in its reactors (mono-recycling) and is considering the possibility of further recycling in the future (multi-recycling in current reactors, or in future fourth generation reactors).

(1) Decree No. 2022-1547 of 9 December 2022 provided for by Article L. 542-1-2 of the French Environment Code establishing the requirements of the PNGMDR.
(2) Decree No. 2022-174 of 14 February 2022 on the implementation of recovery operations for low-level radioactive substances and Decree No. 2022-175 of 14 February 2022 on the radioactive substances eligible for the recovery operations mentioned in Article R. 1333-6-1 of the French Public Health Code.
(3) Decree No. 2022-993 of 7 July 2022 declared CIGEO to be in the public interest and brought the territorial coherence plan of the Pays Barrois (Meuse), the inter-communal local urban planning plan of Haute-Saulx (Meuse) and the local urban planning plan of Gondrecourt-le-Château (Meuse) into line with it, and Decree No. 2022-992 of 7 July 2022 included the CIGEO project among the operations of national interest mentioned in Article R. 102-3 of the French Urban Planning Code.

Against this background, EDF is developing a project for an underwater centralised spent fuel storage facility in order to meet the need for long-term storage of spent fuel already generated through initial recycling. This project also aims to meet the more general need for new spent fuel storage capacity by 2030. The commissioning of this facility, which is planned to be located in La Hague, is scheduled for 2034. This project was the subject of a preliminary consultation under the auspices of the National Commission for Public Debate (CNDP), which was held over three months in two phases, from 22 November 2021 to 2 February 2022 and, after that, from 20 June to 8 July 2022 (see section 1.4.1.1.2.3). This stage initiates a phase of ongoing consultation with the territory until the public inquiry scheduled for 2025.

Furthermore, in order to meet medium-term storage needs, Orano and EDF are studying transitional solutions in conjunction with ASN: densification of existing pools at the Orano La Hague site, dry storage solutions for certain fuels, *etc.*

For more details, see section 6.1, note 15.1.1 "Nuclear provisions" in the notes to the consolidated financial statements for the financial year ended on 31 December 2023. See section 1.4.1.1.2.3 "The issues relating to the nuclear activity": A – "Downstream", "Processing of spent fuel from EDF's nuclear power plants", "Storage of final conditioned radioactive waste", and B – "Decommissioning of permanently shut-down nuclear plants". The risks associated with waste management are described in chapter 2 (Risk 2A "Control of radioactive waste treatment and decommissioning of nuclear facilities, and ability to meet related commitments").

3.2.4.1.2 United Kingdom

In the UK, radioactive waste is classified into several categories:

- low-level waste (LLW);
- intermediate-level waste (ILW);
- high-level waste (HLW), which is radioactive waste (excluding spent fuel) that has a significant capacity to generate heat and therefore cooling, which must be taken into account in its handling and storage.

EDF UK's radioactive waste strategy is in line with the UK and Scottish Governments' commitment to the hierarchical principles of waste management (reduce, reuse, recycle, recover).

LLW accounts for about 94% of the volume of radioactive waste in the UK, but only 1% of the total radioactivity. This waste is mainly made up of old machine components, filters, plastic, cloth and paper. The waste is recycled or incinerated *via* high temperature incinerators, so that LLW sent for disposal is minimised. All remaining waste is compacted (where possible), sealed in containers, then cemented and disposed of in the LLW depot in Cumbria.

ILW accounts for about 6% of the UK's radioactive waste volume, derived mainly from the operation and maintenance of power stations. The waste is safely stored in shielded areas within power stations, pending the introduction of a government-planned long-term geological disposal process (GDF) in England and Wales (or other disposal channels in Scotland) following a period of decay.

HLW represents less than 1% of the UK's radioactive waste volume and accounts for about 95% of the total radioactivity. HLW is produced as a by-product of the reprocessing of spent fuel from nuclear reactors. HLW is usually in liquid form and a process called vitrification converts the liquid HLW into a solid product which is then safely stored in preparation for the planned GDF for waste in England and Wales. For Scotland, high level waste needs to be packaged and stored prior to the development of a near surface repository. EDF UK has no HLW on its sites as it does not reprocess spent fuel on any of its sites.

Spent fuel from AGR-type reactors[1] is transported to the Sellafield reprocessing site (owned by Sellafield limited, an NDA[2] subsidiary) for long-term storage. Spent fuel from Sizewell B is stored on site, in a dedicated dry storage facility, the purpose of which is to safely store the spent fuel that will be generated throughout the operating life of Sizewell B). Following long-term surface storage, the Sizewell B PWR spent fuel will be disposed to a future UK geological disposal facility.

The AGR spent fuel arrangements were agreed at the time of the restructuring of British Energy and through them EDF Energy pays for long term storage (and in previous years reprocessing) of spent nuclear fuel. Sizewell B's fuel storage strategy is approved by the NDA as it is funded by the Nuclear Liabilities Fund. Policies aimed at continuously improving and minimising the amounts of spent fuel and waste are implemented by EDF Energy. They are based on broader company-wide policies on safety, sustainability and the environment (see section 1.4.5.1.2.2 "Nuclear generation": "Radioactive waste management" and "Management of waste from decommissioning".)

3.2.4.1.3 Radioactive waste indicators

Solid radioactive waste indicator	2021	2022	2023
France: volume of long-lived high and intermediate level solid radioactive waste *(in m³)*	287	225	261
United Kingdom: volume of low-level solid radioactive waste disposed of *(in m³)*	471	498	474

In addition to the previous indicators, the generation plants in operation in France (EDF) are affected by very-low level solid radioactive waste (VLLW) and short-lived high-level and intermediate-level solid radioactive waste (SL-LILW). In France, the volume of VLLW from activities in 2023 was 3,716m³, compared to 3,619m³ in 2022 and 3,273m³ in 2021. The volume of SL-LILW waste in 2023 was 5,151m³ compared to 4,916m³ in 2022 and 6,329m³ in 2021. In the UK, the Group generated 247m³ of intermediate-level radioactive waste, compared with 196m³ in 2022 and 161m³ in 2021 and 2020. These changes are typical inter-annual variations, depending on the nature of maintenance and decommissioning activities.

Waste from Framatome's industrial activities in Belgium and the United States is identified by the class A radioactive waste indicators. In the United States, the volume of Class A waste was 662m³ in 2023, compared to 911m³ in 2022 and 215m³ in 2021. In Belgium, decommissioning activities at the Dessel site are being completed and did not produce Class A waste in 2023, as in 2022, 2021 and 2020.

(1) Advanced gas-cooled reactors.
(2) Nuclear Decommissioning Authority.

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3.2.4.1.4 Radioactive waste and decommissioning

Waste resulting from the decommissioning of power plants and associated industrial activities is identified in France using the indicators of very-low level solid radioactive decommissioning and industrial waste (VLLW) and low-level and intermediate-level (LILW) radioactive waste. For the Group in France, the volume of very-low level waste is 2,735m³, compared to 3,259m³ in 2022 and 2,707m³ in 2021. The volume of LILW waste was 147m³ compared to 349m³ in 2022 and 622m³ in 2021. The interannual variation in the generation of VLLW and LILW radioactive waste is linked to operational dismantling activities.

3.2.4.2 Eco-design

The eco-design approach, the first phase of the circular economy[1], is integrated from the engineering phase for major new construction projects or major process modifications.

The design of facilities by engineering entities is based on an eco-design approach taking account of their environmental footprint, waste management and recovery throughout their entire lifecycle. Implementing a Waste Organisation and Management Plan (SOGED) for major construction sites contributes to the implementation of the principles of the circular economy very early on in the construction process. The deployment of the eco-socio-design approach at EDF Hydro is continuing, for example with a GHG footprint assessment, or an LCA as was done for the Rhinau fish passage project (Bas-Rhin).

3.2.4.3 Reusing and optimising resources

The Group's entities and companies are committed to a process of continuous improvement according to the principle that the "best waste" is waste that is not produced. Integrated into EDF's EMS, the "Waste and circular economy" group, which brings together the waste correspondents of the business lines, is tasked with carrying out prevention actions, as well as actions to optimise resources and reuse them in order to limit waste generation. All entities have action plans to limit the generation of conventional waste, which are incorporated into the environmental management system programmes and include corresponding indicators (quantity of waste avoided, quantity of equipment reused, savings made on waste management, monitoring of a waste recovery rate to encourage recycling and therefore foster savings of resources).

3.2.4.3.1 Optimisation of fuels and raw materials

To generate electricity and provide energy services, the Group uses raw materials, of which fuels make up a significant proportion: uranium, gas, coal, fuel oil and biomass. The consumption of the various fuels varied heterogeneously in 2023: coal (-71%), heavy fuel oil (-15%), natural and industrial gas (-17%). In France, coal consumption decreased by 75% due to the decrease in coal generation. EDF's gas consumption fell by 33% due to reduced gas-powered energy generation. In terms of electricity consumption on industrial sites, electricity consumption for generation resource auxiliaries (approximately 23TWh/year) is mainly self-produced electricity.

To optimise fuels and raw materials, the Group focuses on several factors:

- the development of renewable energies, the commissioning of high-efficiency CCGT[2] power plants (Edison's Marghera Levante project in Italy aims to be among the most efficient in Europe), the use of renewable and recovered energy (biomass, free heat) by Dalkia, the conversion of the thermal fleet of the island systems with liquid biomass;
- SEI, Dalkia and EDF in the United Kingdom are carrying out actions to optimise existing facilities, such as improving energy efficiency or process performance, maintaining or modifying processes, prescribing fuel quality and enhanced monitoring of performance levels, or using cogeneration (e-monitoring). In addition, seven of SEI's thermal sites are ISO 50001 certified in the island territories;
- for example, Dalkia uses an energy management tool to optimise energy facility fuel use and is increasing its renewable energy use rate, replacing fossil fuels;
- EDF's control of each stage of the fuel cycle, the design of high-efficiency fuel and suitable management of that fuel within nuclear units all contribute to optimising natural uranium needs. Recycling of spent fuel currently generates a saving of approximately 10% natural uranium *via* the use of MOX fuel for a balanced cycle (see in section 1.4.1.1.2.3 "A - Nuclear fuel cycle and related issues");
- EDF Renewables, which uses raw materials to manufacture equipment, carried out life-cycle assessments on its technologies (onshore and offshore wind power, solar power, photovoltaic, battery storage) to identify the main environmental impacts, and the life-cycle phases making the biggest contributions, and to study the technical & economic feasibility of possible improvements.

3.2.4.3.2 Optimising material and equipment

The use of recycled materials (aggregates, earth, concrete, *etc.*) is encouraged during major projects related to networks and hydropower, nuclear and thermal investments and the materials used are recovered. Many large-scale projects under the *Grand Carénage* programme recover a large amount of equipment and spare parts that can still be used.

EDF Reutiliz[3] is the EDF group's reuse platform; it offers a second life to equipment that EDF no longer uses. It is intended for Group entities but also for companies, local authorities and associations that can benefit from EDF equipment at competitive prices or free of charge. This reuse approach thus contributes to the preservation of resources, the reduction of waste and the reduction of EDF's GHG emissions (Scope 3), as well as to the reduction of emissions from its stakeholders reusing EDF equipment. It is also a solidarity-based approach that contributes to making donations to associations and schools. Since it was launched in 2021, more than 8,000 ads have been published, including over 1,500 reuses.

In 2023, reuse helped EDF and its stakeholders avoid 1,244 tonnes of CO_2eq emissions.

(1) There were many examples, including the free supply of warm water from the Gravelines power plant to the Aquanord fish farm, where by installing pipes to draw warm water from the drains, the fish farm collects 10m³ per second, without a water heating system (see the EDF "Circular economy and regions" guide); as well as the Dampierre power station, which uses its hot water to supply nearby agricultural greenhouses.
(2) Combined cycle gas turbine : a type of power plant using a combination of gas and steam turbines.
(3) https://reutiliz.edf.fr

3.2.4.3.3 Optimisation of internal consumption

In mid-2022, EDF established an energy sobriety plan to reduce the company's energy consumption, through proactive measures and the mobilisation of employees:

- technical/management levers: 19°C in winter, no air conditioning under 26°C indoors, fresh air shutdown 24/7, lighting hours for spaces and signs, etc.;
- eco-friendly occupants: teams, PC recharging, internal challenges;
- mixed measures: test of gatherings in the same area on low-traffic days with reduced use of lockers in unoccupied spaces.

This plan amplifies and complements the actions undertaken by the company over a number of years, such as:

- managing real estate assets: reducing and optimising the use of m², freeing up energy-intensive sites and choosing more energy-efficient sites, changing technical equipment, etc.;
- mobilising stakeholders: financial backers and technical service providers;
- analysing the sources of overconsumption through an analysis of load curves in order to act effectively;
- reinforcing or adding management solutions.

EDF's goal of reaching a ratio of 100kWh/m² on the tertiary portfolio in 2030 will necessarily lead to an acceleration and reinforcement of the activation of levers. The conditions for success were identified:

- continue the actions of the sobriety plan by avoiding a potential rebound effect at the end of 2023 (vigilance – 19°C);
- continue the load curve analyses, management actions and other actions on real estate assets.

Controlling energy consumption coupled with optimising occupied m² makes it possible to target a ratio of 100kWh/m² by 2030, within the scope of tertiary real estate.

3.2.4.4 Conventional waste management and recovery

Conventional waste is the waste produced by the EDF group on its sites. It does not include radioactive waste, coal ash or gypsum derived from the process, which are managed and assessed separately. Waste stored on-site, waste awaiting disposal, materials reused on-site (e.g. spoil and rubble) and equipment that could be reused (sold or gifted) are not taken into account. Construction and decommissioning waste is included in this report, if its management falls under the responsibility of the EDF group.

3.2.4.4.1 Recovery of conventional waste

3.2.4.4.1.1 Group policy and commitment

The Group's CSR policy aims to develop the circular economy approach and improve the recovery of waste produced. This policy takes concrete form in various ways, including the development of the reuse of parts and materials, particularly during deconstruction work; the implementation of on-site pre-processing of various waste products, in order to limit the volume of waste produced and promote the recovery of the remaining fraction (concentration of hydrocarbons, separation of asbestos); the establishment of partnerships with players in the recycling field (RECYLUM for Citelum, Veolia and Suez for conventional waste, Ateliers du Bocage for printer cartridges); sorting and recovery of waste in authorised channels; for example, excavated earth or sediments from hydropower dams are recovered as aggregates for civil engineering or during public works; sorting and recovery of certain waste in dedicated recovery channels (wind or photovoltaic assets at end of life for EDF Renewables).

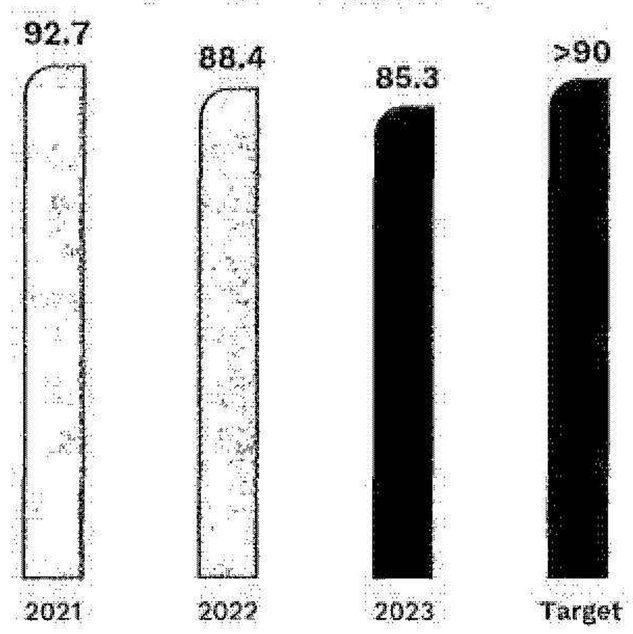
3.2.4.4.1.2 Key performance indicator

The annual waste recovery target is 90% for the entire Group. The generation of conventional waste amounted to 502,513t in 2023 at Group level compared to 640,128t in 2022. This significant decrease was mainly due to a lower generation of sediment waste from the cleaning of dams for EDF Hydro. In 2023, the generation of hazardous waste amounted to 66,447t at Group level. These are mainly water-hydrocarbon mixtures and fume treatment sludge from the operation of facilities. For EDF, new monitoring tools were recently put in place to further optimise the management of the generation of conventional waste from the operation of industrial activities.

Group key performance indicator

In 2023, the conventional waste recovery rate was 85.3%. This recovery rate, which is below the target, is linked to an increase in the generation of hazardous waste, notably oil-hydrocarbon mixtures following a one-off incident at the Cordemais site, which did not generate an environmental impact but did required *ad hoc* collection and processing through a dedicated channel, with no possible recovery. Moreover, the generation of recoverable sediments by EDF Hydro is significantly lower than in previous years due to a reduction in dam cleaning projects.

Annual rate of conventional waste directed towards a waste recovery industry (in %)



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3.2.4.4.2 Recovery of combustion products

Resulting from the combustion of coal to generate electricity, coal ashes have properties that enable them to be used in various applications (in particular cement and concrete). In 2023, EDF recovered 6,377t of coal ash, *i.e.* a recovery rate of 58%. As part of a continuous improvement approach, EDF has undertaken research to improve the recovery of ash, sediment and sludge, notably through the work of the RECORD association with the collaboration of the Group's R&D team.

3.2.4.4.3 Recycling in the field of new renewable energies

3.2.4.4.3.1 Recycling of wind turbines

Composed essentially of concrete, steel/cast iron, copper and aluminium, the structure of a wind turbine is easily 90% recyclable. Including concrete foundations, this figure rises to 98%. The most difficult elements to recycle are the blades: they represent about 10% of the weight of a wind turbine (2% including the foundations). The most mature processing method is currently energy recovery, but alternative solutions are being developed (material recovery).

Blades

Wind turbine blades and components that are not currently recycled are the subject of a variety of experiments and pilot projects on which EDF Renewables is working, in conjunction with EDF R&D: recovery of fibre-glass blades and transformation into granules for integration into concrete or wood aggregate; reuse for street furniture (for example, the decommissioning of the EDF Renewables wind farm in Tenesa, Corsica).

Unveiled by Siemens Gamesa in 2021, a new recyclable blade design will be used by EDF Renewables on 10 wind turbines at the Calvados offshore wind farm. This is a first in France. Made from a combination of materials cast together with resin, this new blade model allows the resin to be effectively separated from the other components at the end of the blade's life so that the materials can be reused in a wide range of applications (automotive, aeronautics, railways, etc.).

In 2021, WindEurope called for a Europe-wide landfill ban on decommissioned wind turbine blades by 2025. In 2023, EDF Renewables became the first French player to make a public commitment, for all the wind farms under its control, to reuse, recycle or recover wind turbine blades when they are no longer operational.

Rare-earth elements

Rare-earth elements pose a challenge for wind power, and only for technologies using permanent magnets, *i.e.* "PMG" (Permanent Magnet Generator) wind turbines. These may contain several rare-earth elements: neodymium, dysprosium, praseodymium, or sometimes terbium in their permanent magnets. Magnets represent on average 600 to 700kg/MW in Direct Drive (mainly used for offshore wind power), and 80 to 160kg/MW in Gearbox (mainly used onshore).

Due to the low volumes, there is not yet an industrial process for recycling permanent magnets in order to reuse rare-earth elements. The recycling of permanent magnets is under study and the first projects are emerging. Manufacturers are working on creating permanent magnet wind turbines without rare-earth elements.

3.2.4.4.3.2 Recycling of solar panels

In Europe, the recycling of solar panels is governed by Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment, as amended, known as the WEEE Directive. Under this directive, producers are responsible for financing the management of waste from their own products, including the processing of products at the end of their life.

In France, more than 95% of the components are recycled. Rare-earth elements are not used in the manufacture of solar panels. The eco-organisation SOREN (formerly PV-Cycle), certified by the State, provides end-of-life collection (the average eco-participation in the purchase of equipment is €0.70 per panel). There are currently three crystalline silicon panel recycling plants in France. The materials are separated and redirected to various industrial sectors: silicon to precious metal sectors, the aluminium frame to aluminium refineries, junction boxes and cables are crushed and sold as copper shot.

3.3 Well-being and solidarity

Personal well-being and solidarity development are key issues of EDF's *raison d'être*. This concerns both its employees and all its stakeholders. The four main CSR commitments identified in this respect are the health and safety of all individuals, ethics and human rights, the promotion of equality, diversity and inclusion and the prevention of energy poverty and promotion of social innovation.

1.7	100%	31.7%	390,376
Global LTIR[1]	Rate of response to whistleblowers within one month	Gender balance index: women in management committees	Advisory actions through the energy support service

The Group's objective, without overriding the managerial independence of the regulated infrastructure operators, is to sustainably transform the way it works and manages its activities, in order to provide the best possible conditions for employee involvement, with a view to increasing their well-being, performance and team mobilisation.

A pioneering system[2] for listening to employees and recording their expectations: "MyEDF group".

The annual employee engagement survey "MyEDF group" is sent to all Group employees to gather their opinions on their work life and their perception of the Company at both the local and Group levels. Identifying areas of satisfaction and areas for improvement, the results of this survey are examined by the Executive Committee and the various Management Committees. They help guide priorities and feed action plans within the teams.

The 2023 survey took place over four weeks. It is conducted by IPSOS, which strictly guarantees the anonymity and confidentiality of responses. There was still very marked employee interest in this survey, with a record participation rate this year (81%). The engagement index reached its highest level since 2016 and was up by a further 3 points (74%) on last year. Results in terms of engagement (engagement index[3]) are integrated into the variable remuneration of executive managers (see section 3.5.4.6 "CSR and remuneration policy for executives.

3.3.1 Security, health and safety for all

EDF is committed to protecting the health and safety of all individuals. As part of this, the Group develops the highest standards in terms of nuclear and hydropower safety, health policies for its employees and subcontractors (reducing the number of accidents, eradicating fatal accidents, developing the management of psychosocial risks, adapting work organisation methods, guaranteeing a high level of social welfare, *etc.*), sales offerings related to comfort and well-being, improvement of air quality and reductions in noise, visual or light pollution.

3.3.1.1 Nuclear safety

The operational safety of nuclear facilities is taken into consideration from the initial design stage, and is regularly monitored, together with the implementation of an employee motivation policy and large-scale investment programmes. The Group's nuclear safety policy is incorporated into training for both EDF employees and subcontractors. Nuclear safety is subject to internal controls (annual reviews, internal control plans and nuclear inspection audits in France) and external controls (peer reviews between corporate members of WANO[4] and OSART[5] audits conducted by experts from the International Atomic Energy Agency [IAEA]).

The French Nuclear Safety Authority (ASN) and the Office for Nuclear Regulation (ONR) in the United Kingdom ensure compliance with safety rules, including as regards the transport of radioactive materials. The "EDF group Nuclear Safety" policy was redefined in 2021 (see section 1.4.1.1.2.2 "Environment, nuclear safety, radiation protection").

Given the importance of the nuclear safety issue, clear and transparent information and communication on events and their possible impacts are promoted within the Group. This quality dialogue is sought and maintained with employees and their representatives, subcontractors, regulatory bodies (ASN and ONR), local authorities and all other stakeholders in nuclear safety.

The Nuclear Safety Council, chaired by the Chairman & Chief Executive Officer of EDF, meets several times a year and, periodically reviews the annual nuclear safety assessment for the EDF group. A General Inspector for nuclear safety and radiation protection (IGSNR) is appointed by the Chairman and Chief Executive Officer to whom he/she reports. He/she carries out inspection assignments regarding all of the nuclear activities of the EDF group. Each year, he/she issues an opinion on safety within EDF. The report is presented to and discussed by the Nuclear Safety Council. It is then made public (see section 1.4.1.1.4.3).

For developments in nuclear safety, see in particular sections 1.4.1.1.2.2 "Environment, nuclear safety, radiation protection", 1.4.5.1.2 "Activities of EDF Energy" and 2.2.2 "Specific risks related to nuclear activities".

(1) Lost Time Incident Rate: the Group's overall Lost Time Incident Rate (LTIR) the number of work-related accidents in service related to professional activity (employees and service providers, regardless of the level of subcontracting, including co-contracting and temporary workers) with lost time of one day or more, occurring during a period of 12 months compared to one million hours worked.
(2) The first "My EDF group" internal engagement survey was begun in November 2012, covering all the Group employees.
(3) The engagement index is a descriptive and factual "employee engagement dynamics index" which, when used in a macro way, makes it possible to measure the quality of employees' commitment throughout the entity.
(4) World Association of Nuclear operators.
(5) Operational Safety Analysis Review Team.

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INES Indicator

	2021	2022	2023
Significant level-2 events on the INES scale (number)*	1	0	0

** For the methodology used for this indicator, see section 3.6 "Methodology".*

3.3.1.2 Hydropower safety

The hydropower safety policy aims for a high level of safety and continuous improvement. For developments related to hydraulic safety, refer to section 1.4.1.3.1.3 "Hydropower safety".

3.3.1.3 Health and safety of employees and subcontractors

In an environment that is undergoing rapid, far reaching changes, the human aspect is a core component of the Group's strategic plan. To tackle the industrial and commercial challenges it faces, the Group must remain a socially responsible and committed employer and customer and a benchmark in terms of health and safety.

3.3.1.3.1 Health and safety policy

The Group's health and safety policy, adopted in April 2018, was updated in April 2021. The Group strives to set an example in the area of Health and Safety. The policy is based on a commitment signed jointly by the Chairman and Chief Executive Officer and all members of the Executive Committee. The policy defines a consistent framework and all policies and action plans of the Group's different subsidiaries must comply with the policy. This Group policy applies to all the companies controlled by the EDF group, in all the countries in which EDF operates. It concerns both its employees and its subcontractors.

The priorities of the policy are primarily to eradicate serious accidents and fatal accidents, and secondarily to reduce the number of accidents and to fight against absenteeism. The policy aims to anchor throughout the Group the foundation formed by the Group's key rules and the BEST health and safety management reference framework.

The Executive Committee reviews health and safety figures and monitors action plans regularly. A strategic Committee steers the deployment of the policy.

3.3.1.3.2 Health and safety management

The basis of health and safety management

The 10 key rules

The Group focused its commitment on the 10 key rules, identified on the basis of an analysis of the fatal accidents that have befallen the EDF group over the past 30 years.

The BEST reference framework

In 2023, the Group's departments, divisions and companies updated the self-assessment of their health and safety management system with regard to the BEST reference framework. This review is conducted every three years and examined by the Group's Strategic Health and Safety Committee. In 2023, the entities were very active in updating the health and safety policy, which will be presented to the Group's Executive Committee in 2024.

ISO 45001/MASE or VCA certifications

The proportion of employees belonging to entities having a certified management system (ISO 45011, MASE or VCA) was stable at 35.4% at end 2023, as against 35.4% at end 2022.

This figure is published on the "edf.fr" website and on those of the certified entities.

"Safety Stop"

The Group's health and safety policy specifies that when the safety conditions relating to the key rules are not met, a "NoGo" must be activated to correct the situation before starting. In the same way, when unforeseen circumstances no longer allow the safety rules to be respected, a "safety STOP" should be marked.

Moreover, a Group Safety STOP event is organised every year, for each team, in October. This year, it was held on 17 October. It made it possible to debate, in the field and in work collectives, the issue of health and safety, and more specifically in 2023 the theme "Dare to say STOP".

Sharing the analysis of "High Potential Events" (HPE)

In order to ensure the continuous improvement loop, and to maintain risk awareness, High Potential Events (HPE) are collected, analysed and shared at Group level; 6% of these HPEs are near misses or dangerous situations. Particular emphasis is placed on those related to the Group's 10 key rules.

In 2023, a safety criterion of the EDF SA profit-sharing agreement focused on developing analyses of accidents requiring shutdown and reducing the number of accidents classified as HPE requiring shutdown or not.

Health & Safety audits

Audits are carried out each year throughout the Group, in particular in the form of site visits. These visits are written up in a site visit report shared locally with the audited teams.

See also section 3.8.1 "The EDF group's CSR commitment and duty of vigilance framework" relating to its commitments and requirements with respect to the environment, human rights, health and safety.

3.3.1.3.3 Occupational accidents

Eradicate serious and fatal accidents

EDF is committed to improving the physical and mental health of its employees and subcontractors. The top priority is to protect them and, most importantly, to eradicate serious and fatal accidents.

Four fatal accidents directly linked to professional activities occurred in 2023. These tragedies concerned three employee partners and one employee of the Group. In addition to these four fatal accidents, the EDF group deplores the five fatal illnesses that affected four of its employees and one of its service providers, as well as one fatal commuting accident suffered by one of its employees.

	Target	2021	2022	2023
Number of fatal accidents	0	4	2	4

In line with the steps taken within the Group to eradicate serious and fatal accidents, the policy aims to develop a collective safety requirement supported by both Group and subcontractor employees. It reinforces the momentum for progress among service providers (four action sheets or "assets" were drawn up in this regard).

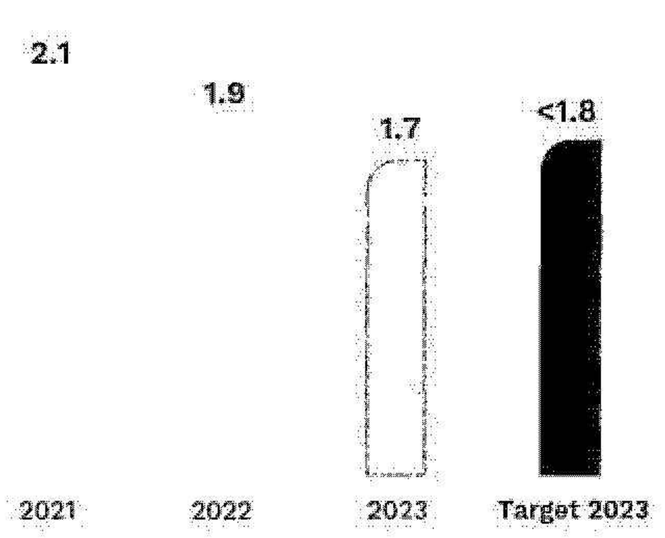
In order to have comparable data between Group entities and measure accident rates directly related to the performance of activities, the EDF group set up a new "LTIR" (Lost Time Injury Rate) indicator corresponding to the calculation of the frequency rate according to Anglo-Saxon standards.

Group key performance indicator

Under the health and safety policy, the targets for the end of 2023 are 1.4 for Group employees and 1.8 for all contractors combined.

While 2020 was a highly uncharacteristic year, the Global LTIR has exhibited a steady downtrend since 2019, illustrating the improvement due to the deployment of preventive approaches for employees of both EDF and service providers.

Global LTIR



	2021	2022	2023
Employees			
LTIR Group employees	1.7	1.6	1.5
Employee work-related accidents (with at least one lost day)	432	404	403
Accident severity rate	0.16	0.16	0.17
Occupational illnesses	40	52	69
Suppliers			
Supplier LTIR	2.6	2.2	2.0
Supplier work-related accidents (with at least one lost day)	513	450	436

The number of occupational illnesses reported in 2023 was up on the previous three years, returning to the levels recorded in 2017, 2018 and 2019, with a high proportion of cases linked to the development of musculoskeletal disorders, justifying preventive measures to reduce the arduousness of activities (exoskeletons) and also the ergonomics of workstations, including in the tertiary sector.

3.3.1.3.4 Well-being and psychosocial risks

EDF is committed to improving the physical and psychological health of its employees at work: both on-site and remotely. Making progress in this field requires the long-term involvement of medical teams, social workers, managers, prevention specialists, human resources managers in a multidisciplinary approach, and the social partners.

Prevention of anxiety- and depression-related disorders, stress and musculoskeletal disorders (MSD), the three main causes of absenteeism, are regularly targeted by prevention initiatives. The development of team empowerment projects has led to a significant decrease in absenteeism among employees of committed teams, illustrating a positive impact on issues in relation to health, the quality of life at collectives, but also commitment and work ethic. An emphasis is placed on the quality of return interviews conducted by managers to welcome their employees after their sick leave and to successfully return to work.

For the prevention of MSDs, Framatome developed exoskeletons to reduce the strenuousness of activities. The operational departments include other potential causes of the development of occupational illnesses, such as exposure to noise, hazardous chemical substances, ionising and electromagnetic radiation and biological agents, in their risk assessments, depending on the nature of their activities, and implement preventive measures locally.

Thus, the prevention of psycho-social and socio-organisational risks is based on the use of the employee perception survey (MyEDF) read at all levels of the organisation, providing a precise risk assessment highlighting the strengths of the organisation and team, as well as its weaknesses. This makes it possible to establish local action plans adapted to the situations encountered.

	2021	2022	2023
Number of days of absence per employee and per year (EDF group)	9.1	9.8	8.2

(1) Lost Time Incident Rate.

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Health in the workplace and general health issues

The EDF group employs personnel who specialise in occupational health, as well as doctors who are experts in environmental health and public health. In addition to medical monitoring of employees, these healthcare workers are involved in setting up prevention programmes and are stakeholders on all the social dialogue bodies in the field of health at work.

Awareness-raising activities are regularly organised to continue the prevention of cardiovascular risk, a major cause of death by heart attack, as well as the prevention of addictions, including the implementation of drug testing. As an extension of these initiatives, the EDF group signed a partnership with the French National Cancer Institute (INCA) in 2023 and undertook actions to support employees suffering from chronic diseases and in particular cancer, thus allowing those who so wish it to have reasonable assistance through the system and the cross-disciplinary support provided by the entire professional circle and medical teams.

3.3.1.3.5 Well-being, organisation of work and working hours

Work time

For companies based in France, the duration of the working week is 35 hours, with shifts spanning for a minimum of five days. In order to meet the needs relating to each company's business and particularly to ensure continuous operation, the Group's employees may be required to provide a continuous service or be on call outside of regular working hours. These arrangements are according to the changing circumstances at each company, legislation and new authorised work organisation practices.

Fixed numbers of working days

By implementing "*forfaits jours*" agreements (which provide managers a fixed number of working days and have proved overwhelmingly popular among them) in most of the Group's companies, the Group has sought to modernise how working hours are structured in order to promote agility and employee empowerment.

"Working Differently, Managing Differently" (TAMA) project

For EDF, a "Work Differently, Manage Differently" agreement was signed on 15 November 2021. This global agreement includes a process of team empowerment, new working methods (updating the consistent framework for working-from-home with a maximum of 10 days/month of permitted working-from-home, new options for flexible working hours where necessary adjusting working hours to approximate as closely as possible to employees' needs, provided the level of work teams' performance is maintained, working directly on-site) and is implemented through the co-construction of a team project to determine how the teams' operations will change. In order to support staff during these changes, the Group has also instituted two financial-assistance schemes in connection with working-from-home: an indemnity of up to €20 per month. This is the employer's contribution to home occupancy expenses (rent, taxes, variable costs), and assistance for equipment to telework in satisfactory conditions.

Work-at-home agreements in Group companies

In the context of the Covid crisis and its consequences, several Group companies have seen themselves compelled to institute or review their working-from-home agreements (Enedis, EDF Renewables, Électricité de Strasbourg, Framatome, among others).

3.3.1.3.6 Well-being and social welfare

Long-term social welfare policy

The Group's employee benefits policy is based on three main principles: a principle of responsibility, a principle of balance between competitiveness and sustainability, and a principle of appropriation by beneficiaries. Providing sustainable employee benefits that are adapted to local market conditions requires them to be financially sustainable in the long term, for both employees and employers.

A specific social welfare scheme: the status of the EGIs

In France, the majority of the Group's workforce are employed by companies descended from "historic operators" (EDF, Enedis[1], PEI) which have electricity and gas industry or "EGI" status. This status carries an entitlement to special social security schemes, including special sickness, disability and pension schemes. If employees with EGI status are unfit for work (sickness/maternity/disability), they thus benefit from a customised level of cover. In terms of healthcare costs, in addition to the basic scheme, their special scheme includes an additional mandatory part, which also covers retired employees. Employees with EGI status and EGI pensioners have access to centralised social activities, financed by EGI companies and managed independently by the unions. In addition to these schemes, there is a benefit in kind historically based on a company decision which covers gas and electricity supplied by historic operators to employees and which is maintained for retired employees.

From 1 September 2023, new hires benefit from all the provisions of the EGI Staff Regulations, with the exception of those relating to the special pension plan, which is gradually being phased out as of that date. These new statutory employees are affiliated to the CNAV[2] for their basic pension and to AGIRC-ARRCO for their supplementary pension.

Significant changes over the last decade

EDF's IPO and the application of international accounting standards required the valuation and provisioning of commitments to retired employees. The maintaining of the industry's special welfare plans faced with this requirement was supported by the overhaul of their financing: affiliation with standard mandatory plans for pensions and strengthening of affiliation between current and retired employee plans for complementary health insurance cover.

Special pension plan

The EGI special pension plan has, like other public sector special pension plans, been increasingly integrated into pension reform movements. Except for the pension calculation method (specific rate, applied to a salary at the end of career, with a reduced base), the main parameters (retirement age, required contribution period, etc.) tend to be in line with the standard compulsory plan. The definition of active service, enabling earlier retirements, has been revised and the way it is taken into account has been significantly overhauled for employees hired as of 1 January 2009, *via* the creation of a Retirement Days Savings Account.

(1) A distribution operator managed in accordance with the rules of managerial independence.
(2) French National Pension Insurance Fund (Caisse nationale d'assurance vieillesse).

New developments have taken place with the promulgation, on 14 April 2023, of the rectifying finance law on social security (LFRSS) for 2023, which is a vector of the pension reform. This reform includes:

- parametric measures, aimed at raising the age of entitlement (from 62 to 64) and accelerating the schedule for increasing the contribution period (transition to 43 years of contributions to benefit from the full rate):
  - > their implementation methods are set out in the law for employees falling under the general scheme, the self-employed and civil servants, with implementation from 1 September 2023,
  - > for employees affiliated to the EGI special pension plan, the decree of 28 July 2023 specifies that these age and duration measures will apply from 1 January 2025, in accordance with specific procedures;
- a systemic measure to close the main special plans: in addition to the special pension plan for the EGIs, this includes RATP, Banque de France, schemes for clerks and employees of notaries, and members of the Economic, Social and Environmental Council (the SNCF special pension plan was closed on 1 January 2020):
  - > as a result, all current statutory employees retain the benefit of the EGI special pension plan, but statutory employees hired as of 1 September 2023 are affiliated to the CNAV for their basic pension and to AGIRC-ARRCO for their supplementary pension;
- other measures include:
  - > an easing of the conditions for benefiting from early retirement for long-term careers, extended to people who began their work before the age of 21 (20 years previously),
  - > maintaining a departure at age 62 and at the full rate for the unfit and disabled,
  - > a pension bonus (premium) for mothers having completed a full career at age 63,
  - > a revaluation of the minimum pension increased to 85% of the minimum wage for a full career,
  - > prevention of professional attrition (relaxation of the professional prevention account to acquire more arduousness points and use them to finance retraining leave; creation of an investment fund to support the business units in order to encourage them to identify, through a collective agreement, a list of arduous occupations),
  - > improving work-retirement transitions (easing of gradual retirement and of combined work-retirement status).

The pension reform is therefore being implemented in two stages at the EGIs:

- 1 September 2023: end of the special pension plan for the EGIs, with new hires benefiting from the maintenance of all statutory benefits excluding retirement (health cover, disability, work insurance-occupational illness[1], family benefits, ANE[2], social activities – including retirement);
- 1 January 2025: implementation of the increase in the entitlement age and the acceleration of the schedule for the increase in the contribution period.

In view of the significant changes it entails, the pension reform poses several major challenges for the EDF group:

- building an attractive employment framework for statutory employees hired on or after 1 September 2023;
- maintaining conditions that facilitate Group mobility;
- reviewing the funding of the plan to limit the cost of the EDF group's social commitments.

Health, disability, and death

In accordance with the practices of major groups, in terms of health, disability, death and supplementary pension coverage, additional cover has been put in place in these four areas, by agreement at the level of the professional branch.

An agreement on family rights was signed in 2017 at the level of the EGI branch with the trade union organisations, to modernise the social system.

In terms of health insurance, an in-depth consultation between the social partners of the EGIs and the government was carried out concerning a rebalancing of the accounts of CAMIEG[3], which have carried a surplus since its creation in 2007.

The rebalancing is specifically based on a reduction in employer and employee complementary health insurance contributions, a reduction in the solidarity contribution paid by the working population for the non-working population and an improvement in optical benefits. These provisions have opened the way to a broader rethinking of how to monitor CAMIEG's balance of accounts and how to potentially increase responsiveness in order to recalibrate rates to the observed reality of financial balances.

In practice, EGI employees were able to benefit from these measures:

- for salaries in 2022, the supplementary health contribution rate was reduced by 25% compared to its 2020 level;
- in 2023, this rate reduction remained at 5% compared to the 2020 employee contribution level;
- the solidarity contribution paid by the working population for the non-working population, for its part, was permanently reduced by 17%, compared to 2020.

Moreover, in order to improve the cover of medical expenses (Supplementary Health Cover which is the third level after the Compulsory CAMIEG Scheme and the Supplementary CAMIEG Scheme), a call for tenders will be launched in the first quarter of 2024 in order to meet the requirements of the EDF group in terms of public procurement and to optimise cover (guarantees, services and financial aspect).

As regards disability and death benefit, a strengthening of the system for supporting carers entered into force as from 1 April 2022. Financial assistance to employees on family solidarity leave and on parental attendance leave was improved, and extended to employees on caregiver leave.

Thus, for several years, the strengthening of the financial steering of health, disablement and death schemes is a major goal, fostering closer tying of contributions with benefits, and responsibility is shared between employers and trade union organisations.

Lastly, in terms of supplementary pension plans, the EDF group chose to establish, as at 1 January 2009, a (so-called "Article 83") supplementary pension plan common to all Group companies employing staff subject to the national status of EGI personnel. In addition to the supplementary pension plan, in September 2009 the Group made a collective pension savings plan (PERCO) available to its employees. At 1 April 2023, the Group set up a mandatory retirement savings plan (PERO) which replaced the so-called "Article 83" system in order to provide the benefits of all the opportunities offered by the Pacte law.

(1) Work-related accident and illness.
(2) Benefits in kind (energy).
(3) CAMIEG: Caisse d'assurance maladie des industries électriques et gazières (health insurance fund for the electricity and gas industries).

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Social protection for non-statutory employees

The Group's other employees in France are covered by several collective bargaining agreements and can have fringe benefits provided by their own employer. Each employer must ensure that the benefits provided are consistent with the Group policy. For Group companies outside France, even if the regulatory context specific to each country must be taken into account, each entity is required to ensure that the capital paid out in the event of a death under death benefit contracts covers one year's salary at the very least.

3.3.1.4 Consumer health and safety

In addition to its long-standing efforts in terms of the safety of electricity use[1], the EDF group is a committed player in consumer health. Upstream of its activity, it has a positive impact on air quality due to its low-carbon generation method. Downstream, with regard to the uses of electricity and its applications, it allows the development of good practices in terms of mobility, cold chains and home comfort.

The EDF group's policy covers a wide range of activities for promoting consumer health[2]. For several years now, environmental issues have been linked to health issues out of a sense of limiting risk, anticipating future risks such as the health impacts of climate change, and promoting innovative services.

In order to detect emerging issues as early as possible, a meeting is held every quarter with all the environmental health correspondents of all the Company's departments. EDF is also a member of the French association Entreprises pour l'Environnement (EpE), to analyse and anticipate environmental regulations, and share good practices.

A study conducted by the Medical Studies Service (SEM) in collaboration with the University of Warwick (England) and EDF R&D showed that energy renovation of heat sink buildings would generate savings for the public health system. This EDF study was adopted by the French Ministry for Ecological Transition (MTE), in a document published in 2022 on quantifying the economic evaluation of the benefits to health associated with energy renovation of housing[3].

Regarding noise pollution, acoustic studies are conducted from the initial design stage and are included in environmental impact studies. Acoustic measurement campaigns are run in the area surrounding nuclear power plants. EDF Renewables carries out acoustic studies as of the development phase of wind farms, the noise generated by the turbines being included in the criteria for selecting the machines. Monitoring was carried out during the construction phase to measure the impact of the noisiest activities (*e.g.* foundations) on marine fauna. The same vigilance with regard to noise pollution exists at the Group's international and French subsidiaries. All new transformers purchased by Enedis now use low-noise air coolers. With regard to the action taken to prevent light pollution, Citelum has implemented a system of sensors to adjust the intensity of lighting on the road network based on traffic density and driving speeds, which also improves car safety.

3.3.1.5 Actions to promote the practice of physical and sports activities

There are many initiatives to promote the practice of sports among the Company's employees, and they are varied and conducted as closely as possible at shop-floor level.

EDF is partnering the 2024 Paris Olympics and Paralympics and launched in June 2022 its heritage programme "enJeux d'avenir 2024" (the Challenge for the future in the 2024 Olympics). Designed to bring sport and the energy of the Games to life throughout France, this programme aims to harness the positive energies of sport for social and environmental causes through initiatives in mainland France and the overseas territories.

The heritage programme "enJeux d'avenir 2024" targets all French citizens. The young generations are the prime target of this programme, and they are the best placed to contribute from today to transforming the world of sport. The programme initiatives were developed to go out and meet young people in order to raise their awareness of societal themes such as attitudes to handicap, eco-responsibility in sport, or learning to swim[4].

3.3.1.6 Air quality

3.3.1.6.1 Improving air quality by transforming the generation fleet

The EDF group is continuing its process of modernising and improving the environmental performance of its thermal fleet, until it meets the best available techniques in Europe. Regarding island systems, actions are taken to reduce NO_x emissions, on a case-by-case basis: optimising exhaust gas processing, or reducing the number of hours of operation for certain turbines. In Brazil, the emission levels of the Combined Gas Cycle power plant in Norte Fluminense are below the NO_x limit of 25ppm, mainly due to the high level of equipment maintenance.

In Italy, the Marghera Levante plant (780MW with 63% efficiency) is being substituted for less efficient resources, not only allowing specific gains in greenhouse gas emissions (up to 40%) but also significantly lowering nitrogen oxide atmospheric emissions (by more than half).

EDF continues its experimentation on and its conversion to bioliquids, low-sulphur fuels, as a replacement for fossil fuels[5]. At the same time, EDF is developing non-NO_x and SO_2 emitting technologies and proposes, in the island systems, isolated 100% renewable energy systems.

Change in SO_2, NO_x and dust emissions Group-wide

SO_2 and NO_x emissions due to heat and electricity generation (in kt)	2021			2022			2023		
	SO_2	NO_x	Dust	SO_2	NO_x	Dust	SO_2	NO_x	Dust
EDF group	18	31	3	16	29	3	11	26	3
EDF	4	10	0.2	3	10	0.2	2	9	0.2

(1) Various systems are in place at all the Group structures concerned, in France, Italy, the United Kingdom, etc. For example, in France, EDF systematically sends a safety notice to any customer subscribing to a natural gas offer. These instructions can be accessed on the edf.fr website. Enedis also develops partnerships with organisations representing the main high-risk groups to raise awareness of the risks of fishing near power lines, or to boost cooperation in the prevention of risks relating to firefighting work near power grids. Overseas, EDF in the UK informs its customers of the potential dangers of electricity in newsletters or on the back of bills. EDF in the UK also has a toll-free number to inform its customers about safety practices. Specific action is taken regarding the most vulnerable customers to promote their health, particularly during the winter period.

(2) Health is understood here within the WHO meaning as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

(3) strategie.gouv.fr/publications/levaluation-socioeconomique-effets-de-sante-projets-dinvestissement-public-0

(4) See the EDF press release of 9 June 2022 "EDF launches enJeux d'avenir 2024, a legacy programme to bring sport and the energy of games to life throughout France."

(5) More specifically, it involves the Fluid Mechanics, Energy and Environment Department of EDF R&D.

3.3.1.6.2 Improving air quality by supporting public initiatives in this area

France's "Climate and Resilience" law strengthens outdoor and indoor air quality standards (mobility, heating, building renovation). As a responsible energy company, EDF has developed unique skills in this field over many years, and works with partners to propose solutions to improve air quality.

EDF[1] has historical know-how on the understanding and modelling of atmospheric emissions and air-conditioning systems of buildings.

With CEREA[2], EDF R&D participates in the scientific effort by developing open source models[3]. The 4Evlab laboratory[4], run jointly by R&D, EDF, LaSIE[5] and the CNRS, conducts studies on indoor air quality, humidity control, urban energy and building-front testing equipment.

Airparif is one of Citelum's partners in Asnières-sur-Seine, part of the AIRLAB platform[6]. The installation of cameras and sensors on urban equipment makes it possible to measure, in real time, mobility flows and variations in sources of pollution in the atmosphere. In Paris, Lille and Haute-Savoie, the vehicles of the distribution network operator Enedis are equipped with a network of air quality sensors, Pollutrack: 300 Enedis Paris vehicles are equipped with laser sensors capable of capturing PM 2.5 fine particles and transmit approximately 2 million daily readings to Airparif, which displays them on a map and points to the hotspots.

3.3.1.6.3 Improving the indoor air quality of buildings (IAQ)

EDF and the town of Villiers-sur-Marne have joined forces to implement urban renewal and construction projects to improve and control indoor and outdoor air quality "from the street to the room". The deployment of a scientific approach carried by CEREA has resulted in the creation of a first digital demonstrator of air quality in a show flat.

EDF's R&D addresses the issue of IAQ, as well as the energy and environmental performance of buildings. The goal of its research is to acquire methods and tools to assess the impact of constraints and requirements on the energy, environmental and economic reality of buildings, while considering health aspects. Dalkia implements global solutions integrating IAQ and energy performance. After a precise diagnosis, continuous measurement sensors adapted to the pollutants are associated with adaptive ventilation and energy recovery systems. Thus, maintaining good IAQ and controlling energy consumption becomes possible.

3.3.2 Ethics, compliance and human rights

The EDF group, while respecting the management independence of the regulated infrastructure operators, promotes a culture of integrity and applies a zero tolerance policy towards fraud and corruption. Ethical conduct in accordance with the law is the absolute rule for all Group employees, at all levels of the organisation, and without exception. The EDF group is committed to respecting and ensuring respect for human rights in all its activities and wherever it operates.

3.3.2.1 Organisation of ethics and compliance within the EDF group

3.3.2.1.1 Governance

The EDF Executive Committee is responsible for determining the orientations and priorities of the ethics and compliance programme, allocating the necessary resources and ensuring the monitoring and control of its implementation. The Board of Directors of EDF, through its Corporate and Social Responsibility Committee, oversees the Company's incorporation of ethical and compliance considerations into its works. Every year, the Executive Committee and the Governance & Corporate Responsibility Committee also receive an activity report drawn up by the Group Ethics and Compliance Department.

3.3.2.1.2 The Group Ethics and Compliance Department and its ethics and compliance network

Reporting to the General Secretary, the Group Ethics and Compliance Department manages and coordinates, in liaison with the Departments concerned, the implementation of the Group's ethics and compliance programme. A network of around 50 Ethics and Compliance Officers within its entities and subsidiaries, both in France and abroad, share and deploy the Group's Ethics and Compliance Policy. The RECs participate in the Management Committees and report directly to the entities' executive managers. EDF is a member of several anti-corruption groups and non-profits. In 2016, it joined Transparency International France, in which it participates in the Forum of Engaged Companies (*Forum des entreprises engagées*, or FEE), which promotes the highest standards of transparency and integrity.

3.3.2.1.3 Group Ethics Charter and its values

The Group Ethics Charter defines the shared values of the work collective. It places ethical requirements at the heart of the Company's responsibility and, in accordance with the Chairman's commitment, promotes ethical behaviours across all professional activities. The Group Ethics Charter focuses on the Group's three values "Respect, Solidarity and Responsibility", each featuring four requirements. It is available in French and English on the EDF[7] group website and in 11 other languages in which the Group works.

3.3.2.1.4 Group Ethics and Compliance Policy (PECG)

The Group Ethics and Compliance Policy (PECG) which identifies the Company's compliance programmes as well as the main rules that executive managers should know, observe and enforce within their entities, strictly aligned with the risks of those entities, was updated and approved during an Executive Committee in January 2020.

The PECG includes 13 compliance programmes: preventing the risk of corruption and influence peddling; preventing conflicts of interest; combating fraud; compliance with international sanctions programmes; prevention of harassment and discrimination; prevention of market abuse; prevention of the risk of money laundering and financing of terrorism; compliance with EMIR[8]; compliance with the REMIT[9] regulation; preventing breaches of competition law; personal data protection; export control (dual-use goods); and the duty of vigilance (covering environmental, human rights and health and safety issues).

(1) More specifically, it involves the Fluid Mechanics, Energy and Environment Department of EDF R&D.
(2) The Atmospheric Environment Education and Research Centre – laboratory shared by EDF R&D and the Ponts Paristech school.
(3) Free access to source code.
(4) The Laboratory on the Energy and Environmental Efficiency of Buildings and Cities, created in 2016.
(5) La Rochelle University's Environmental Engineering Science Laboratory.
(6) Airparif's laboratory of innovative air quality solutions.
(7) https://www.edf.fr/sites/groupe/files/2022-02/20190416-edf_charte_ethique_en_page_hd.pdf
(8) European Market Infrastructure Regulation.
(9) Regulation (EU) no. 1227/2011, known as the "REMIT" regulation, on the integrity and transparency of the wholesale energy markets.

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3.3.2.2 Anti-corruption and other compliance programmes

3.3.2.2.1 Anti-corruption programme

Programme

In accordance with the law of 9 December 2016 on transparency, combating corruption and the modernisation of the economy, known as the "Sapin II" law, EDF set up an anti-corruption compliance programme taking into account legal requirements.

An ethics & compliance code of conduct included with the internal rules of procedure and a disciplinary mechanism

This code of conduct, which will be revised in June 2023 to take account of regulatory changes relating to the whistleblowing system, defines and illustrates, through practical examples, the various types of behaviour that employees are likely to encounter as a result of the Company's activity and organisation, and which should be prohibited because they are likely to constitute corruption or trading in influence. It sets rules for all the themes identified during the corruption risk mapping process. It prohibits facilitating payments, and restricts gifts and invitations. Breach of any of its rules may result in disciplinary sanctions. It can be viewed by employees and third parties on EDF's site in French and English[1].

Whistleblowing system

The Group procedure for processing whistleblowing was reviewed during 2023, to factor in the developments entailed in the transposition in French law of the European Directive for whistleblower protection. See section 3.3.2.4 "The EDF group whistleblowing procedure".

Risk mapping

Ethics & compliance risk mapping is part of the Group Risk Department's annual internal control self-assessment process. Based on this, the entities draw up action plans appropriate to their operational contexts to prevent and mitigate these risks. Since 2018, a specific "corruption" risk map was prepared, which identifies and prioritises, by business sector and country, risks of exposure to corruption. In 2020, the methodology used for the mapping was improved, to enhance its focus on the operational specificities of the Group's various business lines and geographical locations.

Third-party integrity control system

The PECG requires the executive managers of the Group entities concerned to set up a system in their entities to control the integrity of the partners with which the Group intends to establish or continue a business relationship. The goal is notably to ensure that there is no risk of exposure to international sanctions, as well as to include, in each contract, a clause giving EDF or its subsidiary the right to immediately terminate the relationship in the event of non-compliance with an international sanctions programme. In 2021, this system was reviewed in line with the Group's corruption risk map.

Accounting controls

Control procedures, containing specific requirements for the detection and prevention of corruption, have been defined for the Company's various processes. Following a technical analysis, any anomalies likely to be characterised as fraud are, where applicable, forwarded to the entity's Ethics and Compliance Officer.

Internal evaluation system

A system enables the entities to assess the level of implementation and the control of each key requirement, and to identify the improvement actions to undertake.

A system to prevent conflicts of interest

The entities have put in place a system designed to prevent conflicts of interest and raise employee awareness of high-risk situations, provide a system for employees to declare their links to organisations in which they have a personal interest, and require managers to resolve conflicts of interest with respect for individual freedoms. A support guide, including case studies to help managers identify and deal with conflicts of interest, was introduced in early 2021, and is also being used by RECs and managers to raise awareness among employees during dedicated meetings.

Combating fraud

In accordance with the "Combating fraud" memorandum of instructions, revised in October 2022 in order to simplify it and make it more workable, executive managers shall set up systems within their entities to raise awareness among their staff, put in place checks to detect potential cases of fraud, investigate incidents, report proven cases and sanction those responsible.

Regulation of interest representatives

EDF is an interest representative within the meaning of the Sapin II law. To this end, it is registered on the list of interest representatives managed by the French High Authority for Transparency in Public Life (Haute Autorité pour la transparence de la vie publique, or HATVP). The network managers RTE, Enedis, and Dalkia are also registered: they each declare interest representation actions carried out during the year. The list of persons in charge of an interest representation identified in the register will be updated regularly. EDF also files with the HATVP[2] an annual declaration relating to interest representation actions carried out that mentions actions aimed at influencing a public decision, with national public officials identified by the legislator. Lastly, lobbying has been added to the new version of the code of conduct.

At the European level, EDF is listed on the Transparency Register of the European Parliament and the European Commission (no. 39966101835-69), regularly updates its data, and applies the related Code of Conduct. In addition, in order to continue to raise awareness of ethical issues among interest representatives, the European Affairs Department has published its own internal ethics EU Lobbying Rules, available on the EDF website.

EDF presents its positions publicly *via* this transparency register and[2] associations of which it is a member[3]. Its main messages are also posted on social media (LinkedIn, Twitter). The European Affairs Department has introduced a regular internal control process for these associations to ensure that they match its mission statement, following which decisions may be taken (withdrawal or new membership) where necessary.

The estimated annual cost of the activities covered by the European Transparency Register since 2016 is around €2 million, with a downward trend. In 2023, the main actions were connected with: an ambitious revision of the EU ETS Directive and the implementation of the carbon adjustment at national boundaries; the development of low-carbon electricity generation sources, particularly for accelerating the permitting procedures for renewable energies; accelerating electrification of the economy, particularly in transport with the AFIR Directive promoting low-carbon hydrogen; and discussions around the forthcoming reform of the electricity market architecture.

(1) avere.org/wp-content/uploads/2019/02/the_electrification_alliance_-_declaration-2017-030-0453-01-e.pdf (Electrification Alliance Electricity for an Efficient and Decarbonised Europe).
(2) With the exception of RTE, transmission network operator, and Enedis, subsidiary independently managed within the meaning of the Energy Code.
(3) EDF and the companies it controls. Control is established, in particular, if EDF holds, directly or indirectly, a majority of the share capital or the voting rights within the governing bodies of the relevant companies. Excluding RTE and Enedis which are independently managed subsidiaries within the meaning of the provisions of the Energy Code.

Regulation for the financing of political parties

The EDF group complies with the laws and regulations in force concerning the financing of political parties. In accordance with the legislation in force in France, EDF makes no payments to political parties. The Group's Italian and UK subsidiaries have written directly into their codes of conduct the prohibition of financing political parties. In countries where it is allowed (such as the United States), EDF group companies may determine whether they wish to provide financial support. In such case, the financing shall comply with the principle of neutrality. Every year, the Group companies concerned must report any financing to their parent company.

In 2023, EDF Renewables made payments in the United States, consisting of US$39,000 in the form of Political Action Committee contributions and US$282,000 in the form of Corporate Contributions.

Training schemes

The Group Ethics and Compliance Department develops prevention and training actions for all employees at EDF and its subsidiaries (permanent and non-permanent employees – fixed-term contracts, temporary workers, service providers, interns, PhD students, *etc.*) and notably:

- a dedicated community on the Group Intranet providing a range of training materials;
- the introduction of e-learning training modules, in particular an interactive training course on the code of conduct, in the form of two e-learning courses ("All employees" and "Exposed employees"), in French and English, enabling participants to deepen and test their knowledge (2,060 participants in 2023);
- targeted in-person training courses: generic training for new entrants to the ethics and compliance networks; for directors of subsidiaries or contract managers; and also to training courses, in French and in English, conducted by lawyers and targeting Group employees tasked with assessing third parties and with processing whistleblowing.

Additionally, the Group Legal Affairs Department and the Ethics and Compliance Department are also providing a "Preventing corruption and influence peddling" e-learning module, accessible to all employees on the e-campus platform, that teaches about how best to behave in situations relating to business relations, conflicts of interest, and gifts. It became mandatory for all employees moving to a new position exposed to corruption risks to follow an anti-corruption e-learning module (e-learning module added to the standard training given to managers, project managers, buyers and contract managers, *etc.*).

3.3.2.2.2 Prevention of harassment and discrimination

Banning all harassment or discrimination, preventing and dealing with any physical or psychological violence as well as intolerance or injustice in the workplace are some of the requirements of the Group Ethics Charter. This commitment is part of the regulatory and judicial context which, in many countries, incriminates not only the actions and behaviours themselves, but also employers who fail to implement sufficient preventive measures. The executive managers must take all necessary steps to prevent discrimination, harassment and physical and emotional abuse within their entities by informing employees of these risks. They must provide regular information about the Group whistleblowing system and take appropriate disciplinary action in the event of proven wrongdoing.

Two reference guides designed to prevent and combat bullying and sexual harassment have been distributed, primarily to managers, the HR Department and the Ethics and Compliance Managers of entities. They have been published in a simplified format for all employees. Several training modules are available for everyone on e-Campus.

See also section 3.3.3.2 "Combating sexism and violence".

3.3.2.2.3 Financial ethics

The Ethics and Compliance Policy sets out the requirements to be *followed to prevent market abuse, the risk of money laundering and* the financing of terrorism. An Ethical Code for Trading in Securities, recently updated, complements this Policy. The Group Ethics & Compliance Policy also sets out the requirements concerning compliance with the European EMIR regulation.(1)

Support guide

The implementation of this EMIR regulation by the EDF group, the implications for entities as well as the related processes and controls are described in the EDF group EMIR Policy Paper support guide. An e-learning module is available on the e-campus, attended during the year under review by close upon 200 particularly-concerned employees.

3.3.2.2.4 Integrity and transparency of the wholesale energy market (REMIT regulation)

In accordance with the Group Ethics & Compliance Policy, entities concerned must put in place a compliance programme for the European REMIT regulation (on the integrity and transparency of the wholesale energy market). A Group Compliance Officer is tasked with preventing risks of non-compliance, by developing an appropriate control environment. The practical application of the REMIT regulation at the EDF group, the implications for the entities, as well as the associated processes and controls, are described in an instruction note. An EDF staff training system has been online since 2019. As of the end of 2023, 1,678 people had been trained through this system.

3.3.2.2.5 Preventing breaches of competition law

The EDF group has made the prevention of anti-competitive practices (cartels and abuse of dominant positions) a major issue for its employees. With this in mind, the Group has implemented a Competition Law Compliance Programme since 2010. The programme, which is binding on all employees, aims to ensure that all operations of subsidiaries and entities of the Group in France and worldwide comply with competition law. Any suspicion of anti-competitive practices may be reported under the whistleblowing system set up by the Group (see section 3.3.2.4).

One e-learning awareness-raising course on competition law available on the Group's internal training portal brought together 564 participants in 2023. It is also included in the training course for directors of the Group's subsidiaries, who also benefit from additional awareness-raising as part of a face-to-face module.

3.3.2.2.6 Personal data protection

In France, EDF, which appointed an IT and Liberties Correspondent (CIL – *Correspondant Informatique et Libertés*) as early as 2006, appointed its Data Protection Officer (DPO) in 2018, pursuant to EU Regulation 2016/679 of 27 April 2016, known as the General Data Protection Regulation (GDPR), and made them DPO for EDF and Lead DPO for the Group.

(1) European Market Infrastructure Regulation.

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Around 20 DPOs have been appointed in the French and European subsidiaries and Personal Data Contacts (*interlocuteurs informatique et libertés* [I2L]) are present in all EDF entities. The DPOs are ensuring compliance with regulations relative to the protection of personal data within the Group, whether with regard to the personal data of its customers, employees, service providers or partners.

3.3.2.2.7 Export control and international sanctions

As part of its activities, in particular nuclear, EDF and its subsidiaries carry out various operations for their own needs, or those of third parties, requiring the use of goods and technologies, notably those with "dual use" ("DUG"), in other words civil and military. This may expose them to certain risks inherent to specific French, European and/or foreign regulations in this area, some of which have extraterritorial scope, and which may require obtaining a license/ authorisation from the competent authorities prior to any transfer, export, re-export, brokerage or transit of such goods and technologies. Some regulations, particularly in the United States, have introduced restrictions on access to goods and technologies applicable to foreign entities that may affect both DUGs and any other commercial goods.

The Group, or some of its partners, may be exposed, directly or indirectly, to sanctions programmes, in particular (i) international sanctions adopted by the United Nations Security Council, (ii) sanctions adopted by regional organisations such as the European Union, and (iii) sanctions adopted unilaterally by certain states, some of which have extraterritorial scope.

A Group Export Control and International Sanctions Department was set up in August 2019 to strengthen the Group's ability to comply with these regulations. A memorandum of instructions describing the compliance procedures to be implemented was adopted by the Executive Committee on 4 May 2020. In April 2022, the Export Control and International Sanctions Department implemented to e-learning modules, "export control" and "international sanctions" in French and English, accessible for all Group employees on the e-campus platform.

Since they were rolled out, the two e-learning courses have been a great success: by the end of 2023, almost 1,350 Group employees had received e-learning training, in addition to those trained by the Export Control and International Sanctions Division in targeted face-to-face/Teams sessions.

3.3.2.2.8 Duty of Vigilance

See section 3.8 "Vigilance plan".

3.3.2.3 Human Rights

In 2021, EDF published a set of guidelines[1] listing the commitments of the Group and the fundamental requirements for its business relationships in terms of human rights and fundamental freedoms, environmental protection, protection of personal health and safety and business ethics. These EDF group human rights commitments were approved and signed by the Chairman and Chief Executive Officer.

3.3.2.3.1 Compliance with international standards

The EDF group does not tolerate any infringement of human rights and fundamental freedoms, either in its activities or in those of its business relations when their activities are related to this relationship (see www.edf.fr/groupe-edf/agir-en-entreprise-responsable/responsabilite-societale-dentreprise/bien-etre-et-solidarite/droits-humains).

International Standards

In accordance with the United Nations Guiding Principles on Business and Human Rights (UNGPs), EDF undertakes to respect, at the very least, international standards for the protection and defense of human rights and fundamental freedoms, and in particular the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, and the fundamental conventions of the International Labour Organization (ILO).

Conflicting standards

If the laws of a country where it operates conflict with these international standards, EDF endeavours to find a solution to render it compliant with both the spirit of the international standards and national laws.

Vigilance approach

To ensure that human rights and fundamental freedoms are respected in its operations, EDF has implemented a vigilance approach to identify, assess and prevent any potential infringement of human rights or fundamental freedoms. This vigilance approach has been designed to comply with the French duty of vigilance law and is based on the recommendations of the UN Guiding Principles on Business and Human Rights.

Vulnerable persons

The EDF group pays special attention to the impact of its operations on individuals recognised as vulnerable under international human rights law and investigates, in complete transparency, impartiality and good faith, any alleged infringements of human rights or fundamental freedoms connected to the operations of the Group's entities, providers and subcontractors.

Proven cases of injury

If an infringement of human rights or fundamental freedoms is proven in the operations of the Group's entities, EDF has agreed to engage in dialogue with the victims and/or their representatives to address the situation, pursuant to the OECD Principles for Multinational Enterprises with which the EDF group complies.

3.3.2.3.2 Rights of staff

ILO

The EDF group is committed to the human rights and fundamental freedoms of its staff and complies, as a minimum, with the provisions of the standards published by the International Labour Organization (ILO).

Combating discrimination

In terms of the prevention of discrimination, the EDF group guarantees equal treatment for its employees and is against any form of distinction, exclusion or preference, whether based on presumed race, skin colour, sex, age, religion, political beliefs, national origin, social origin, disability, family status, sexual orientation or gender identity. In the countries where it operates and for its own operations, the EDF group actively promotes equality in the workplace and equal treatment for equal work for the women and men working for the Group and strives to achieve balanced work teams at all levels of the Company. Diversity is encouraged at all staffing levels and employees must be protected from all forms of discrimination or retaliation.

Combating harassment, sexism and violence

The EDF group does not tolerate any form of harassment or violence, whether within or outside the workplace, relating to the working relationships established in the workplace. The Group is committed to preventing and protecting its employees from all forms of harassment, sexism and violence in the workplace.

(1) https://www.edf.fr/sites/groupe/files/contrib/groupe-edf/engagements/2021/rse/edfgroup_rse_referentiel-ddv-2021_en.pdf

Refusal of all forced labour

The EDF group is against all types of forced labour, as defined in the ILO fundamental conventions as well as any form of human trafficking. In particular, for the projects and operations implemented by the Group, it ensures that all employees have given their free, informed consent for the performance of all their duties. In particular, the EDF group ensures that its intermediaries and recruitment agencies do not use any practices that could result in forced labour. The Group is committed to protecting the free movement of workers and, in particular, will not confiscate the travel documents, identity papers or any other personal belongings of workers in any circumstances whatsoever.

No child labour

The EDF group is against all types of child labour, as defined in the ILO fundamental conventions. The Group commits to not employ anyone under the age of 15 (subject to the exceptions set out in ILO Convention 138) or anyone under the age of 18 for work considered dangerous as provided for in the ILO convention.

Freedom of association, right to collective bargaining and trade union rights

The EDF group upholds an individual's right to freedom of association and the right to collective bargaining as defined by the ILO. The Group recognises that all employees are free to form and/or join the workers' organisation of their choice and will not interfere with that right.

In accordance with the Group's Global Framework Agreement on Corporate Social Responsibility, EDF is committed to respecting and protecting the autonomy and independence of trade unions, in compliance with applicable laws and regulations. It aims to guarantee the effective exercise of trade union rights and recognises the representative trade union organisations in the Company as contact people and partners. The EDF group respects strict neutrality as to whether or not its employees choose to belong to a trade union, and if so, which trade union they wish to be represented by. Employees are not discriminated against because of their union membership and/or activities. Facilities are granted to employee representatives in order for them to perform their duties. Notably, EDF sets aside a number of hours dedicated to the performance of trade union functions and mandates, as well as a supervised career path for employees holding representative and/or trade union positions. The EDF group prohibits any intimidation, harassment, sanction or discrimination against an employee because of their trade union activities, and does not discourage employees from joining organisations of their choice. The Group respects the right to collective bargaining and the role of workers' organisations in the collective bargaining process.

Work time

The EDF group complies with the ILO standards and all applicable laws and regulations governing working time, based on the following principles, subject to the exceptions approved by the ILO: regular working weeks should not exceed 48 hours; working weeks are limited to 60 hours, including overtime; workers should have at least one day off for every seven days worked, except in emergencies or unusual situations; workers should have at least three weeks of paid leave for a full year of service; workers are entitled to at least 14 weeks of maternity leave.

Compensation, working conditions, and benefits

The EDF group strives to comply with the ILO standards on pay, working conditions and benefits. The Group is committed to paying a living wage, covering the basic needs of its employees and their families, and to providing adequate social security cover for all its employees. When employee accommodation is provided by the Company, the EDF group ensures that decent housing or accommodation is provided in compliance with the ILO standards.

Global agreement on CSR

In 2018, EDF and two global trade union federations (IndustriAll Global Union and PSI) along with 15 trade union organisations representing EDF group employees signed a global framework agreement on the Group's social responsibility, later extended for two years on 29 November 2021. This agreement automatically applies to all the Group's employees, warranties the right to collective bargaining and effectively reflects its commitment to "make upholding human rights a prerequisite to all its business activities, and not to tolerate any violation of these rights whatsoever, whether during the course of its business, or by its suppliers, subcontractors and partners". It confirms that, in the event of conflicting standards with applicable laws in countries in which it operates, the EDF group undertakes to apply the most protective human rights provisions while complying with the national laws. All controlled subsidiaries of the EDF group have now been informed of the agreement and are developing a social progress action plans.

3.3.2.3.3 Rights of local communities

The EDF group is committed to protecting the rights of the local communities affected by its operations and arranging, systematically and worldwide, transparent, debated discussions and consultations for each new project relating to a facility drawing on a budget of more than €50 million and having a significant impact on the territories or the environment.

The Group recognises the role of human rights and environmental defenders from all walks of life, both among its suppliers and in civil society. It is committed to protecting the exercise of their rights and ensures that it identifies the risks to human rights and environmental activists caused by its business operations and allows them to speak freely about its operations.

The EDF group identifies, for each project, the potential impact on the health, living conditions and environment of local communities, with reference to the performance standards of the International Finance Corporation (World Bank Group) and proposes suitable measures.

Indigenous Peoples

EDF is committed to respecting the specific characteristics and rights of indigenous peoples as defined in the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and ILO Convention 169, which provides, in particular, that "indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation".

EDF is aware of the unique issues facing indigenous peoples and is committed to following the best international standards in this area and, more specifically, the UNDRIP (United Nations Declaration on the Rights of Indigenous Peoples), ILO Convention 169 and World Bank standards. In particular, EDF recognises the criteria for characterising indigenous peoples included in these standards, including historical and geographic "pre-existence," "cultural distinctiveness," "self-identification," and "non-dominance." EDF upholds the individual and collective rights of indigenous peoples and communities, including their right to self-determination, their right to land, territories and resources, and their right to FPIC (Free Prior and Informed Consent) in its projects and activities, as defined by ILO Convention 169.

Whenever its operations threaten or affect the livelihood of a community, the Group implements compensation and/or restoration measures for their livelihood matching or exceeding the level prior to its operations.

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The EDF group is committed to respecting and protecting or safeguarding, in agreement with the populations concerned, any expressions of their culture, religion or heritage present on the land used for its operations.

In terms of the use of security forces, the Group is committed to protecting the safety of its employees and sites in strict compliance with human rights, including those of local communities, and only authorises the use of force for preventive or defensive purposes in a manner proportionate to the nature and severity of the threat.

3.3.2.3.4 Implementation of human rights commitments

Human rights commitments[1] are implemented as part of the Group's CSR commitments and requirements, based on the principles of action that apply to all Group operations, such as:

Principles of action
Management of E&S impacts

The initial and ongoing evaluation and the management of environmental and societal (E&S) impacts and risks, including those caused by the activities of its business acquaintances.

Dialogue and consultation

The organisation, worldwide, of a procedure of transparent, debated discussions and consultations for each new project relating to a facility drawing on a budget of more than €50 million, and having a significant impact on the territories or the environment.

Implementation and monitoring

The implementation and monitoring of these commitments and requirements is ensured under the Group's existing internal policies or agreements, in particular the sustainable development policy, the ethics and compliance policy, the purchasing policy, the health and safety policy, the global CSR agreement, the Ethics Charter and the roll-out of the vigilance plan.

Collecting and processing reports

Systems for collecting and processing reports of wrongdoing, that are accessible and notified to anyone who could be impacted by the Company's operations, guaranteeing the confidentiality of the reports and protecting internal whistleblowers (employees and external staff), have also been set up.

Consideration of human rights in projects
At the project management level

Depending on the context of the project, a Human Rights Impact Assessment (HRIA[2]) is conducted. It is based on the principles defined by the UN Guiding Principles on Business and Human Rights. These studies place the identification of impacted human rights at the centre of the analysis. They include an assessment of the state of human rights in the country as well as in the project area, a mapping of human rights-oriented stakeholders (listing "rights-holders" and "duty bearers"), an analysis of the project's impacts on these rights, and the development of mitigation measures. This type of study identifies the activities at risk according to their importance and sensitivity. These studies are generally entrusted to national or international consultants specialising in the topic, and managed by EDF's internal Human Rights contacts. The conclusions of these studies are intended to be integrated into all development, construction, operation and end-of-life activities of the project, *via* an *ad hoc* management system (internal Human Rights policy, Human Rights contact and correspondents, contractual tools, audits and performance monitoring, reporting, *etc.*). They concern both affected communities and workers, the use of security forces, the whistleblowing system and the protection of whistleblowers, *etc.*

At the level of investment decision-making processes

A section devoted to human rights, environmental issues and human health and safety is systematically included in the analysis of projects presented to the Group Executive Committee's Commitments Committee (CECEG), in the form of an identification of the risks associated with the projects, in order to ensure that EDF's commitments in this area are taken into account. Concretely, this takes the form of identifying the risks associated with the projects for the activities developed and for the supplier and subcontractor relationships envisaged in the framework of the project. This identification will be facilitated by the providing of a regularly updated grid screening, which will allow for an analysis of projects that are consistent with the Group's *raison d'être*, CSR commitments, and guidelines, as well as with international standards. This grid takes into account environmental, health and safety, human rights and ethics issues. In the milestones prior to the CECEG, these issues are examined by the project validation bodies specific to each entity (for example the International Department's Commitment Committee – CEDI).

In operational terms

In operational terms, a large number of projects are developed internationally, notably by the Group's International Department or by EDF Renewables.

Human rights risks are understood and managed at the various stages of the projects:

- at the pre-development phase, for "new" countries, an assessment is carried out using the Verisk Maplecroft® tool, or other internal and external sources. Specific due diligence can also be carried out for particular sectors with identified risks;
- during the development phase, a Human Rights Impact Assessment and Management (HRIAM) study may be launched, depending on the country risks identified and the specific features of the project, in order to clarify the human rights context in the project area, in relation to future development and construction activities:
  - > draw up a matrix of risks and opportunities generated by the project regarding human rights,
  - > identify "rights-holders",
  - > identify social and environmental studies that need to incorporate a human rights component,
  - > submit a Human Rights Policy proposal for the project;
- Human Rights clauses are also systematically included in the project's main contracts ("EPC[3]") to build major infrastructure such as hydroelectric facilities, but also for smaller contracts such as photovoltaic generators for "B&I" (Business & Industry) clients, particularly in Sub-Saharan Africa;
- during the construction phase, claim and complaint management systems are set up for workers and communities (in addition to systems provided by EDF and any lessors).

Combined cycle gas project in Uzbekistan

This combined cycle gas project is being implemented by EDF, Nebras, Sojitz and Kyuden, while its construction is entrusted to Harbin Electric International and its financing is provided by the International Finance Corporation. Its construction requires a team of workers (around 2,000), half of whom are recruited locally and the other half of whom are Chinese workers. Particular attention is paid to the working conditions of workers on the site with the application of international good practices on Health and Safety (OHS), and in particular to accommodation conditions (on-site or off-site), to contractual matters (employment contracts, quality of payslips), to free movement of employees, etc. These requirements are reported in the construction contract, and an ESHS[4] team dedicated to environmental and social matters is in charge of verifying the due performance of the builder and its subcontractors. The 30 hectares of agricultural land required for the construction of the power plant did not necessitate the physical removal of people. The 15 or so farmers who used this land and trees (whether fruit bearing or not) were compensated, at a level significantly higher

(1) unglobalcompact.org/what-is-gc/mission/principles
(2) EIDH – Human Rights Impacts Assessment and Management.
(3) EPC contract: Engineering Procurement and Construction: https://www.cmr-group.com/en/nuclear-power-plant-copy-270
(4) Environmental, Social, Health and Safety.

than that required by national regulations. Programmes to improve their generation activities are being rolled out. An independent consulting engineer (Lender's Independent E&S Consultant – LIESC) verifies on a quarterly basis that project commitments and lessor requirements are met. The drawdowns of loans throughout the construction phase are subject to compliance with these covenants.

Wind farm in Australia

EDF Renewables is developing a wind farm project in Australia. At the development phase in 2023 and 2024, the construction phase should begin in 2025. The project is located on land to which the indigenous aboriginal and Torres Strait Islander communities, the Ganngalu and the Wulli Wulli, have specific rights. A cultural heritage management agreement is being developed with these two indigenous communities to ensure the preservation of cultural heritage, including ceremonial sites, tools and scar trees (culturally modified trees), throughout all the phases of the project. This agreement will be implemented in accordance with the Australian Aboriginal Cultural Heritage Act. EDF Renewables has also initiated the development of a reconciliation action plan with all the groups of Guardians of Community Traditions, in order to integrate the principles and values of reconciliation into the activities of the project. A socio-economic impact assessment is also planned for 2024. EDF Renewables will continue to work with the Guardians of Community Traditions to ensure the protection of cultural heritage throughout the project. They will conduct a survey on the conservation of cultural heritage to determine if there are any artefacts in this area. If necessary, they will be protected, or moved, in order to preserve them during construction. Stakeholders will be consulted at all times during the construction and operating phases of this future wind farm.

Wind farm in Morocco

The complaints mechanism set up for this project is similar to other EDF Renewables projects, and aligned with international standards. It is based on several mechanisms that complement each other:

1. filing complaints:

- in writing: in a letterbox at the entrance to the construction site, or by mail to the Community Liaison Officer (CLO),
- verbally: in the case of illiteracy, for example, verbal complaints may also be received by the CLO at the project site. Complainants may leave their contact details at the entrance, and indicate they wish to file a complaint. A meeting with the CLO will then be organised. Security officers are trained in the complaints mechanism and the associated tasks,
- through the local authorities.

A form is available from the local authorities, as well as at the entrance to site. Information posters on the complaints management mechanism are also visible at the entrance to the construction site. The CLO visits at least once a week to collect the complaints lodged in the mailboxes;

2. processing complaints:

The social technical assistance team gathers the complaints in order to deal with them during the weekly meeting of the monitoring unit, composed of the various project stakeholders (notably EDF Renewables, the National Electricity and Water Bureau, and subcontractors). As regards admissible complaints, following processing by the relevant stakeholder, the CLO communicates responses to the complaints *via* a form addressed to the complainant within a maximum of one week. If the response requires additional processing time, the CLO informs the complainant thereof. If a complaint leads to an immediate blocking of activities at the site, the process provides for the establishment of mediation with the complainant. All complaints are recorded in a register, where the processing actions are also documented.

Dalkia

Following the acquisition of US Chillers and its integration into the Group, a Dalkia subsidiary based in Dubai, Qatar, Bahrain, Saudi Arabia and the United States, an internal health and safety audit was carried out in 2023. This entity has around 380 employees outside the United States, 99% of whom are migrant workers. A diagnosis of working conditions and health and safety was finalised, and the roll-out of health and safety practices was undertaken. The following measures were also taken: work to bring into compliance the collective housing for workers in Dubai and Bahrain, and establishment of a minimum wage. Integration work will continue in 2024.

Modern Slavery Act in the United Kingdom

The EDF subsidiaries in the United Kingdom are implementing human-rights commitments in consistency with the Group's CSR commitments and requirements.

In accordance with the Modern Slavery Act, EDF in the United Kingdom is working to ensure that its activities, as well as those of its supply chain, are subject to an assessment of the risks associated with modern slavery, and that means of prevention and mitigation are put in place. EDF in the UK has a Modern Slavery Statement covering all its employees and procurement. This statement, in accordance with the Modern Slavery Act, is published on the subsidiary's website. EDF in the UK also contributed to the online "Modern Slavery Statement Registry".

EDF in the UK employs around 12,000 people, with a supply chain of around 3,500 suppliers. All staff are required to adhere to the EDF guiding principles (Staff Code of Conduct, and Ethics & Business Ethics and Conduct Policy) in relation to ethics. EDF in the UK has published support guides to make employees aware of these principles and values and to provide the necessary tools to report any behaviour contrary to EDF's principles.

With respect to the supply chain, the potential slavery and human trafficking risks are assessed to identify procurement areas of focus. Suppliers are required to comply with a set of standards, including the obligation to conduct a self-assessment of their risks aligned with the 10 principles of the United Nations Global Compact. EDF in the UK is encouraging its supply chain to adopt a social and environmental improvement approach. Modern slavery obligations are included in the upstream contracting process and suppliers are evaluated at all stages of the procurement cycle, from qualification to contract execution.

In terms of purchasing, the Group Purchasing Department's CSR risk mapping has included an analysis of "human rights" risks for each purchasing segment since 2019, to determine the level of residual risk and identify the action to be taken with suppliers (see section 3.4.2.3.2 "Sustainable and balanced relationships"). For fuels, see section 3.4.2.3.4 "Responsibility in the fuel supply chain".

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Other factors taken into account

The "human rights at the Company" e-learning module, developed with the association "Entreprises pour les droits de l'homme" (EDH), is accessible to all employees. In 2023, a virtual classroom was created to train employees in human rights.

Performance indicators drawn from the Group's strategy are monitored at Group level, through the Health & Safety Policy (see section 3.3.1.3 "Health and safety of employees and subcontractors"), the "Let's Talk Energy" programme, employee commitment surveys, and supplier relations (evaluations, supplier focus survey).

3.3.2.4 The EDF group whistleblowing procedure

The EDF group whistleblowing procedure was revised in order to incorporate both the Waserman law of 21 March 2022, transposing into French law the European Directive on whistleblower protection, and its implementing decree of 4 October 2022. After being validated by the competent authorities, the revised whistleblowing procedure will come into force on 1 June 2023.

3.3.2.4.1 Scope

In order to make report-handling more secure and to strengthen the confidentiality and security of personal data, in 2018 the Executive Committee decided to set up a single whistleblowing system for all wrongdoing reported under the Sapin II law and the duty of vigilance law, as well as wrongdoing reported by employees alleging harassment and discrimination. This Group system benefits all Group entities, except for the subsidiaries in the regulated sector, Enedis and RTE, which have their own whistleblowing system to uphold their managerial independence. Whistleblowers may choose to use the Group whistleblowing system or the other channels available to them (manager, human resources, staff representatives, local ethics and compliance officers, mediators, *etc.*).

The referee body for the EDF group procedure for collecting and processing reports of wrongdoing, appointed by the Executive Committee, is the Group Ethics and Compliance Department (DECG)[1].

3.3.2.4.2 Accessibility of the system

The Group whistleblowing system, managed from an independent server that is not connected to EDF's IS, can be accessed at any time *via* the EDF group website. The interface is available in several languages (French, English, Italian, Spanish, German, Portuguese, Dutch and Mandarin) in France and abroad, and the whistleblower can report wrongdoing in the language of their choosing.

3.3.2.4.3 Reporting wrongdoing

The EDF group whistleblowing procedure enables staff and external personnel[2] to report evidence of:

- a violation or an attempt to conceal a violation of the law or a regulation falling under the EDF group's scope of responsibility;
- a violation or an attempt to conceal a violation of an international commitment ratified by France, of a European Union law, or of the Code of Conduct, falling under the EDF group's scope of responsibility;
- a threat or damage to the general interest falling under the EDF group's scope of responsibility;
- a risk or serious infringement of human rights and fundamental freedoms, the health and safety of individuals or the environment, falling under the EDF group's scope of responsibility and its business relations.

3.3.2.4.4 Analysis of the admissibility of reports

Once the report has been submitted, whistleblowers receive confirmation within seven days from the delivery of such report. Whistleblowers can submit reports anonymously in countries where this is authorised. These anonymous reports are admissible as long as the factual elements are sufficiently detailed and precise to demonstrate the reality of the facts reported.

Each whistleblowing report is examined for admissibility by the DECG whistleblowing committee in order to determine, before investigating the actions reported, whether it meets the criteria defined in 3.3.2.4.3, and whether the appropriate protective measures can be identified.

During the phase of ascertaining admissibility, the recipient of the whistleblowing report may exchange with the whistleblower and refer to the experts (DECG, Legal-Affairs Department, REC, RDV[3]) in order to obtain any supplementary information required for finalising the admissibility analysis.

3.3.2.4.5 Processing of admissible reports

Upon confirmation of the whistleblowing report's admissibility, the investigating officer appointed[4] signs a specific confidentiality undertaking and has a maximum of three months within which to communicate to the whistleblower the information on the measures envisaged or taken in order to remedy the wrongdoing reported, and on the reasons for those measures.

The processing of whistleblowing reports (verification of the facts, interviews with the persons concerned, searching for evidence, *etc.*) is conducted with the support of line experts (DECG, HRD, DSIE, Legal-Affairs Department, Audit Department, *etc.*) or, where necessary, with the support of an external consultant. These experts are bound by the same strict confidentiality obligations (was prior signature of a confidentiality undertaking).

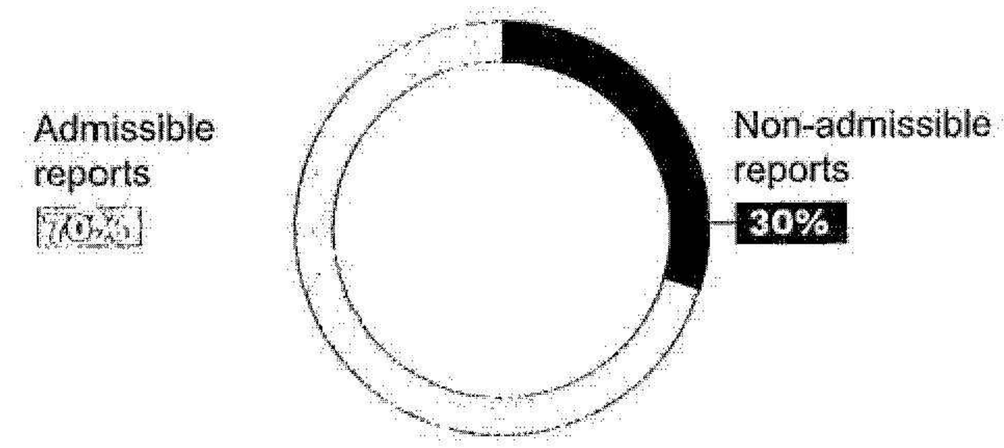
Upon completion of the investigation into the matter, if the facts reported are found to be true, an action plan is implemented. The whistleblowing report will be closed only upon complete fulfilment of that action plan.

3.3.2.4.6 2023 results

Whistleblowing results are consolidated and included in the annual ethics and compliance report submitted to the Executive Committee and presented to the EDF Board of Directors' Governance & Corporate Responsibility Committee. The DECG consolidated all admissible alerts made in 2023 at the Group (*via* the Group system or any other channel). Among them, 231 admissible alerts were recorded (including 85 in the Group whistleblowing system); 177 alerts related to incidents located in France and 54 abroad; 129 related to EDF and 102 to Group subsidiaries. 50% of the cases reported relate to harassment/discrimination. In 2023, 60% of the alerts processed were sufficiently detailed to give rise to corrective actions or disciplinary sanctions (three dismissals pronounced for proven harassment). Equally, 65% of the alerts for which the facts were not proven gave rise to actions to improve the processes.

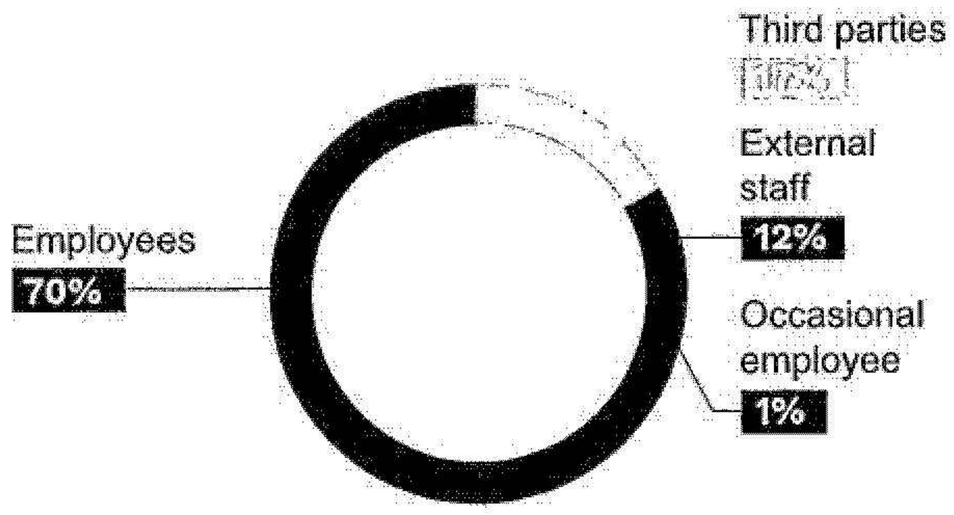
(1) Decree of 4 October: The referee is tasked with gathering the wrongdoing report and with processing it in compliance with the procedure. This referee is appointed by the Company.
(2) Occasional staff (trainees, work-study trainees, etc.) but also service providers or partners.
(3) Group Ethics and Compliance Department, Legal Department, Ethics and Compliance Manager, Duty of Vigilance Manager.
(4) The investigating officer is appointed from within the network of Group ethics and compliance officers (Departments and subsidiaries), managed by the DECG. In the event of difficulty (e.g. conflict of interest), the investigation may be conducted by the DECG itself or by the Ethics & Compliance Manager (REC) of another entity.

Admissibility of reports in the Group's system

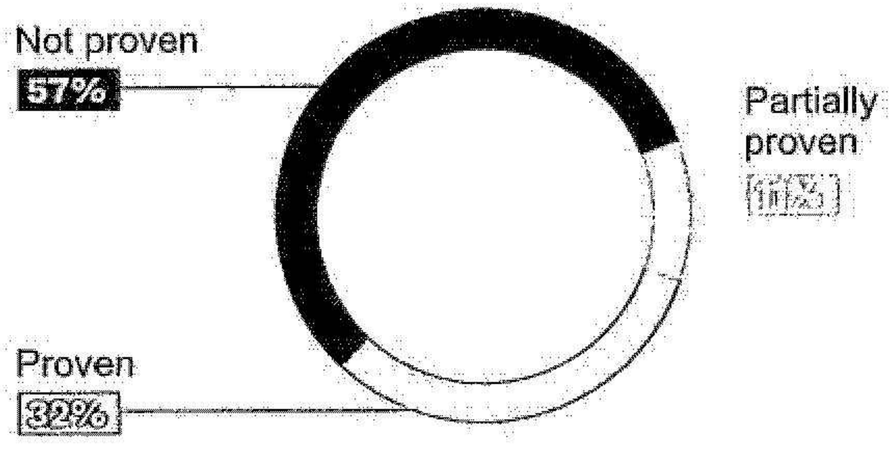


The whistleblower's relationship with the Group

(all channels combined)

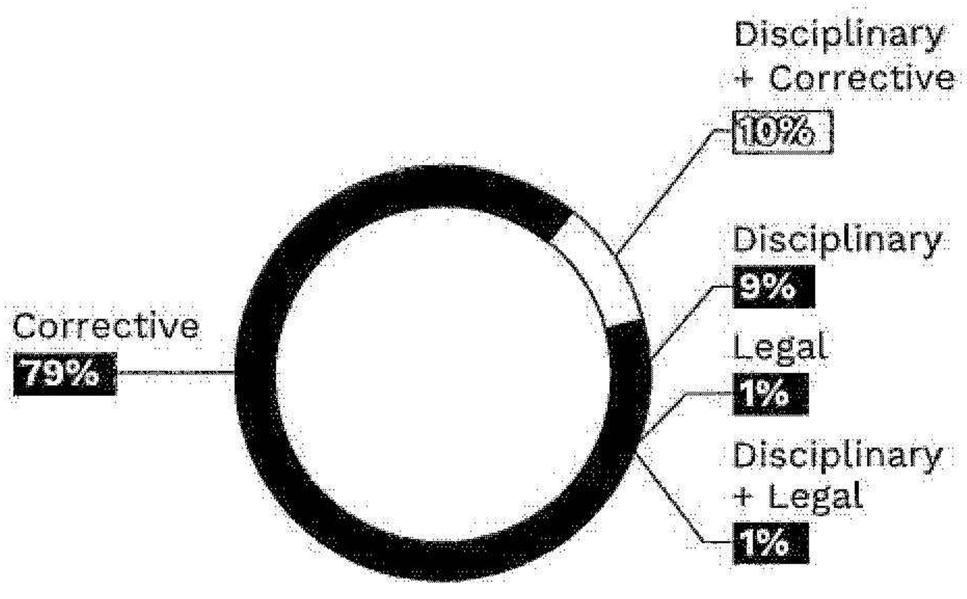


Results of investigations following alerts



Measures taken following alerts

(all channels combined)



3.

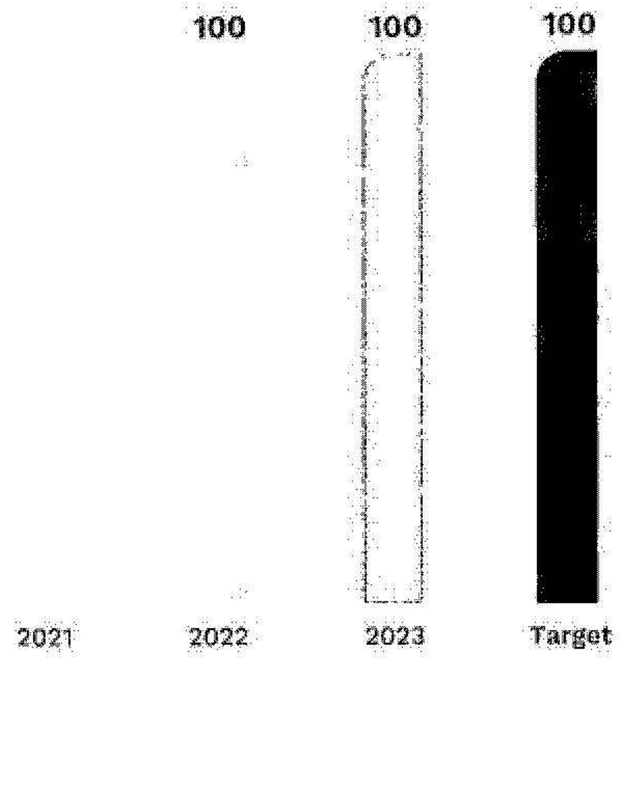
3.2.2.5 Group key performance indicator

Group key performance indicator

The key performance indicator at Group level is the time taken to respond to the whistleblower, informing the latter of the admissibility of his/her report and on whether the whistleblowing processing procedure will continue. This response time must not exceed one month from receipt of the whistleblowing report. The target for this indicator is therefore 100% each year.

It contributes to continually demonstrating the importance EDF attaches to duly taking account of whistleblowing alerts, and the resources implemented to process all alerts reported by the whistleblowers *via* the Group level whistleblowing system.

Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure (in %)



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3.3.3 Equality, diversity and inclusion[1]

In keeping with its responsibility to promote equality, respect for diversity and inclusive values, the EDF group is committed, without overriding the managerial independence of regulated infrastructure operators, to developing concrete action to promote equality in the workplace and occupational and social integration for disabled people, combating sexism, violence and all forms of discrimination, and developing support for parents. As a socially responsible employer, the Group is committed to maintaining and perfecting a high level of social dialogue and strives to secure the skills required for the Group's business lines over the long term, by integrating all aspects of sustainable development into its operations and projects and giving employees an opportunity to develop their employability throughout their careers.

2023 was extremely busy across all the dimensions of this commitment to equality, diversity and inclusion, and this period was notably marked by:

- the signature, on 12 January 2023, unanimously by the trade union organisations, of the 12th certified collective agreement for equal opportunities and professional inclusion of people with disabilities for the period 2023-2025;
- the renewal of international certification with the GEEIS (Gender Equality European and International Standard) label for the EDF group, as well as for EDF and EDF Energy.

This label makes it possible to assess the quality and relevance of their commitments in favour of gender diversity and professional equality, on the one hand, and in favour of diversity and inclusion, on the other.

The signature of a GEEIS AI commitment charter also underlined the Group's commitment to fighting stereotypes by deploying inclusive artificial intelligence without gender stereotypes across all business processes and environments.

3.3.3.1 Workplace equality

As part of its CSR commitments, the Global CSR Agreement and its Ethics Charter, the EDF group is committed to and sets objectives for professional equality between women and men, measures the progress made, and deploys appropriate actions. The EDF group's professional equality policy is based on principles such as equal treatment of women and men throughout their professional lives; condemning any behaviour or practice that discriminates against employees; and EDF's contribution to changing attitudes.

3.3.3.1.1 Reinforcing the Group's commitment

In 2021, EDF's Executive Committee decided to strengthen the Company's gender diversity ambitions, which were formalised at the Group level in 2019. The Group's gender diversity ambition is being implemented in three areas.

1st area: Break the glass ceiling, at all hierarchical levels

A new target for female employment

A new Group-wide target for the number of women has been set for 2021, covering all hierarchical levels: 33% in 2026 and 40% in 2030.

2nd area: Inspire interest in technical and digital professions

EDF wishes to develop gender diversity in science, digital technology and innovation, notably by continuing to raise awareness among young girls of scientific, technical and digital careers in order to encourage them to take up careers in digital technology, and by better integrating gender diversity into the Group's innovation programmes (Écosystème Pulse, Parlons Énergies, Dispositif Y). Each relevant entity develops a programme to include young women in STEMs (Science, Technology, Engineering, Mathematics). For more about bringing women into technical occupations, see section 3.3.3.8.3 "Recruitment priorities".

3rd area: Guarantee non-sexist communication, promoting balanced M/F representation

EDF group is aiming at developing gender diversity in internal and external representation of the Group, mainly by encouraging women to take part in the Group's public interventions (EDF is a signatory of the #jamaissanselle [#neverwithouther] charter).

3.3.3.1.2 Results in 2023

The results concern the proportion of women in the Group's workforce as a whole, in the executive category (managers) and on Management Committees.

Results by hierarchical level

(in %)	2026 Target	2021	2022	2023
Female employees	33	25.9	25.9	26.3
Female managers	33	28.9	29	29.3
Women on the Management Committees	33	29.8	30.8	31.7

Details for female employees

	2021	2022	2023
Male workforce √	123,915	127,130	132,264
Female workforce √	43,242	44,360	47,286
Women/workforce *(in %)*	25.9	25.9	26.3

√ 2023 indicator subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.

Currently, 26% of the EDF group's workforce is female (30% at EDF), which places it in the top half of the main French industrial groups. Although the increase in this rate has slowed slightly in recent years (impact of the "15 years, three children" measure, reduction in the number of new hires), it is still increasing at double the average rate of French companies, for all sectors combined.

EDF strives to guarantee equal access to professional and promotional training, through, for example, a scheme to cover additional childcare costs for parents undergoing training, with a view to securing comparable career paths for women and men.

(1) The EDF group's network of women and men for workplace equality. Created in 2004, it has nearly 4,300 members.

The percentage of women among the Group's managers has doubled since 2002. It was 29.3% in 2023.

	2021	2022	2023
Male managers	39,345	41,061	43,975
Female managers	15,986	16,803	18,219
Women/managers *(in %)*	28.9	29	29.3
Female managers/female employees *(in %)*	37	37.9	38.5

Group key performance indicator

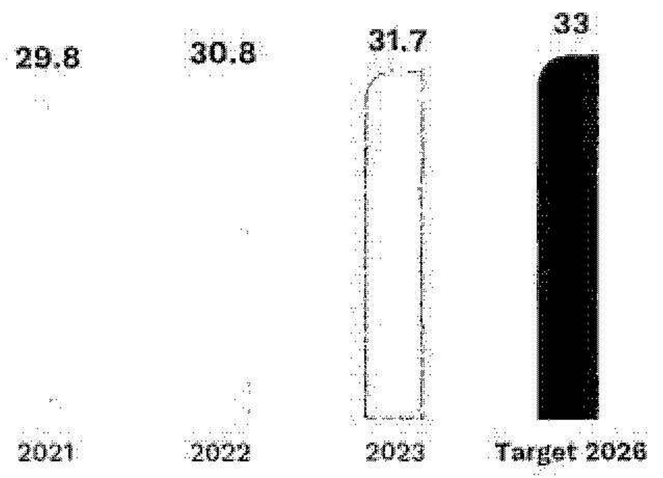
The key performance indicator used by the Group for "Equality, diversity, inclusion" is the percentage of women among the Management Committees of Group entities. Women formed 31.7% of Management Committee members at the end of 2023, an increase of 1 point compared with the previous year.

Over 10 years, the percentage of women in the Group's Management Committees has increased by almost 50% (it was slightly less than 20% at the end of 2011). It also reflects the dynamic observed, more generally, in the Company's managerial body becoming more female.

Article 14 of law no. 2021-1774 of 24 December 2021 (so-called "Rixain law"), aimed at accelerating economic and professional equality, creates an obligation of balanced representation of men and women among the executive managers and the members of management bodies in large companies, also creating an obligation of transparency in this respect[1].

At the end of 2023, the percentage of women executive managers at EDF was 26.5%. Succession plans for executive positions are always mixed-gender. In addition, schemes such as TALENTS 2.0 help identify a more diverse range of talent, at all stages in a career.

Gender balance index: percentage of women in the Management Committees of the Group's entities (in %)



(1) *For EDF, this first publication in the framework the Rixain law was made in 2022 in respect of the data as of 31 December 2021: the percentage of women executive managers at EDF was 23.95%, and the percentage of women on EDF's governing body (Executive Committee) was 15.4% on the same date.*

The proportion of women on the Board of Directors is in compliance with the statutory threshold. The Nominations, Remuneration, and Governance Committee and the Corporate Social Responsibility Committee are chaired by women (see section 4.2.1 "Members of the Board of Directors").

Law no. 2021-1774 of 24 December 2021 (the so-called "Rixain" law), supplemented by Decree no. 2022-680 of 26 April 2022, requires all companies with more than 1,000 employees to achieve a 30% quota for women among executive managers and members of management bodies[1] starting 1 March 2026, with this figure being raised to 40% as of 1 March 2029.

As of 31 December 2023, at EDF SA:

- 26.5% of company executives were women (compared to 24.1% at the end of 2022);
- 28.6% of the members of its governing body (Executive Committee) were women, compared to 15.4% at the end of 2022.

The diversity, and notably the gender balance, of managers and future managers are essential drivers of the Group's transformation. EDF therefore boosted its action plan in 2023 in order to meet this challenge, as well as the obligations set by the Rixain law. In order to accelerate the increase in the proportion of women managers, by working at the various stages of career management that can lead to this pathway, this action plan will be strengthened and rolled out more widely in 2024, according to the following axes:

- preparing for the roll-out of a new system for identifying and supporting future leaders, which is both broader and more inclusive, for each manager, woman or man, but also more attractive for younger generations, promoting diversity;
- increasing the accountability of executives in this work, with the integration in 2024 of a new mixed performance criterion in the bonuses of the Group's executives, in addition to the existing criterion in the long-term remuneration plan;
- strengthening the requirement for gender diversity in applications for executive positions in the appointment bodies;
- strengthening and expanding existing specific support for future women leaders (mentoring, coaching, co-development, leadership disclosure, etc.);

(1) The Company's management bodies are defined as EDF's Executive Committee.

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- setting up support for Management Committees in raising awareness of cognitive biases and inclusive management, allowing the integration of gender issues into the managerial projects of entities;
- sourcing of potential women managers outside the company to further increase the representation of women in the pool.

With regard to results in terms of gender diversity in the top 10% of functions with highest responsibility, at 31 December 2023, women accounted for 30.6% of the Company's 10% most senior positions[1], compared with 29.5% at 31 December 2021.

Professional gender equality index*

	Published in 2021 in respect of 2020	Published in 2022 in respect of 2021	Published in 2023 in respect of 2022
Professional gender equality index (EDF)	95/100	90/100	90/100

** Index published before 1 March reference year+1 in respect of reference year.*

EDF scored the maximum number of points on this index for the first four indicators relating to the pay gap and equal treatment of men and women in the company, but gave up five points because there was one less woman among the company's ten highest earners.

In-depth work were conducted on equal pay for women and men, in partnership with the Institut national des études démographiques (National Institute for Demographic Studies or INED), to identify the sources of the gender pay gap, with a particular focus on the impact of additional pay components. Analyses have been carried out at the Division level, and social dialogue on the subject is ongoing (see section 3.5.3 "Social dialogue").

3.3.3.2 Combating sexism and violence

The EDF group is committed to preventing and combating all forms of violence against women, in the workplace (sexism, harassment) and also domestic and family violence (support, guidance and job retention). The aim is to train and raise the awareness of managers and HR personnel on the subjects of sexism and both moral and sexual harassment.

3.3.3.2.1 Combating sexism

As early as 2016, EDF was the first company to earn the "*Sexisme, pas notre genre*" (Sexism is not for us) label. The company acts with the support of the *ÉNERGIES Mixité!* network (formerly *Énergies de Femmes*) and its more than 4,200 members. With the help of this network, a new "sexism barometer" was set up as part of the #StOpE multi-company initiative, of which EDF has been a member since its inception. In 2023, nearly 12,000 Group employees took part.

The e-learning programme dedicated to the prevention of ordinary sexism was attended by 3,057 employees on the e-campus (*i.e. 14,893 employees in aggregate since it went online*). Equally, 919 employees took part in an e-learning module on gender-based and sexual violence in 2023.

An e-learning programme intended to prevent the risk of moral or sexual harassment was deployed for all target groups (management, HR, staff representatives, medical and social teams and employees). It was taken by 700 EDF employees and managers in 2023 (a total of 1,239 since it went online). Similar approaches are being deployed by EDF UK and Luminus.

3.3.3.2.2 Combating domestic and family violence

Support, awareness, assistance, and care for victims

These measures were operationally implemented in partnership with the Company's medical and social teams and the "*FIT, une femme un toit*" association in particular. In 2023, EDF has once again taken on board, assisted, supported and guided 168 employees who were victims of domestic violence, with over 653 employees (628 women and 25 men) who received help between 2019 and 2023 (one victim almost every three days).

Operational system

A toll-free hotline for all employees of the Company, operating seven days a week, to allow employees to confide in someone and obtain advice on all harassment and discrimination issues. A support team (with in-house and external skills) intervenes in investigations carried out when alerts are reported.

3.3.3.3 Parenting support measures

EDF is strengthening its support systems for parents and family carers, under the "Family Rights" business-segment agreement signed on 15 December 2017: implementing new rights for family carers (access to an advice and services platform, additional pay for three family carers' leave entitlements – to help a disabled family member or a family member with loss of autonomy); creating paid family care leave beyond parental leave available to both women and men that takes into account the different types of contemporary families, including single-parent families and parents of handicapped children; giving parents the option to lengthen their paternity and childcare leave if they so wish (with a basic minimum of four weeks' paternity leave and 16 weeks of maternity leave); childcare facilities (financial aid for children's study expenses; leave system for CESU employees (remunerated by a *chèque emploi service universel* [universal service employment cheque] with 80% prefinancing by the company for parents of children below 12 years of age, and additional assistance for isolated parents or parents of handicapped children).

Breast-feeding mothers are supported by entitlement to paid authorised absence of up to one hour per day (not prorated on the basis of time worked), for one year from the date of the child's birth.

(1) This percentage is calculated for positions with the highest responsibility from a sample of 6,183 people, representing 10% of the Company's workforce at 31 December 2023, notably including executive managers and senior managers. Among EDF SA executive managers, the percentage of women at 31 December 2023 was 26.5%.

3.3.3.4 Disability plan

3.3.3.4.1 A long-standing commitment

EDF is one of the first major French companies to be involved in the professional and social integration of people with disabilities, and is committed to doing so well beyond the legal framework. The 12th EDF agreement for equal rights and equal opportunity, and the occupational inclusion of disabled people, was signed on 11 January 2023 for the 2023-2025 period. EDF Renewables has also extended its agreement in December 2022 to cover the same period. Framatome and Enedis have agreements that are valid until end 2023. Its goal is also to encourage sports for all. In 1992, EDF became a partner of the Fédération française handisport (French Federation of Disability Sports). EDF is also a partner of the 2024 Paralympic Games.

	2021	2022	2023
Number of employees with disabilities	6,454	6,791	7,054

3.3.3.4.2 Integration and inclusion

The Group pays attention to the integration of disabled employees throughout their careers.

The findings of the IPSOS survey on quality-of-life work by employees recognised as disabled (conducted in 2021 at EDF) have furnished employee-relations and professional dialogue throughout 2023.

The Group's commitment to the occupational integration of disabled people is a long-term commitment, but the issues to be addressed are constantly changing. As an example, this is the case for the digital issue, given priority in the latest EDF handicap agreements, and leading to the signature in February 2022 of a first policy on access to digital technology at EDF. The commitments of this policy are implemented in stages, notably through the appointment of digital accessibility officers for each of EDF's major business lines, then over 2023, by making inventories of tools and action plans. Awareness-raising among IS players is under way.

Several Group companies in France have introduced schemes, as part of their disability agreements, to provide them with occasional, back-up aid to offset the challenges they face in the workplace. Applications for aid are examined anonymously, in a multidisciplinary framework.

The situations of parents of children with disabilities are now taken into account in the related rights.

In connection with their approved agreements, several Group companies in France have also introduced measures to facilitate the continued employment of disabled employees during the second half or at the end of their careers.

3.3.3.4.3 Purchasing from companies who employ disabled people only (STPA)

See also section 3.4.2.3.1 "Share of local purchasing – Solidarity-based purchasing".

3.3.3.5 Preventing discrimination

3.3.3.5.1 A clear, proactive framework

Backgrounds and racial discrimination

In order to give concrete form to its commitments under the Global CSR Agreement and its Ethics Charter, the EDF group has addressed the issue of cultural backgrounds, and more specifically racism in the workplace, in a reference document for its managers and HR staff.

Religion in the workplace

The Company will perform better if its employees feel respected, including respect for their personal beliefs, as this will allow them to fully commit their skills to their work teams.

The EDF group has been committed to respecting religion in the workplace since 2008, and published a first set of guidelines in 2010 (updated in 2016), setting out guidelines for managers and HR officers to help them understand, analyse and act in compliance with the law.

Respect for different sexual orientations or gender identities in the workplace

The Group has adopted a code of ethics based on three main values: respect, solidarity and responsibility. Through these values, all employees should flourish in the workplace, regardless of their sexual orientation or gender identities.

EDF is a partner of *L'Autre Cercle* and has been a signatory of the LGBT+ charter since 2015. It regularly participates in the inter-company perception survey supported by L'Autre Cercle. EDF has also been a partner and sponsor of the Energies LGBT+ network since its creation in 2021 (the network took over from the Energay association, which had existed since 2010). Since 2015, HR and managers have been provided with a benchmark document on "respect for sexual orientations in the workplace". EDF has also designed, in partnership with Energay, a process to accompany and support transitioning employees within the Group. "Supporting transitioning employees at EDF – Respect for gender identity" guidelines were published.

Age discrimination

The Company has set up a "generation contract" negotiated with the trade unions, which includes commitments for the sustainable integration of young people, for the employment of seniors, and for the transmission of knowledge and skills among generations.

Sensitive medical situations

The Group has taken initiatives to encourage employees with health problems to remain at work. Since 2020, EDF has been a partner in the experimental programme "Work and breast cancer in companies and organisations" run by the association "Le Nouvel Institut".

3.3.3.5.2 Tools available to all to combat discrimination

To implement these policies of inclusion and equal opportunity, EDF has produced educational and training materials for its entire workforce, whilst still providing managers and HR staff with more targeted materials. For example, in 2018, Enedis published a set of guidelines called "Deciding without discrimination". The Company trains everyone involved in its recruitment process, using training course on how to "recruit without discrimination". To raise employee awareness of diversity and encourage new inclusive practices and methods of organisation, the Group has launched a digital training programme called "Vivre ensemble la diversité" ("Experiencing Diversity Together"), a serious game completed by 1,825 employees in 2023 (making an aggregate 18,023 employees since it went online).

3.3.3.6 Skills development

The skills development policy, "Groupe France", updated in 2022, aims to boost the transformation of training and professional capacity-building practices with a view to securing the skills of the Group's businesses over the long term, in the context of the development of new nuclear power. Its aim is to move from training and employment management to skills management, and to anchor the acquisition of learning within the framework of a learning company and knowledge management, approaches whose objective is to improve the circulation and capitalisation of knowledge by encouraging the transfer, sharing, storage and dissemination thereof.

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3.3.3.6.1 Investing in human capital and facilitating employee career pathways

The Group invested nearly €600 million in 2023, providing nearly 7.3 million hours of training and professional capacity-building. The optimisation of the training offer catalogue has made it possible to facilitate the user experience for employees and managers, equally thanks to a dedicated search engine, hosted on the Group intranet and which makes it possible to find all the offers, across all methods. A common interface is also being rolled out to bring together the two current Group digital platforms, ecampus for all employees, and ecampusmanagers for managers.

The Group now offers a range of teaching methods, from classroom-based training to knowledge management, including on-the-job and supported learning, virtual classes and all combinations of blended learning methods. This means that nearly a quarter of the training and professional capacity-building hours consumed were consumed digitally (EDF SA figure). Furthermore, work has been initiated to enable the selection of external content providers, who will then interface with our platforms to optimise our catalogue of soft skills and tertiary and cross-disciplinary training courses.

	2021	2022	2023
Share of employees who benefited from a skills development action (rate of access to training) *(in %)*	79	79	80.7
Number of skills development hours	5,948,618	6,433,821	7,264,806
Number of skills development hours per employee in the workforce	36	37	40
Number of skills development hours per trained employee	45	48	50
Employees who have taken part in a skills development initiative	132,018	134,683	144,682
Number of employees who have not taken part in a skills development initiative for three or more years	7,420	8,113	7,704
Number of employees who attended Group Campus training	56,800	92,095	101,057
Employees trained using digital resources		119,835	121,729

3.3.3.6.2 Being prepared for the Group's industrial challenges

The development of new nuclear and all of the Group's industrial challenges require an acceleration in the identification of profiles, as well as the deployment of innovative systems enabling these profiles to be rapidly operational.

To this end, a professional qualification, recognised in the French National Directory of Professional Certifications (Répertoire national des certifications professionnelles - RNCP), has been developed internally by players in the training sector, with the support of the Group's professional training centres (Centres de formation d'apprentis - CFA) and public educational institutions. The first two classes of nuclear operations technicians graduated in 2023.

The EDF group has joined forces with the public authorities and industry players in order to develop initial training in line with its skills challenges. The aim is also to increase the attractiveness of the professions concerned and of the training available, notably through the Université des Métiers du Nucléaire (UMN(1)), by raising awareness of the nuclear professions in collaboration with industry and regional training bodies, in order to adapt the training on offer to the needs of the industry. With regard to initial training, efforts focus on integrating a sector-specific approach into cross-functional training courses, from the upper high school level through to post-graduate education, which are not specific to the nuclear industry. In 2023, training modules targeting these skills were integrated into 10 professional and graduate diplomas, as well as 10 engineering schools. For example, a comparable approach is used in the new energy systems sector. Moreover, the new "network schools for the energy transition" were set up in 2023 by the electricity networks sector (electricity network classes in 50 vocational high schools with dedicated teaching and also mentoring by Group employees).

In terms of retraining, the company is continuing its work through work-study programmes, particularly in areas that are under pressure or undergoing change. Building on the success it had with data analysts, EDF is implementing this type of approach in new courses on so-called under-pressure jobs (certain fields of generation, engineering, accounting and IT).

3.3.3.6.3 Group talent management

The Talents policy, implemented at the level of the EDF group, describes the principles and criteria for identifying and validating employees with the potential, in the long and short term, for executive level responsibilities. Early identification of high-potential managers, with strong involvement from the Group's executive managers, enables them to be prepared and monitored over the long term, *via* individualised support (career paths, development plan, training) and special networked events. To identify the executive managers of tomorrow, assessments are carried out to evaluate the potential of managers according to a leadership model that is unified at the Group level.

3.3.3.6.4 Support for the Group's executive managers and managers: the Group Management University

The Group Management University (GMU) was created in 2010 to support the development of EDF group managers and executive managers throughout their careers. The GMU has three missions to serve these populations: promoting the development of cross-functional skills, contributing to spreading a common managerial culture, and supporting the transformations of the Group and its environment. The GMU pooled its intelligence to develop the new leadership goal, and has been deploying it since early 2020. It is based on three pillars: openness, commitment and authenticity.

3.3.3.6.5 Skills development in the area of sustainable development

In line with the Company's training policy, there are many training courses available for employees, managers and Directors on sustainable development issues.

In April 2023, a new online training course was offered to all managers, project managers and executives: "Climate Campus: Understanding climate change". Co-constructed with the University of Liège and the Climate Department of EDF R&D, it consists of a digital course and concludes with a live interactive webinar. This "mini-MOOC" aims to (re)clarify the mechanisms of climate change; to place them in context for their teams in order to inform the Company's orientations and news; and to clarify certain points by interacting, live, with experts during the webinar.

The other fully digital training courses made available to all managers and executives are ongoing, such as: "Building a decarbonised electricity mix by 2050: challenges and methodology", or several sections of the "Energy thematic files". The EDF group is also pursuing its training offer "Energy strategic business" for senior executives, "The New World of Energy" targeting the Group's talents, or the "Business and sustainable development" module targeting incoming Group directors.

(1) On this topic, see section 3.3.3.8.2 "Attractiveness of the employer brand".

In France, a comprehensive "environment – sustainable development" training programme features both business line and cross-disciplinary training focusing on themes of environmental management, standards and regulations, and environmental analysis.

	2022	2023
Number of employees trained in "Environment – Sustainable Development"	1,755	1,789
Number of hours of training	19,061	21,093

The "Environment & Society" training course aims to strengthen and standardise the Group's CSR skills. It is organised around four key themes: CSR fundamentals, relations with stakeholders, E&S impacts, and communication, including the use of social networks. Comprising 17 modules spread over eight months, amounting to more than 50 Group experts, and it counts on collective intelligence and experience sharing. Targeting managers already experienced in CSR, the course now provides Afnor Compétences – EDF certification. The third cohort, composed of 26 participants, began in the second half of 2023.

Following on from the Climate Fresk awareness-raising workshop and in conjunction with the "Combating CO_2, it starts with us" initiative, a new 100% digital training programme on the challenges of the ecological transition is now available to employees on the Group's e-learning platform. Structured in two parts, the course makes it possible to develop knowledge of climate change and to identify levers for action at the Company, notably in the Company's support functions: HR, Communication, Marketing, Legal, Purchasing, Risk management, etc.

3.3.3.6.6 Developing a culture of innovation: the EDF Pulse ecosystem

The Company wishes to develop a culture of innovation in-house in order to support its development and transformation in line with its performance needs, the expectations of its employees and customers, and societal changes.

The internal innovation dynamic is structured around the "EDF Pulse" ecosystem, which relies on several levers:

- the EDF Pulse programmes, a set of support mechanisms to help all innovators grow;
- the EDF Pulse awards, a competition started in 2014 to promote "the women and men who are creating and inventing tomorrow's world today", with a section for external start-ups and a section for internal efforts;
- the EDF Pulse community, a network for developing and disseminating best practices in innovation within the Group.

3.3.3.7 Remuneration

Global remuneration is a key component in recognising the contribution of every staff member to the Group's performance. It contributes to employee engagement, increases the loyalty of talent and adds to the Group's attractiveness.

The policy on remuneration and social benefits updated at 20 June 2022 defines the principles underpinning the companies of the Group including EDF.

It includes items relating to:

- the main, variable and additional remuneration;
- social benefits (mutual insurance, death and disability insurance, family, housing, etc.);
- the development of employee shareholding;
- employee savings incentives.

It is based on appropriate governance based on an annual review, carried out by the Group HR department and harmonised for EDF and its Tier 1 subsidiaries (currently Enedis, Luminus, Edison, Framatome, Dalkia, EDF Renewables, EDF Trading and EDF Energy). Tier 1 subsidiaries are monitored within their parent company and Tier 2 subsidiaries are monitored by Tier 1 subsidiaries.

3.3.3.7.1 Fair and competitive global remuneration

The Group is committed to offering its employees fair and competitive remuneration, while also paying great attention to the level of social welfare it proposes, particularly in terms of cover against the major risks of life.

Global remuneration policy:

- covers all employees of the main companies controlled by the Group. The Group's main companies' remuneration and social welfare systems are reviewed on the basis of this policy;
- is guided by four main principles:
  - > competitiveness with the external market,
  - > internal equity and consistency,
  - > financial sustainability,
  - > readability for employees and managers.

It is based on fixed remuneration and individual and/or collective variable remuneration which serves to recognise the achievement of objectives, connected to the companies' economic results. This policy must also ensure consistency in the level of job remuneration with the market, taking into account all the benefits conferred upon employees.

The priority is to establish a direct and visible link between the employee's contribution and the related remuneration. The managers and the HR business segment are responsible for implementing these principles, including allowing for differentiation in order to provide individualised support, adhering to a defined framework.

The Group's companies guarantee both the meeting of the minimum legal or professional requirements in each country, and the absence of discrimination.

The Group companies communicate on their remuneration rules and systems, ensuring maximum transparency and adhering to the principles set out. Each EDF group employee must have visibility on his/her total compensation. The manager, with the HR function, is their prime contact. The annual career assessment interviews provide a key opportunity for exchanging on this topic.

EDF is reaffirming its priorities in terms of recognition and has updated its policies by:

- improving the integration of recognition into its managerial practices and processes;
- strengthening the direct, unbiased and obvious link between personal contribution (performance, ability to adapt and take the initiative), professional development and financial recognition;
- developing variable remuneration schemes, linked to the Company's financial performance, to recognise through differentiation.

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	2021	2022	2023
Equity ratio/Average remuneration	6.6	6.3	5.8
Equity ratio/Median remuneration	7.2	6.8	6.2

The employees taken into account for the calculation of the above ratios are all the full-time equivalent employees of EDF in France, continuously present over the year 2023, numbering approximately 60,000 employees, which represents all of EDF's employees in France and nearly 50% of the Group's employees in France. EDF employees' salaries taken into account include the fixed salary, the variable portion and all bonuses, including those related to the status of the EGIs, as well as any benefits in kind. See also section 4.6.1.1 "Remuneration policy applicable to the Chairman and Chief Executive Officer".

3.3.3.7.2 Variable remuneration plans to boost performance

Variable remuneration

Within the Group, most employees have individual or collective performance-based variable remuneration. The terms and conditions of this variable remuneration differ from one Group company to another on the basis of historical agreements or applicable regulations.

Profit-sharing

In France, EDF employees and Enedis employees benefit from a profit-sharing scheme. Most of the Group's European subsidiaries have similar schemes. EDF and Enedis employees can choose either to receive payment and/or to invest it into either the Group savings plan (PEG) or the collective retirement savings plan (PERCO). In a constrained economic context, a policy of matching contribution is maintained. Since 2020, EDF's profit-sharing agreements, which are usually triennial, have been concluded for a one-year period. EDF's 2023 profit-sharing agreement was signed unanimously by the trade union organisations. It provides for the inclusion of minimum remuneration in the calculation of profit-sharing. For EDF, the nature and weighting of the indicators were reviewed for 2023 to focus on financial and generation criteria. EDF and Enedis require the profit-sharing amount payable to be set based on the meeting of national objectives reflecting the different components of the companies' performances (economic, business lines, health & safety, social and environmental).

3.3.3.7.3 Employee savings policy

The employee savings schemes are open to employees of EDF and of the Group's French companies in which EDF owns directly or indirectly at least 40% of the share capital and which have signed up to the Group savings plan (PEG) and/or the collective retirement savings plan (PERCO).

3.3.3.7.3.1 Group savings plan (PEG)

A full range of diversified mutual funds is available for subscription, including conservative funds mainly invested in bonds and money market investments, balanced funds and dynamic funds, mainly invested in shares. A dedicated, solidarity-based, low-carbon fund aims to invest in the energy transition while respecting agreements that limit CO_2 emissions. Incentives, profit-sharing (where applicable), individual payments and transfers from time savings accounts may be matched according to the conditions negotiated in each company.

The EDF group's PEG	2022	2023
Number of employees, retirees and former employees of the Group holding a PEG	203,382	196,833
Share of total population *(in %)*	97.4	96.6
Outstanding amounts *(in billions of euros)*	5.3	5.6

3.3.3.7.3.2 Collective Retirement Savings Plan (PERCO)

The EDF group's PERCO is made up of two FCPE profit-sharing funds with a total of eight investment vehicles: one solidarity fund and one set-maturity fund. It is possible to manage a PERCO either on an unrestricted basis, which means it is possible to invest in any sub-fund regardless of the retirement date, or on a controlled basis, in which case the savings will be automatically de-risked as the maturity date approaches (retirement, purchase of main residence). Incentives, profit-sharing (where applicable), individual payments and transfers from time savings accounts may be matched according to the conditions negotiated in each company.

EDF group PERCO	2022	2023
Number of employees, retirees and former employees of the Group holding a Group Collective Retirement Savings Plan	89,723	92,417
Share of total population *(in %)*	42.29	45.4
Outstanding amounts *(in billions of euros)*	1.0	1.2

It will be noted that 30% of Group employee savings (PEG + PERCO) is invested at the date hereof in funds aligned with Article 8 of the European Union SFDR (Sustainable Finance Disclosure Regulation).

3.3.3.7.4 Employee shareholdings

The simplified public tender offer initiated by the French State on the shares and OCEANEs of EDF and launched in the autumn of 2022 ended with the mandatory delisting on 8 June 2023.

The former employee shareholding funds have been transformed into so-called "prudent" management funds, as provided for by law, and will remain in place for as long as the litigation continues. They are to disappear once the litigation ends.

At the time of the mandatory buyback:

- the PEG's employee shareholding funds represented 102,705 unit holders, *i.e.* more than 50% of the PEG population and nearly *80,000* employees present;
- the registered shares held by persons identified as employees represented 37,066 individuals.

3.3.3.8 Attract and retain talent

3.3.3.8.1 EDF remains one of the top industrial recruiters

The French energy transition sectors will have to recruit several hundred thousand individuals over the next 10 years, including more than 10,000 per year in the nuclear sector alone, according to the Match Study[1]. These massive hires require the mobilisation of all players in the energy transition ecosystem. To meet this challenge, the EDF group launched the Operational Excellence Skills project in 2023. The actions carried out as part of this "project" are planned for the extended company, and across the regions where they are rolled out in practice. They are implemented in partnership with players in the national education system, the public employment services, and associations, together with local authorities.

In this context of sharply increasing skills needs and of unprecedented tensions on available resources, the EDF group, a major player in the energy transition, is one of the main industrial recruiters with 15,515 permanent hires worldwide in 2023, including 10,423 in France. In addition, the Group welcomes and supports 8,894 work-study trainees and 3,500 interns.

HUMAN RESOURCES	Unit	2021	2022	2023
Hires*	Number	10,254	12,992	15,515
Retirement departures/inactive employees	Number	3,333	3,403	3,328
Resignations	Number	3,522	4,761	4,314
Redundancies, dismissals, people made inactive	Number	1,524	1,086	975
Turnover	%	5.6	6.5	6.8
Other arrivals	Number	9,856	12,594	11,776
Other departures	Number	9,940	10,396	11,141

** The Hires indicator takes into account permanent hires at Group level.*

3.3.3.8.2 Attractiveness of the employer brand

In order to attract candidates who are of interest to the Group, the Company relies on a CSR and innovative Group employer brand. EDF remains one of the most attractive employers for students, work-study trainees and young graduates, and this is confirmed by this year's rankings:

Epoka ranking[2]

As part of the 2024 edition of the Epoka x Ifop x Occurrence awards for "Preferred companies for students and young graduates", EDF came first in the ranking of companies in the "Energy/Utilities" sector in terms of employer attractiveness.

Universum ranking[3]

In 2023, EDF maintained its no. 4 position in the CSR ranking conducted by Universum among students and young workers with a postgraduate degree.

In terms of overall attractiveness, EDF holds the no. 3 position for experienced engineers (up one position), no. 5 position for graduates (up two positions), no. 1 position for experienced graduates (stable) and no. 7 position for engineering students (up one position).

IFOP[4]

EDF was ranked third among employer brands and third among those over 35. EDF remained in sixth place in the ranking of the most admired companies.

Happy Trainees[5]

For the eighth consecutive year, EDF is among the preferred companies in the overall ranking measuring the level of satisfaction of work-study students and interns for 2023 (companies welcoming more than 1,000 young work-study students and interns) with a 90.8% recommendation rate.

3.3.3.8.3 Attracting and reinforcing the attractiveness of the energy transition professions

Faced with the extent of the need for skills to succeed in the energy transition, the EDF group and its partners are multiplying initiatives to attract young people and workers and to enhance the image of the industry sector.

FORINDUSTRIE

This is, for example, the objective of the FORINDUSTRIE event, which presents the diversity and richness of the energy professions to young middle school students, high school students, university students, their teachers, as well as job seekers. This immersive and fun experience *via* a metaverse was rolled out throughout France and brought together around 52,041 participants, in 2,008 classes and 574 working groups. Over 525,000 connections were recorded during the great challenge.

Partner in the "CGénial" competition

In 2023, EDF awarded the Génialissime prize to the Collège Hubert-Fillay of the Orléans-Tours academy, for their project "finding a way to reduce indoor temperatures during heat waves". Prizewinners are allowed to take part in international scientific contests, and to visit companies so as to see in real life the openings for students in science and technology.

The nuclear sector

The Université des Métiers du Nucléaire (UMN) created in 2021 by players in the nuclear sector, UFE (*Union française de l'électricité*), UIMM, France Industrie and Pôle Emploi to contribute to securing the skills needed in the sector, carries out activities to support projects in the regions relating to the France 2030 calls for projects.

In 2022, the sector set up its own career and training portal "My future in nuclear energy", targeting a large audience of young high school and university graduates, employees undergoing retraining, job seekers, and prescribers (parents, middle and high school teachers, local Pôle Emploi employment/mission advisors, National Education guidance counsellors, guidance officers in the regions).

It is in this spirit that the first week of nuclear professions organised by Pôle Emploi, the UMN and their partners made it possible to coordinate 278 events highlighting all the professions in the sector and to address a wide range of audiences in 12 regions. Over 8,000 job seekers took part in the events provided in this context.

(1) https://www.gifen.fr/
(2) entreprises-preferees2022.eventmaker.io/
(3) universumglobal.com/fr/classements-etudiants-2022/.
(4) ifop.com/publication/les-entreprises-francaises-les-plus-admirees-vague-3/
(5) https://www.edf.fr/en/edf-join-us/our-human-relations-news/edf-and-its-students-a-winning-combination

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Network sector

The network sector relies on the "network schools for the energy transition", on the basis of a partnership signed on 20 March 2023 with major industrial partners (FNTP, SERCE, SNER, GIMELEC, SYCABEL) around four pillars: business line attractiveness, skills development, diversification of sourcing and career path support.

A first major action on attractiveness and skills was put in place at the start of the 2023 school year with the creation of network classes in vocational high schools, involving courses incorporating elements dedicated to the professions in the sector, and employee mentoring to support the success of high school students. Other actions were undertaken to train guidance prescribers at the school on the energy transition and the skills that it requires.

The new energy services sector

Initiatives were also initiated in the new energy services sector, such as a project to create an energy transition label and the development of a platform to share with and recommend to companies in the sector applications that are of high quality but which were not selected during recruitment processes.

A marked increase in Group recruitment in France in industrial, technical and digital skills

In 2023, the EDF group increased its recruitment volume by 21% compared with 2022 while continuing to prioritise the employability of its workforce and targeting recruitment involving profiles not available in-house.

This year, recruitment profiles addressed needs in terms of industrial, technical and digital skills, as well as customer relations. The business lines concerned are those of nuclear generation for the work necessary to extend the French nuclear fleet, as well as the engineering business lines of EPR2 projects, renewable energies, energy services, networks to cope with connection needs of renewable energies and charging stations, and those of information technology. These notably include mechanical and electrical maintenance engineers and technicians, tap engineers, welders, electrical project design engineers, design office technicians, contract managers, cybersecurity experts, data scientists and, to a lesser extent, customer advisers, to meet the needs of a growing customer portfolio and increasingly complex requirements.

The Group is continuing its commitment to hiring young graduates from work-study programmes and internships, while increasing the proportion of experienced graduates.

Recruitment in technical professions (EDF SA)	2021	2022	2023
Percentage of young graduates recruited through work-study programmes *(in %)*	23	16	16
Percentage of young graduates recruited from end-of-study internships *(in %)*	6	4	6
Share of experienced technicians and engineers among hires *(in %)*	40	49	53

To attract and integrate skills in the Group, in 2023 EDF continued to modernise its recruitment processes and improve them with more innovative and digital tools (matching tools offered to candidates) while diversifying its sourcing. Actions were undertaken to strengthen coordination across the Group in terms of relations with schools and the sharing of candidate pools.

Modernisation of the recruitment process

Work was undertaken in 2023 to optimise the duration of each stage of the recruitment process and of response times to candidates. Moreover, a breadcrumb trail in the application tunnel was set up to maintain contact with candidates. Candidate matching has been operational on the edf.fr/edfrecrute website since March 2023. Following an analysis of their CV, it proposes adapted offers to the candidate and suggests they apply. This matching system has already led to a significant increase in the volume of applications for certain vacancies.

Reinforced coordination across the Group for School Relations and the sharing of candidate pools

In order to maximise the visibility of all EDF group entities among students, a coordination of School Relations and partnerships was set up at Group level, notably through the signature of new agreements by the EDF group (signature of an agreement with the UITs Foundation). The sharing of internal and external pools of candidates at the Group has been strengthened (including work-study programmes and internships).

Joint hiring

The Company continued to pursue joint hiring among departments for generation and nuclear engineering jobs. As soon as the candidate arrives, they are given insight into the next job, so as to be able to follow a dual course of study (engineering/research) and of operational implementation (operation-maintenance).

Sponsoring scheme

The sponsoring scheme set up in 2022 made it possible to recruit 74 employees in 2023. Its aim is to get its staff to do the recruiting. The recommending employee is entitled to a bonus for a "sponsored" hire that materialises. It is an approach that has proved its worth in EDF group subsidiaries, notably Framatome and Dalkia.

Adding more women to technical professions: strong focus of recruitment objectives

In order to accelerate the increase in female recruitment, a "female recruitment" working group is rolling out innovative actions in three areas:

- by innovating in the way of communicating to make it known that women have their place in technical professions, and that the EDF group offers them careers that match their ambitions. For example, the Group promotes "female role models" in its external communications: podcasts by women leaders launched on 8 March 2023, work-study female ambassadors club. The Group has also developed partnerships with influencers on the theme of diversity. In total, 15 pieces of content were published on all networks, for 1.5 million views on TikTok, Instagram and Twitter (X);
- by being present in schools to publicise the professions, making it known that they are all open to women, and thus encouraging young girls/women to pursue technical professions;
- by integrating the issue of female representation across all stages of the recruitment process: brief, drafting of offers, sourcing of candidates. As such, EDF is a member of the À Compétence Égale association, which supports companies in the fight against discrimination in the recruitment process and throughout their professional careers.

Recruitment, integration and employment (EDF SA)	2021	2022	2023
Total number of hires in technical professions	1,219	1,799	2,267
Share of women among hires in technical professions *(in %)*	17	17	18
Total number of hires in the information systems business units	159	269	276
Share of women among hires in information systems professions *(in %)*	21	20	30
Share of women hired as engineers *(in %)*	10.5	16	28

Mixed energy challenge

EDF, in partnership with CEA, SNCF and the PACA region took part in the fifth edition of the mixed energy challenge to increase the number of women in the Energy professions. With the support of working female mentors, more than 60 female students are discovering the benefits of gender diversity at work, in a world that is *a priori* reserved for men, so that they can become aware of stereotypes when making career choices. This is an initiative that the Group decided to promote and scale up in other regions in 2023.

Women's Energy in Transition Award

For the sixth year in a row, Dalkia organised the Women's Energy in Transition Award, which provides financial support to female students and working professionals, with the aim of encouraging women to join training programmes or technical professions related to the energy transition.

EDF has made work-study programmes and end-of-study internships a key component of its skills sourcing and "inclusive industrial" employer brand, meaning that more than one out of every 100 work-study trainees in France is trained by the Group, *i.e.* 5.9% of employees.

3.

Work-study programmes and internships (EDF SA)	2021	2022	2023
Number of work-study trainees	3,518	3,683	3,903
Number of interns received	1,727	1,700	1,702
Number of young graduates hired through work-study programmes or internships	494	703	742
Percentage of young graduates hired through work-study programmes or internships *(in %)*	29	25	23

For many years, the Group has been working for a more inclusive economy, especially for young people. This commitment is also reflected in the actions carried out as part of the group of companies for a more inclusive economy, in which the EDF group is a partner.

The EDF group, with other companies in the Collective, also took part in days to promote inclusion through sport. For example, with the organisation of a "Six concepts" day in Occitanie, on 13 September. This commitment is also reflected in the Group's partnership with the Tous en Stage association, which works to help high school students from disadvantaged neighbourhoods find work placements in France.

"One young person, one mentor"

The EDF group and the EDF group Foundation are mobilised in the "One young person, one mentor" scheme which provides a response to the challenges of youth employment and of renewing skills. More than 1,000 mentorship proposals are open to Group employees[1]. Mentor missions are available throughout France in person and remotely, in formats ranging from one to two hours of commitment per month per mentor over an average duration of six months.

The EDF group's commitment was reaffirmed by the Chairman Luc Rémont during Mentor Day on 26 January 2023, with the goal of reaching 1,300 young mentees by 2025.

At the end of December 2023, 831 mentoring actions had been carried out by Group employees as part of the Human Pacte platform.

EDF, long-standing partner of the "Hello Handicap" trade fair

The EDF group is one of the leading French companies in terms of the professional integration of people with disabilities. As a concrete illustration of this commitment, EDF takes part in the Hello Handicap fair every year, in October. The largest 100% digital fair dedicated to talented individuals with disabilities brings together 120 companies and offers 20,000 job offers throughout France and for all profiles. During the four days of this forum, candidates had the opportunity to conduct interviews with the Company's managers and HR team, without travelling, by telephone or by chat.

Skill mentorship

Under the French Pacte Act, EDF has chosen to develop skills sponsorship. The Company adopted two lines of approach:

- senior skills sponsorship, which constitutes an opportunity to end one's career by placing one's skills at the service of a recognised voluntary entity. This scheme therefore addresses employees who are nearing retirement;
- mid-career sponsorship, which addresses all the Company's employees, enabling them to perform a mission in the general interest according to differing terms and procedures as part of an employee's career path.

In 2023, 60 skills sponsorship contracts were entered into in the Company.

Numerous partnerships at national and regional level

In 2023, EDF continued its national and regional partnerships to facilitate the recruitment of people involved retraining and reintegration. This involves reinforcing partnerships with Pôle Emploi (employment centre) and relationships with organisations such as AFPA and associations such as Apprentis d'Auteuil.

Sector in decline or affected by PSE

EDF is pursuing its responsible and win-win sourcing approach and is offering jobs to employees with experience in sectors that are shrinking or affected by PSEs[2].

(1) *engagement.microdon.fr/humanpacte*
(2) PSE: Employment Protection Plan (*Plan de sauvegarde de l'emploi*).

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3.3.3.8.4 Other innovative sourcing methods

The Group maintains a high level of digital communication in order to maintain its position and role as an indirect "source" *via* social media and online events targeted at the profiles it seeks. Communication on the Group's businesses and subsidiaries has been strengthened, with a particular focus on the Group's recruitment energy-transition related priorities.

Social networks; Web series; Data Challenge; Videos

To boost its communication targeting young people, the EDF group increasingly works with influencers and the TikTok social network.

In 2023, EDF and 16 other major industrial groups launched the fourth edition of the #SmarterMobilityDataChallenge targeting European data science students. This challenge both enables students to move on from theory to practice by responding to one of the greatest challenges of a capital city, and also gets them to create a network of qualified Data Scientists in major companies.

In addition to recruitment, the EDF group launched a new system to talk about its business lines and boost EDF's attractiveness. Over the course of the episodes, recruiters and EDF employees provide essential advice on CVs, cover letters and interviews, *via* the Cards in Hand podcasts. The initiative, available on Spotify, Deezer and the career site EDF Recrute, offers auditors essential tools to optimise their job search, discover the Group's business lines, but also to apply for offers.

Over 10,000 employee ambassadors in 2023

To increase awareness of the energy transition professions in schools and among teachers, the EDF group decided to change its scale from a network of 4,000 employee ambassadors to one of more than 10,000 by 2023.

These active and organised networks of employees (MyJobglass, graduates, EDF c'est moi, Elles bougent, EDF social club) make it possible to introduce as many people as possible to the electrical industry, in videos published on the edf-recrute website and on the EDF YouTube channel. They tell their story with spontaneity and authenticity and show the usefulness of their profession, thus sharing their outlook with young people in search of a meaningful professional future.

3.3.3.9 Detailed information on the Group's workforce

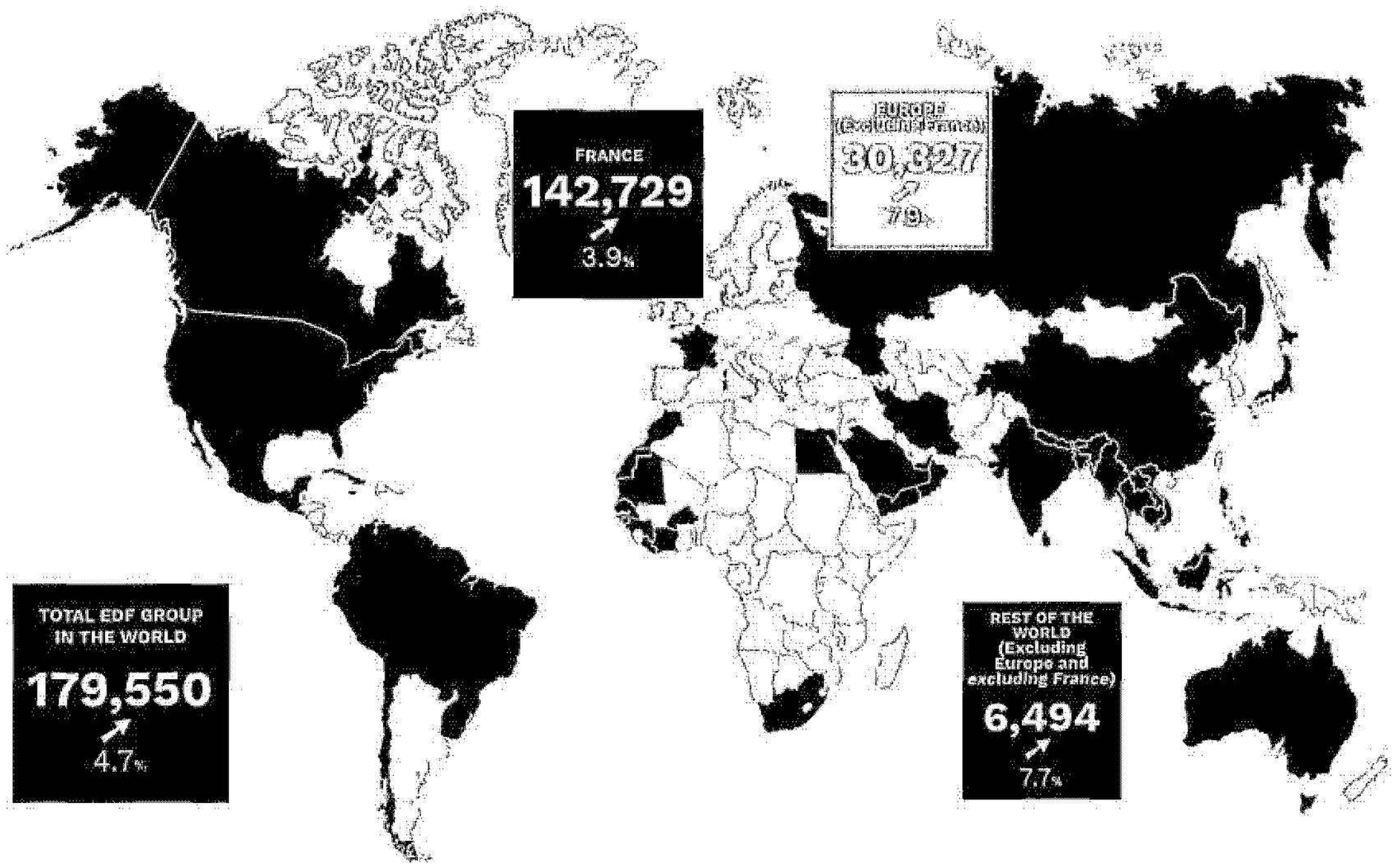
3.3.3.9.1 A workforce trajectory in line with the Group's strategic orientations

The EDF group's consolidated workforce totalled 179,550 employees at 31 December 2023 (with subsidiaries consolidated). The 4.7% increase compared with 2022 is explained by the expanding need for skills driven by the Group's nuclear industrial segment, so as to respond to unprecedented industrial challenges.

3.3.3.9.2 The workforce in France

The EDF group is continuing to transform itself and is adapting its business model to meet the challenges of the energy and ecological transition in France and Europe (maintenance programme for existing power plants, new nuclear, developing renewable energies, developing new commercial offers, particularly electric mobility, heat pumps, optimisation of support functions, digitalisation of internal service sector processes, targeted development abroad). In France, the Group's companies had a total of 142,729 employees as of 31 December 2023. The workforce grew 3.9% compared to 2022. The Group's companies in the nuclear, renewable energy and energy service sector are expanding quickly to support the development of their business, with workforce numbers for Framatome growing 9%, and over 10% for Cyclife. In renewable energies, the workforce increased +31.9% for EDF ENR and +4.8% for EDF Renewables.

3.3.3.9.3 International Group workforce: 96% of the international workforce is European, with 80% in France



3.3.3.9.4 Details of the breakdown at 31 December 2023

Further details on the breakdown of the workforce:

	Unit	2021	2022	2023
By age				
Under 25 years old √	%	7%	7%	8%
From 25 to 35 years old √	%	27%	26%	26%
From 36 to 45 years old √	%	27%	28%	29%
From 46 to 55 years old √	%	26%	25%	25%
56 years old and older √	%	13%	13%	13%
Per category				
Managers	Number	55,324	57,864	62,194
Non-management employees	Number	111,833	113,626	117,356
Part-time work				
Part-time employees	Number	9,234	8,856	9,586

√ 2023 indicator subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.
For gender distribution, see section 3.3.3.1 "Workplace equality".

The breakdown of the workforce appears balanced and consistent with the medium-term need for skills, as a result of the EDF group's employment strategy. The proportion of employees under 35 (33%) stems from the Group's desire to integrate young graduates from work-study programmes and internships. The proportion of managers Group-wide will increase in 2023, notably due to the significant increase in hires for nuclear engineering.

3.3.4 Energy poverty and social innovation

Taking into account the most vulnerable customers is at the heart of the Group's efforts to ensure a fair and inclusive energy transition. It is for this reason that the EDF group confirms and renews its commitment to its most vulnerable customers, by increasing the understanding of this diverse, complex reality, implementing support solutions based on public solidarity schemes and specific initiatives.

3.3.4.1 Understanding energy poverty

The first part of EDF's efforts consists of gaining a better understanding of the complexity of energy poverty situations to be able to identify more precisely the customers most at risk, with a view to providing them with better support.

3.3.4.1.1 Complexity of the problem

The problems due to access to energy and energy poverty keep intensifying in most developed countries, in terms of the number of households concerned or the severity of the impacts encountered. Vulnerability varies according to geographical location, income, and size and type of accommodation, as well as the type of energy used. The pandemic has worsened a growing phenomenon.

And its measurement is complex and varies from one country to another. In France, the National Observatory of Energy Poverty, of which EDF is a partner, reported that 11.9% of the poorest French people spent more than 8% of their income on paying their home energy bills in 2021, and that 26% of French people declared they suffered from the cold during the winter of 2022-2023, for at least 24 hours.

In the United Kingdom, the indicator published by the public authorities showed the country had 6.5 million households in a situation of energy poverty as at the end of October 2023. In Italy and Belgium, there is currently neither a definition nor an indicator relating to energy poverty.

3.3.4.1.2 Initiatives

In these very different national contexts in regulatory, economic, political, and competitive terms, the EDF group is committed to combating energy poverty alongside public and social organisations and associations.

Understanding the R&D programme

EDF R&D runs an "Energy Poverty & Social Innovation" programme, which is tasked with anticipating changes in energy poverty and public policies, and designing and developing innovations to better combat energy poverty. In France, EDF participates in the work of the National Observatory of Energy Poverty.

Identify GEODIP

Since late 2021, the National Observatory of Energy Poverty (ONPE) has enabled local actors to use the GEODIP tool (Geolocate Diagnose Energy Poverty), which makes it possible to visualise energy poverty zones based on housing and household car use.

3.3.4.2 Combating energy poverty

The Group has long been acting to ensure that an electricity bill is not an additional aggravating factor for its most vulnerable customers. EDF's efforts are supported by its solidarity policy, which either serves as a supplement to public programmes or works by deploying special actions of their own. The operational implementation of this policy is based on three components: payment assistance, customer support, and prevention.

3.3.4.2.1 Payment assistance

In addition to the individualised payment terms that may be granted (see section 3.3.4.2.2), the EDF group is closely involved in national and regional public schemes and participates in the "Don d'énergie" (Energy gift) programme.

5.6 million energy vouchers were sent out by the authorities in France in April and May 2023.

For the past 30 years, EDF has had an active partnership with the *Fonds de Solidarité Logement*, granting financial aid to people who have difficulty paying for their housing expenses. With €21.2 million in 2023, EDF is the largest contributor to the *Fonds de Solidarité Logement*, after government agencies.

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3.3.4.2.2 Support initiatives

In November 2021, EDF committed itself to no longer requesting that electricity be cut off for bills unpaid by its residential customers in France. With this measure, EDF goes further than its regulatory obligations outside the winter grace period, by replacing the cut-off with a power limit of 1kVA. This measure took effect on 1 April 2022 and is applied in all cases, unless it is physically or technically impossible to limit the power of the home's electricity supply. In 2023, 271,000 customers were affected by a power limitation. In the spring of 2023, in partnership with the Fondation Abbé Pierre, EDF conducted a survey of households with unpaid bills which had lived under a power reduction. It establishes that, with prior information, a large percentage of households, despite the difficulties, are receptive to the logic of replacing an outage by a power limitation. Far from being comfortable, it does not take away from consumers' responsibility, since it encourages them to contact EDF again to find a solution adapted to their situation. The measure is welcomed by the latter since it makes it possible to meet their basic vital and social needs, and it is appreciated by the social action partners who can thus work under less urgent conditions to find sustainable solutions for the customers they support.

EDF has made arrangements to provide massive support to customers facing hardship. This translates into an Energy Support service, increased vigilance during the winter grace period, and a firm local basis for the solidarity policy.

3.3.4.2.2.1 The Energy Support Service

Since 2010, "*Accompagnement Énergie*" (Energy Support Service) has been providing a personalised solution to any EDF customer who has trouble paying.

5,000 Customer Relations advisors

All based in France, the 5,000 Customer Relations advisors are made aware of and trained in energy poverty situations. They detect the first signs of hardship and offer the first forms of assistance. The EDF advisor checks that the customer is getting the right rate for their consumption habits and that the bill has been calculated on the basis of a real index. The advisor tells the customer how to lower their consumption and discusses the terms of payment. They inform the customer about the energy voucher, directing them to those who can help if necessary.

230 EDF Solidarity Experts dedicated to solidarity who work directly with social action organisations to provide the best possible support to the most vulnerable customers.

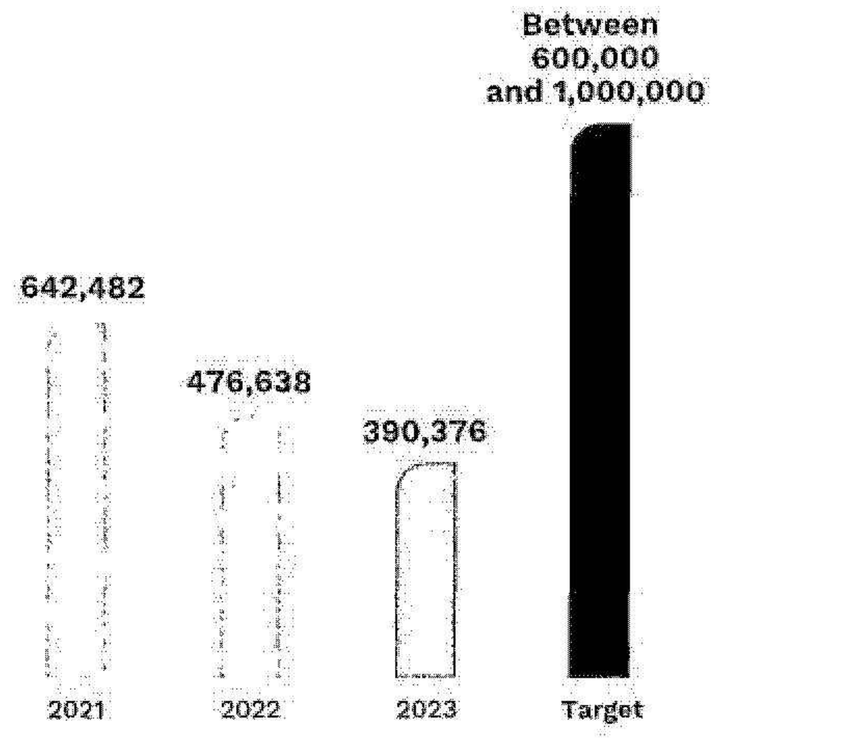
Group key performance indicator

Group key performance indicator

The key performance indicator relates to the number of advisory actions carried out with customers within the framework of the Energy Support Service.

The *accompagnements énergie* (energy support measures) are one of the levers implemented by EDF to combat energy poverty, in parallel for example with the promotion of the energy voucher scheme, and with the institution of payment instalment schedules or the renovation of housing. In 2023, the number of these advisory actions was below the range set annually, even though electricity prices increased. The price shield put in place by the State, which made it possible to limit the increase, as well as the calls for sobriety, made customers much more aware of the need to manage their consumption. Customers made greater use of the digital tools available to them, in particular the Consumption Monitoring service, which allows them to monitor their energy consumption on a daily basis, or even by half-hour segments, and to benefit from useful advice. Lastly, EDF's debt collection process makes it possible to proactively maintain an ongoing dialogue with customers experiencing payment difficulties, by sending them regular emails or text messages, which automatically reduces the need for counselling under the Energy Support service. Furthermore, EDF stepped up its energy support for vulnerable customers, by increasing its contacts in 2023.

Advisory actions carried out with customers within the framework of the Energy Support Service (in number of actions)



3.3.4.2.2.2 Local foothold for the solidarity policy

Several additional tools allow EDF's solidarity policy to be fleshed out and rooted as close as possible to the problems being faced.

- The work of the Solidarity Experts is supplemented by that of the Solidarity Contacts, who are the regional leaders of EDF's solidarity policy. They raise awareness of energy poverty issues among their partners and provide them with training.
- Effectively combating energy poverty usually means working with partners. EDF works with the *centres communaux d'action sociale* (CCAS), as well as with major charities such as the Abbé Pierre Foundation, the French Red Cross, Secours Catholique, and *Secours Populaire Français*. EDF cooperates with the Union Nationale des CCAS (UNCCAS) and the Association des cadres territoriaux de l'action sociale (ACTAS) to seek all forms of innovation, for example in terms of access to rights.

- To strengthen its support in the field, EDF works with many social conciliation structures throughout France, including around forty PIMMS (multiservice conciliation and information points). Under its partnership with the national conciliation network Pimms, EDF participates among others in the development of mobile Pimms (itinerant multiservice points), providing humane neighbourly responses to the everyday needs of rural inhabitants.

3.3.4.2.3 Prevention initiatives

In conjunction with its partners, EDF is deploying strong efforts in the area of prevention, taking action either in housing or in energy efficiency.

Toits d'abord programme

EDF and the Abbé Pierre Foundation have signed a three-year extension to the *Toits d'abord* ("Roofs First") programme, which aims to build and renovate housing for people on very low incomes. In 10 years, the programme has made it possible to build 6,000 energy-efficient housing units and to rehouse 13,000 particularly vulnerable people. Over the 2024-2026 period, EDF will contribute €6.4 million.

Territoire zéro exclusion énergie programme

EDF supports the *Territoire zéro exclusion énergie* ("Zero Energy Exclusion Territory") programme run by the Stop à l'Exclusion Énergétique association, which aims to renovate 3,000 heat sink housing units used by the most vulnerable households over three years. EDF is the main financier with a contribution of €7 million between 2024 and 2026.

EDF Energy bonus

This offer of support is for carrying out renovations that are likely to save energy. It is based on a public system, which has been enhanced under the Recovery Plan.

Mon chauffage durable offer

The *Mon chauffage durable* ("My Sustainable Heating") offer makes it possible to replace a fossil fuel boiler with a heat pump, or electric radiators with efficient and intelligent radiators. This offer is part of the *Coup de pouce chauffage* ("Heating Boost") scheme launched by the French government in 2019. For heat pumps, EDF goes further than the state scheme, and offers additional bonuses for households facing energy insecurity.

Global renovation offer

Since 2022, EDF has added to its support offerings for energy renovation by launching its *Rénovation globale* ("Complete Renovation") offer, enabling all owners of single-family homes to completely renovate their housing, within a secure framework, aiming for at least 55% savings in their home energy consumption compared with the situation prior to the renovation works.

Ashoka Partnership

Faced with the energy crisis, EDF wanted to strengthen its communication and awareness-raising action for the benefit of the most vulnerable populations, whether in terms of good practices to control their consumption, the financial aid that may be requested, or the prevention of arrears and difficult situations.

To meet these challenges, EDF relies on Ashoka and Voisin Malin to define and identify the keys to success and good practices in terms of awareness-raising when addressing people in vulnerable situations.

Alogia offer

EDF and its partner Alogia are committed to helping senior citizens through the energy transition. This offer for social-housing landlords addresses two important societal challenges: helping seniors stay in their homes by improving comfort and security, and combating poverty.

Green Homes Grant

EDF in the UK is the only supplier to have taken the decision to help its customers access the Green Homes Grant new government fund that finances households via a voucher system for insulation and low-carbon heating systems (UK Government programme "Energy Company Obligation" [ECO]). The latest scheme, "ECO4", became effective on 1 April 2022. For the year as a whole, 8,110 vulnerable households were aided *via* the ECO3 and ECO4 programmes.

The awareness-raising regarding the importance of eco-friendly actions was boosted during the 2022-2023 winter with enhanced customer support for consuming less or more efficiently (*#GestesUtiles "j'éteins, je baisse, je décale"* – #UsefulPractices "I turn off, I lower, I defer energy use"). Numerous partnerships were set up, among them one with Unis-Cités.

Info Watt

Since 1 October 2022, for customers benefiting from energy vouchers, and equipped with a communicating meter, EDF proposes its "Info Watt" service. This is a free-of-charge service affording real-time display of electricity consumption, in euros and in kWh. This system identifies the most energy-consuming appliances and habits. Thus, each Info Watt beneficiary has no difficulty in being aware of his/her consumption, adapting habits by means of eco-practices, controlling consumption and making savings on bills.

Unis-Cité partnership

As part of the "Solidarity" programme, Unis-Cité mobilises 370 young people in civic service. Their mission consists of raising awareness among the most vulnerable households of the challenges of the energy transition, supporting them in controlling their energy consumption, helping to identify people experiencing energy poverty, and providing information on the existing preventive (*Ma prime rénov*) and remedial (*Chèque énergie*) support measures by actively seeking out people and offering them guidance.

Association nationale des compagnons bâtisseurs partnership

EDF has formed a partnership with the French National Association of Master Builders (Association nationale des compagnons bâtisseurs) to run training sessions on eco-friendly actions for the regional associations and for residents of priority urban neighbourhoods (*Quartiers prioritaires de la ville* – QPV).

SLIME programme

On Reunion Island, EDF carries out awareness-raising and demand-side management (DSM) diagnosis actions for households facing hardship. These actions are carried out in partnership with regional government via the Local Intervention Services for Energy Management (SLIME in French).

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3.4 Responsible development

The Group aims to achieve responsible growth. To do so, it has made a priority commitment to maintaining and developing a high level of stakeholder dialogue and consultation in all projects and operational business, whilst ensuring that regulated network operator management remains properly independent. Indeed, over and above its environmental responsibility and alongside its social and societal responsibility, the Group seeks to nurture economic, social, and human development in all territories in which it operates. The Group is keen to develop, stimulate, and support industries, and aims to implement responsible behaviour as its digital development expands.

100%	22.7%	100%	93%
Annual rate of projects engaging dialogue and consultation procedures	Annual rate of procurement from SMEs in France	Implementation rate for relocation and maintaining nuclear industry skills	Achievement rate of commitments towards French "Institut du Numérique Responsable"

3.4.1 Dialogue and consultation with stakeholders

Dialogue with stakeholders is a major part of EDF's culture. It forms the basis of EDF's cooperation with our stakeholders. The Group has made dialogue and consultation one of its priority societal commitments.

3.4.1.1 Experience in dialogue and consultation

EDF's history and its role as a major investor and operator throughout France have allowed it to develop long-standing, tried and tested experience in listening, dialogue, and consultation with stakeholders, which are organised with a view to taking into account multiple stakeholders and a diverse range of situations.

3.4.1.1.1 EDF, a policy of dialogue and consultation

3.4.1.1.1.1 EDF: a pioneer in the implementation of stakeholder panels

For over 20 years, the EDF group has relied on different external stakeholder councils, at EDF, Group, country and subsidiary level. Several panels of experts from civil society provide Group managers with their view on the major topics of interest to the EDF group:

- **the Group's Stakeholder Council**: in terms of dialogue with external stakeholders, and in addition to the external listening forums, anticipatory monitoring and the life of partnerships, the preferred body is the Stakeholder Council. This is a joint, multidisciplinary, voluntary group made up of 13 individuals representing civil society (climatologists, delegates from student and consumer groups, economists, NGOs, solidarity actors, etc.). It is co-chaired by the Chairman of EDF, and by Cécile Renouard[1] since 2022. Two sessions were held last year to discuss the EDF group's strategic orientations and adaptation to climate change;
- **Scientific Council**: chaired by the Chairman of the French Academy of Sciences, this Group-level Board met three times in 2023 to discuss the flexibility of electricity systems, water resources, and the continued operation of nuclear power plants;
- **Edison's Stakeholder Advisory Panel (SAP)**: supporting Edison's management, made up of 16 prominent individuals representing Edison's stakeholders and focusing on strategic sustainable development issues, this Panel met three times in 2023 to discuss various aspects of the energy trilemma;
- **the Enedis Stakeholder Council**: it met twice to discuss the "company with a mission" project and the role that Enedis must play as a leader in the ecological transition. The Enedis Stakeholder Council was dissolved after Enedis became a "company with a mission", giving way to the Mission Committee;
- **the Enedis Mission Committee**: it met twice as it was being established, in order to present the company and its regional roots to the 11 new members of the Committee.

3.4.1.1.1.2 Experience in public debate

The EDF group has implemented many projects entailing a formal public debate. The public debate on the construction of two EPR2 in Penly, organised under the aegis of the French National Public Debate Committee (Commission nationale du débat public - CNDP), was held from 27 October 2022 to 27 February 2023[2]; 70 events were held during discussions in the form of thematic public meetings, workshops and citizen panels, and nearly 4,500 contributions were received through the online platform.

Other participatory formats such as prior consultation, ongoing consultation and voluntary consultation meet the need to inform and involve audiences in projects well in advance of their completion. Public inquiries then take place as part of the examination of project authorisation applications, and formally collect public opinion so that it is taken into account in the decision-making of the competent authorities. In addition to these formal public participation mechanisms, regional dialogue enables the public to be informed of, and involved in, projects, construction sites and facilities operated by the EDF group on an ongoing basis.

3.4.1.1.1.3 Fresh stimulus for dialogue with NGOs

A new NGO relations policy was drawn up and approved by the CSR Committee. This policy takes account of the new NGO landscape and changes to their modes of action under the supervision of an "NGO Relations" project manager answering to the Impact Director. Four areas were identified: coordination, internal communication, dialogue, and human resources.

(1) Philosopher, professor at the École des Mines, ESSEC and IEP Paris, and Chair of Campus de la Transition.
(2) https://www.debatpublic.fr/nouveaux-reacteurs-nucleaires-et-projet-penly

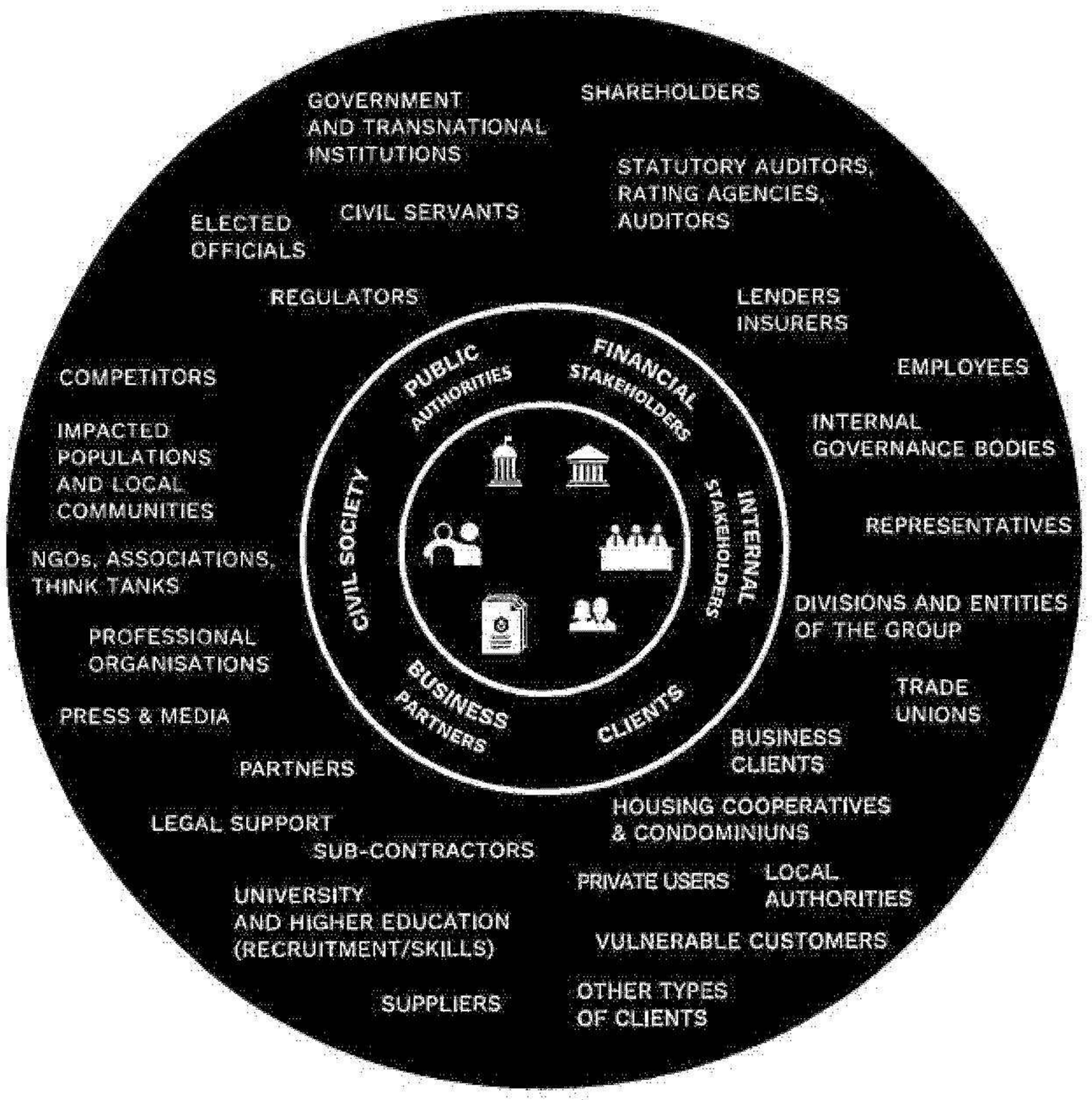
3.4.1.1.2 An open dialogue with all, involving all the Group's businesses and subsidiaries

The culture of dialogue promoted by the Group underpins the way it engages in stakeholder relations.

3.4.1.1.2.1 Mapping Group stakeholders to inform actions

Stakeholder relations are at the heart of the EDF group's CSR policy:

- the Group has drawn up an overall map of its stakeholders, approved by the Executive Committee; this provides Group divisions and companies with a framework within which to organise dialogue;
- as part of ISO 9001 and 140001 certification, the Group's divisions and companies systematically map their stakeholders in order to define appropriate modes of dialogue adapted to their specific context;
- relations with local communities fall within the scope of internal control.



3.4.1.1.2.2 Principles for dialogue and relations in projects

The Group pursues a societal approach, based on stakeholder identification (paying particular attention to indigenous communities) based on the Equator principles for all projects over €50 million[1].

The impacts of each project are assessed on the basis of reasonable environmental and social due diligence. E&S impact studies encompass human rights aspects and stakeholder identification. Dialogue and consultation begin as early as possible, based on context, with special attention being paid to groups that are typically marginalised. A public claims mechanism is set up at a very early stage of the project. Public reporting is provided. Details of the Group doctrine with respect to dialogue, consultation, and stakeholder relations are to be found in a collection of practical guides.

3.4.1.1.2.3 Dedicated local organisation

In France, EDF has set up a Department of Territories and Regional Action (DTAR), whose role is to establish cross-functional dialogue and internal coordination, and to dialogue with stakeholders in the territories as closely as possible to the Group's projects and operational activities.

Making high-level expertise available

EDF R&D has 30 years' worth of cutting-edge expertise in the local acceptability of structures, and devotes part of its research work to this aspect. This expertise helps the Group to understand issues of acceptability, notably regarding environmental and societal aspects. In addition to their many contributions in terms of guidance and proactive measures, these experts assist departments and project managers.

(1) equator-principles.com

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3.4.1.1.2.4 Skills development for managers and project managers

The Group provides a training offering to develop stakeholder knowledge for employees, nurture understanding of issues, and improve the management of dialogue and consultation practices. Open to all EDF group departments and subsidiaries in France, it is directed more particularly at project managers, managers, communications officers, and the members of regional delegations, in liaison with stakeholders.

3.4.1.1.2.5 Listening and dialogue innovations in stakeholder relations

EDF intends to implement tools that promote listening, dialogue and understanding of its environment using a wide range of instruments, from opinion barometers to forums for listening to stakeholders and employees implemented in the form of ongoing surveys or organised in connection with institutionalised dialogues.

The steady increase in the use of collective intelligence methods within the EDF group now makes it possible to solve all types of problems. In 2023, more than 20 projects were carried out for the Group's units, and two major trends emerged:

- improving the "employee experience", for example by preventing work being carried out during unit outages; the Penly nuclear power plant identified the malfunctions that slow down the work of the teams, which can be dealt with to improve the performance of unit outages;
- building the medium-term strategy, with issues such as merging customer platforms or ensuring the success of the 10-year inspections of nuclear power plants.

3.4.1.3 Group key performance indicator

Group key performance indicator

For projects of over €50 million examined by the Group Executive Committee's Commitments Committee (CECEG) with a significant impact on localities and/or the environment, the Group entities in question implement the appropriate dialogue and consultation, in line with the Equator Principles.

The Group's key performance indicator in this respect is the annual proportion of such projects for which a dialogue and consultation processes has been initiated. Practically speaking, this means that as a minimum, each project has initiated or implemented a dialogue and consultation strategy and that the various stakeholders (in particular local and indigenous communities) are taken into account, e.g. through specific measures being taken to address their expectations.

In 2022 and 2023, this indicator was 100% for all projects within the scope of the defined criteria.

Problems and solutions are identified and designed by the teams, using cutting-edge methodological tools, rolled out through workshops led by 250 dialogue participants, all of whom are volunteer Group employees.

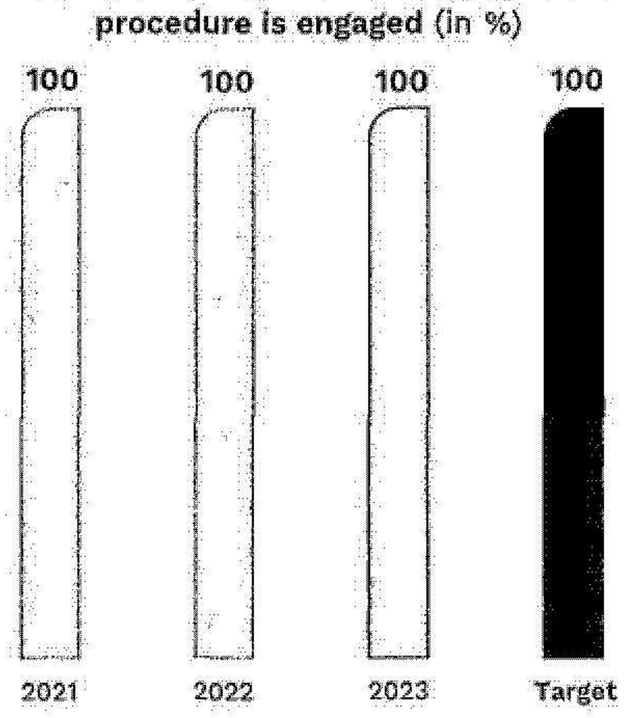
Every year, EDF and Ipsos carry out a large-scale, unprecedented opinion survey in 30 countries on five continents, covering two-thirds of the world's population and including the biggest CO_2 emitters. The full annual results are available as open data(1).

The Internal Environmental Perceptions Barometer (BIPE) has been used every year since 2001 to collect employee opinions on the company or their unit, on environmental issues. The proportion of employees who believe that the Group has a positive image regarding the environment has been rising steadily over the past four years, reaching a record level of nearly 80%.

3.4.1.2 Continuous improvement of dialogue and consultation practices

The EDF group constantly monitors the quality of stakeholder dialogue and relations. In addition to the existing development tools, an intranet site was also set up to improve experience-sharing among project teams. It is a collaborative knowledge-sharing tool that, in the form of a database, brings together documents, both internal and external to EDF, relating to the consultations and public discussions conducted at the Group with regard to nuclear, thermal, hydropower or renewable projects. It involves drawing on the lessons and good practices of previous projects, in order to tackle current and future projects in the best way, to avoid errors, to save time and develop our skills, to improve our performance.

Annual rate of projects for which a dialogue and consultation procedure is engaged (in %)



(1) https://www.edf.fr/en/the-edf-group/climate-and-public-opinions-international-observatory

3.4.2 Responsible regional development

The EDF group is committed to contributing to the development of the regions where it operates in terms of local jobs, local purchases, the creation of economic value and the generation of tax revenue.

The EDF group is also committed to developing low-carbon sources of energy and access to energy in developing countries.

3.4.2.1 Contribution to development through jobs: employment footprint

The employment footprint of a territory, project, or scope of business may be broken down into direct impacts (EDF employees, see section 3.3.3.9 "Detailed information on the Group's workforce"), indirect impacts (the impact of EDF purchases throughout its supply chain) and induced impacts (impact of spending by employees and suppliers, and induced employment generated by taxation). Both EDF employees and the employees of companies in the supply chain spend some of their salary in the region and pay taxes and duties.

Through its activity, EDF contributes to the economic development of the regions where operates. The 2023 study shows that 332,000 jobs (including 63,000 direct jobs) are supported by EDF in France. Across France as a whole, one direct job generates around 4.3 indirect and induced jobs. Around 1.2% of French jobs are thus "supported" by EDF.

3.4.2.2 Contribution to development through taxation

EDF has implemented a Group tax policy to define the applicable principles, in terms of taxation, to all of the Group's relations with its financial or business partners and the government or tax authorities. The tax policy is applied by the Group Executive Director responsible for the Group's Financial Management. It was approved in 2017 by the Executive Committee.

At the end of 2023, as was the case the previous year, the Group electronically transmitted its country-by-country reporting for the 2022 financial year to the French tax authorities, in accordance with the provisions of Article 223 *quinquies* C of the French General Tax Code, which follows the recommendations of the OECD.

3.4.2.2.1 Group tax policy

A wide scope

The policy covers all the Group's taxes: direct and indirect taxes, duties, contributions, any tax or customs deductions which are ultimately the responsibility of the Company or its customers (when EDF merely acts as a collector on behalf of third parties).

This policy must be applied throughout the Group, by all controlled entities regardless of their nature or geographical location, with the exception of regulated infrastructure managers, for whom it constitutes a guide. All Group staff must comply with this policy which aims to protect the Group's reputation and to reduce any tax risks to which it may be exposed through its activities. The policy follows the following guidelines:

- strengthen the tax performance of the Group in strict compliance with national and international tax laws and regulations;
- control tax risks through continued, systematic improvement, in all Group entities, of the identification and management of fiscal risks;
- implement the tools, reporting and actions necessary for the continued, optimum, forward-looking management of tax cash flows[1], as well as attentive and proactive monitoring of the Group's effective tax rate;
- ensure the conditions necessary for obtaining constructive relations with the tax and government authorities of all kinds by maintaining a transparent, professional relationship with them.

Ethical principles

In the context of the allocation between countries of operating margins internal to the Group, EDF strives to apply a transfer price policy in accordance with the principles of the OECD to justify the resulting revenues. EDF has no legal implantation in a territory listed as a non-cooperative state or territory as defined by French and international legislation which is not determined by economic activity reasons and under no circumstances purely by tax reasons. Similarly, cash flow through these countries is prohibited where it is for tax reasons only.

Presence in Luxembourg and Ireland

Like all major French and international groups, EDF relies on captive and mutual insurance companies to supplement the cover provided by traditional insurance markets. The captive and mutual insurance companies enable EDF to reduce the cost of its insurance schemes and the total sum of premiums paid. EDF has three captive insurance companies, based in Ireland and Luxembourg:

- Wagram Insurance Company DAC (wholly-owned by EDF), an insurance company founded in 2003 in Dublin which is involved in the majority of the Group's insurance schemes;
- Océane Ré (wholly-owned by EDF), a reinsurance company founded in 2003 in Luxembourg to reinsure EDF's nuclear civil liability risk;
- Tereco I and II (wholly-owned by Framatome), a reinsurance company within the Framatome consolidation scope located in Luxembourg, to reinsure a portfolio of risks including that of Framatome's nuclear civil liability.

3.4.2.2.2 Taxes paid by the Group

In 2023, the EDF group incurred taxes and duties amounting to €4,064 million in EBITDA, a €901 million increase compared to 2022.

The income tax expense amounted to €(2,470) million in 2023, corresponding to an effective tax rate of 25.13%, compared with tax income of €3,926 million in 2022, corresponding to an effective tax rate of 17.13%.

The €(6,396) million change in the tax expense from 2022 to 2023 is analysed in note 9 "Income tax" in section 6.1 "Consolidated financial statements at 31 December 2023". The income taxes paid in all the countries where the Group has subsidiaries is detailed in the ESG Pack publish on the edf.fr website[2].

The income taxes paid by the Group amounted to €3,695 million, compared to €1,282 million in 2022.

The EDF group contributes to the development of France's regions by paying over €750 million a year in local taxes to local authorities.

3.4.2.3 Contribution to development through purchasing

The EDF group works with around 18,000 suppliers each year. The Group Purchasing Department manages EDF's purchases, excluding fuel purchases and a portion of tertiary, IT and telecommunications purchases for certain subsidiaries, while respecting the independence of regulated network operators within the meaning of the French Energy Code. This scope represented €9.1 billion in orders in 2023 (€8.3 billion in orders in 2022), excluding suppliers belonging to the EDF group, with the following breakdown: €5.5 billion in engineering and production purchases, €2.2 billion in tertiary and services purchases, €1.2 billion in IT and telecoms purchases and €0.2 billion in distribution and customer-related purchases.

(1) Tax cash: tax actually paid or recovered.
(2) https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/reports-and-indicators/non-financial-kpis/esg-indicators

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Suppliers are considered strategic based on a criterion of non-substitutability and the purchasing volume. EDF monitors the supplier dependency rate and implements suitable monitoring actions.

3.4.2.3.1 Share of local purchasing

3.4.2.3.1.1 Local value creation

The EDF group's supplier policy encourages local sourcing and value creation in the regions[1]. More than 94% of its purchases are made in France, mainly due to the mechanism used to split contracts into various lots, which facilitates access to the Group's contracts. And 97% of purchases are made in the European Union (99.6% in the European Free Trade Association).

In 2023, as part of the consultation process, the Group Purchasing Department continued to encourage tier-1 suppliers to employ local suppliers, while meeting the requirements of European Directive 2014/25/EU, for work or service contracts on electricity generation sites.

In line with previous years, the Group Purchasing Department participated in the programmes and events of the Pacte PME association, such as, in 2023, the decarbonisation alliance: this alliance aims to support SMEs in their efforts to reduce the carbon footprint of their activities, driven by key accounts. More generally, the associating conducts awareness-raising campaigns for SMEs regarding the contracts and authorisations required to tender for EDF group contracts and puts them in touch with interested business lines and subsidiaries. It also assists business lines, to help local companies access EDF projects or take part in calls for tenders for nuclear generation refurbishment projects: The Purchasing Department also works with the Regional Action Departments to promote partnerships among EDF and its local suppliers, notably through chambers of commerce and industry.

3.4.2.3.1.2 Solidarity-based purchasing

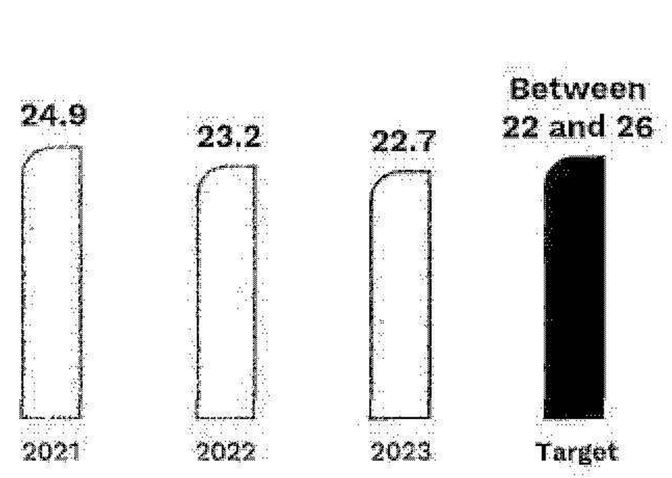
The supplier policy has a long track record of giving preference to relationships with SMEs and companies who employ disabled people only (STPA) and structures for integration through economic activity (SIAE). EDF makes full use of the possibilities offered under Directive 2014/25/EU, allowing certain purchases to be reserved for these sectors. In 2023, EDF's purchases from the solidarity sector amounted to €15.7 million. In June 2023, EDF – in partnership with the GESAT network – organised a webinar for buyers addressing responsible purchasing. In October 2023, EDF took part in the inclusive purchasing forum of the collective of companies for a more inclusive economy. Pursuant to its disability agreements, EDF is developing close ties with work-based support establishments or services (Établissements ou services d'aide par le travail - ESAT) and adapted companies (Entreprises adaptées - EA) in landscaping[2].

	2021	2022	2023
EDF solidarity-based purchasing (STPA and SIAE)	15.6	15.5	15.7

3.4.2.3.1.3 Group key performance indicator

Group key performance indicator

Annual rate of procurement from SMEs in France (in %)



In terms of purchases from SMEs located in France, the annual target range is between 22% and 26% of purchases by EDF and the distribution network manager, Enedis*. For 2023, this figure stands at 22.7%, within the target range.

* *Enedis is an independently managed subsidiary.*

3.4.2.3.2 Sustainable and balanced relationships

EDF's responsible purchasing policy is at the heart of the Group's social and environmental responsibility practices in its supply chain. It is structured by the Group Purchasing Department, which sets the general framework and manages the Purchasing function while respecting the management independence of network operators.

3.4.2.3.2.1 Improving the quality of supplier relations

As part of the reorganisation completed in late 2020, the GPD created new jobs to further improve the quality of its supplier relations. These new jobs included the position of Strategic Supplier Manager, the key point of contact for some 40 suppliers identified as strategic. The Manager establishes a trust-based relationship, encourages strategic alignment between EDF group entities and its suppliers, and facilitates the setting up of productivity and innovation partnerships on a win/win basis. Procurement Category Managers are responsible for relations with other suppliers.

Updated in October 2022, the "Responsible Supplier Relations and Purchasing" Charter seeks to uphold the quality of client and supplier relations, as well as the values of solidarity, ethics, and trust[3]. The Group Purchasing Department contributes to the nuclear sector charter monitoring committee headed up by the French State and the Nuclear Sector Strategic Committee (CSFN).

This charter is accompanied by a certification process. In November 2023, the annual monitoring review confirmed the RFAR label, renewed in November 2021 for a three-year period. Under the auspices of the French Ministry for the Economy, Finance and Recovery, for the third consecutive time, the accreditation committee endorsed EDF in 2021 by awarding it the Responsible Supplier and Purchasing Label (*Relations Fournisseurs et Achats Responsables* – RFAR). First secured in 2015, the Label, accompanying the ISO 20400 standard, recognises companies that maintain balanced, sustainable relations with their suppliers.

(1) See section 3.4.2.4.1 "Boosting the economic, social and human environment".
(2) See section 3.3.3.4 "Disability plan".
(3) EDF was one of the first signatories of the Responsible Supplier Relations Charter.

3.4.2.3.2.2 Supplier policy

The supplier policy emphasises the Group's commitment to maintaining a strong and lasting partnership with its suppliers. It details the Group's *raison d'être* and its CSR commitments with respect to responsible procurement, the use of suppliers who employ disabled people only, local engagement, and supplier awareness-raising. The responsible procurement policy remains central to this approach, with the systematic inclusion of environmental, social, and human rights-related clauses in agreements.

When implementing purchasing contracts, the Group Purchasing Department ensures that financial balance is maintained with respect to suppliers, in particular through compliance with payment deadlines and pricing analysis and structuring actions. Each buyer shall sign the mandatory ethical undertaking which lists the principles to be complied with in relationships with current and prospective suppliers.

3.4.2.3.2.3 Listening, dialogue and partnerships

EDF supports and contributes to the work done by France's National Procurement Council (Conseil national des achats), Responsible Procurement Observatory (Observatoire des achats responsables, OBSAR), the Pacte PME Association. In the nuclear sector, EDF chairs the Nuclear Sector Strategic Committee (CSFN).

EDF implements systems to assess its suppliers using sectoral surveys. The "360 Suppliers" survey enables 900 suppliers to comment on their relationship with the Purchasing Department. Part of the questionnaire is dedicated to the challenges of responsible subcontracting. EDF benefits from the results of the "Idyll" survey conducted by the French Nuclear Energy Industry Group (Groupement des industriels français de l'énergie nucléaire–GIFEN) among nuclear suppliers so that they can express their views on their relationship with the various ordering parties in the sector and on the implementation of the excell plan. EDF also participated in the 2023 Observatory survey by the Pacte PME association, evaluating the quality of the relationship between major ordering parties and SMEs. All these supplier surveys are reported to the panels and feed into the action plans for the continuous improvement of purchasing practices.

In each country, in order to foster dialogue and promote the development of relations among EDF suppliers and local companies, and to develop the skills of these companies, the entities organise regular forums or specific initiatives such as the "One River, One Territory" agencies to promote the economic development of the areas where EDF's hydropower facilities are located.

The first Suppliers Club dedicated to CSR took place in October 2023 *via* a launch meeting organised in the Paris region. It brought together 80 strategic suppliers and made it possible to discuss the state of the art and the expectations of the various sectors, in particular on carbon and resource issues: through collaborative workshops, suppliers were able to express their views on their expectations *vis-à-vis* EDF. The supplier club dedicated to CSR issues will be extended in 2024 through working groups, organised by industrial sector, on the challenges of decarbonisation and the preservation of water resources.

3.4.2.3.2.4 Responsible procurement process

The Group's commitments and obligations in terms of responsible purchasing are integrated into each stage of the purchasing process, including upstream, during the qualification of suppliers, as well as in the preparation phase of calls for tenders (see our Vigilance plan – Main prevention, mitigation and monitoring measures implemented, section 3.8.6.1.2).

Supplier commitments through:

- validation of a compliance commitment for all bidders (mandatory to respond to the call for tenders) covering the following areas: corruption, money-laundering, the funding of terrorism, compliance with international sanctions and the absence of any conflict of interest. Bidders undertake to comply with requirements pursuant to the French Duty of Vigilance Act: observing human rights and the fundamental rights of individuals, guaranteeing individuals' health and safety at work, protecting the environment, and complying with social and environmental legislation applying to their business;
- incorporation of CSR criteria in tenders, including specific criteria in the specifications on the basis of the risks identified for each type of contract and/or to address Group CSR aspirations such as the use of sheltered workshops, local engagement, and the inclusion of SMEs in the supplier panel;
- development of Productivity Partnerships (see section 3.4.2.3.2.8 "Mutual benefits");
- systematic inclusion of a CSR Charter for EDF and its supplier as part of tender documentation updated in December 2022. This update refers to the Group's *raison d'être* and CSR commitments made by the Group, and takes better account of the duty of vigilance;
- the inclusion of a CSR clause in the General Terms and Conditions of Purchase;
- ensuring these principles are upheld by suppliers (see section 3.4.2.3.3 "Supplier monitoring").

Moreover, EDF strengthened its responsible purchasing approach on climate and health and safety issues.

In 2023, the Group Purchasing Department greatly accelerated the due consideration of environmental issues, in particular decarbonisation, in contractual practices. With an incentivising indicator (target of 60% of purchases in priority categories taking into account a CSR lever), purchasing practices were notably equipped with:

- a "compass", which guides buyers and prescribers in order to gain an overview of all the CSR levers that can be considered before, during and after the purchase;
- a "carbon and resources questionnaire", which is submitted to suppliers and may be subject to a technical and economic rating. This questionnaire measures the commitment and maturity of our suppliers on environmental issues for the goods and services provided;
- "life cycle analysis sheets", drafted for each purchasing category, which make it possible to assess the environmental challenges of the category throughout the value chain of a product or service, to summarise the maturity of the supplier panel, and to capitalise on the concrete purchasing CSR levers to be used for this category;
- experimentation with "carbon calculators", to include in suppliers' bids a simplified, objective and uniform assessment of the carbon footprint of the product or service covered by the contract. The results provided by the "calculators" can be valued in the form of a technical-economic rating or a price correction criterion (by setting beforehand a price for the tonne of carbon avoided).

The roll-out of these tools for priority purchasing categories made it possible to achieve a rate of 61% of purchases in priority categories incorporating CSR levers.

In addition, following the Executive Committee of 21 March 2022, it was decided that every business line must require that a high level of health & safety standards be met when selecting businesses and that these standards must be raised at every stage of the purchasing process. To do so, an approach was developed for each health & safety issue per purchasing category to identify the most exposed categories (*e.g.* rotating machine maintenance) in order to take appropriate actions such as including standards in specifications, and suitability and/or admissibility criteria, and criteria in technical ratings.

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3.4.2.3.2.5 Other practical procedures within the EDF group

Even when the mechanisms described in the preceding section (section 3.4.2.3.2.4 "Responsible procurement process") are not directly applied, the major departments or subsidiaries use equivalent methods of commitment adapted to their specific industrial or geographic characteristics. A working group meeting twice a year allows every entity to share its sustainable purchasing processes and accordingly have the chance to work with other entities on specific issues. In 2023, the working group notably addressed the following topics: EDF's new CSR charter with its suppliers and subcontractors and the CSRD and its impact on purchases.

EDF Renewables

EDF Renewables maps CSR risks across all of its supplies, taking into account country risks related to suppliers' production sites, as well as any potential reputational risks.

EDF Renewables responsible procurement is based on two pillars.

- the supplier qualification process takes place in two stages:
  - a request for information phase, during which suppliers answer a list of questions and provide documents about their environmental and societal management, including information about human rights (policies, codes of conduct, commitments, procedures, supply chain management, and any sanctions);
  - an audit phase to verify that the practices adopted correspond to EDF Renewables' standards;
- contractual clauses make up the second Responsible Procurement pillar. When they enter into the agreement, providers undertake to abide by EDF Renewables environmental and societal requirements and to apply these to their own suppliers and subcontractors. Failure to fulfil these requirements may entail termination of the agreement.

Framatome

Framatome's Supply Chain Department takes account of CSR at every step of Framatome's purchasing process, covering everything from specifications to definition of certain supplier panels, plus contractualisation.

In addition to integrity checks based on the ethical risks of its suppliers and the CSR obligations imposed on all its suppliers, Framatome drew up a CSR risk map (environment, human rights, health, safety and security) of its supplies based notably on criteria of country risk (location of suppliers) and activity risk (raw materials and metals). A particular focus is being placed on Framatome's purchases for the Angra 3 nuclear power plant construction project in Brazil. On the basis of this mapping, a control is carried out in order to assess the level of compliance of suppliers with the duty of vigilance using an "ACESIA" CSR documentary assessment carried out by AFNOR auditors or an equivalent assessment provided by suppliers.

Dalkia

In 2023, Dalkia continued to overhaul its Responsible Purchasing approach by developing a CSR risk map for its purchases, including 49 purchasing categories and approximately 17,000 suppliers. Risks were analysed with regard to the environment, working relations and conditions, human rights, as well as ethics and compliance. 10 purchasing categories are considered at risk: suppliers of work equipment, gas, heating and cooling equipment, multi-technical services, mechanical and hydropower equipment and materials, building products, industrial chemicals, measurement and metering, electrical equipment and exchangers and substations.

In this context, in 2023 Dalkia updated the subcontractor self-assessment questionnaire, which now includes a CSR module. In addition, the CSR charter for Dalkia and its suppliers was updated and communicated to all listed suppliers. This charter is applicable to all purchase orders: it is mentioned in the General Terms and Conditions of Purchase and, where applicable, included in the framework agreements entered into.

Edison

Edison implemented a new qualification process based on the use of ESG criteria to be completed by suppliers and including questions on supplier sustainability objectives and the calculation of the carbon footprint.

Through its Suppliers Code of Conduct, Edison also requires its suppliers to respect human rights and the environment. Equally, suppliers commit to making their sub-contractors abide by these same commitments and submit any useful information regarding compliance with environmental protection at every stage of the value chain to Edison.

Edison reserves the right to verify that the working conditions at contractor, subcontractor and supplier sites do not contravene Edison's commitments (fundamental principles and rights defined by the United Nations Universal Declaration of Human Rights, the United Nations Global Compact and the Charter of Fundamental Rights of the European Union under the International Labour Organization).

In 2023, meetings were held to address "Sustainability in the supply chain: a value shared with the region", which consist in involving the entire ecosystem of its supply chain stakeholders (suppliers, partners, buyers and colleagues from the company's business units) in sustainability issues, in line with regional approaches. A series of interviews was also launched with a group of 100 suppliers in order to explore possible ESG improvements in the supply chain.

Luminus

Luminus established a Responsible Purchasing policy and a Suppliers Code of Conduct, the acceptance of which is required to participate in calls for tenders. The Luminus purchasing platform makes it possible to provide for specific selection criteria, depending on the calls for tenders. These non-financial criteria may notably concern carbon emissions, packaging, recycling, waste management or transport.

EDF UK

EDF in the UK also carries out an assessment of the risks associated with modern slavery and ensures that preventive measures are put in place (see section 3.3.2.3.4 "Implementation of human rights commitments").

3.4.2.3.2.6 Procurement stakeholder training

Buyers are also educated about the importance of the responsible purchasing approach, mainly through their training. Every new purchaser joining the Group Purchasing Department attends a "PURCHASER PASS" training course focusing on the main principles of sustainable purchasing. In 2023, the training provided to work-study trainees was redesigned in the form of a practical case integrating questions on CSR issues. The training offer open to all EDF employees consists of a "responsible purchasing" e-learning course, available on the EDF training platform, enabling a wider audience to be covered, a module in the "Environment & Society" training programme offered by the Group, and a complete distance learning course with a responsible purchasing expert.

A "serious game" was developed and integrated into the training offering. The participants in this game put themselves in the shoes of a buyer for 1 hour. They must identify the environmental and social risks of their purchase, then integrate CSR levers taking into account the scope of limitation of the prescription (increase in costs or deadlines).

3.4.2.3.2.7 Collaborative reverse factoring

The EDF group offers its suppliers collaborative reverse factoring, granting them the possibility to pre-finance their invoices before the contractual due date, as soon as EDF issues the payment voucher[1].

	2021	2022	2023
No. of beneficiary suppliers	718	726	743
Amounts *(in millions of euros)*	2,857	3,357	3,811

3.4.2.3.2.8 Mutual benefits

The Group Purchasing Department continued its proactive programme of "Productivity Partnerships". The aim is to improve the contract's operational performance through close cooperation between EDF and its suppliers. This performance generates shared gains, which can be financial, organisational or technical, and sometimes include a CSR component.

Productivity Partnerships	2021	2022	2023
Productivity gains within the scope of EDF *(in millions of euros)*	55.2	51.4	59.4

3.4.2.3.2.9 Company mediator and whistleblowing

The EDF group has used a company mediator since 2010. Suppliers may refer a matter to the mediator directly, free of charge, through its website or by post[2], as stated in the General Terms and Conditions of Purchase and on the Group's purchasing platform.

Suppliers can use the Group's whistleblowing system, set up in accordance with the Sapin II and Duty of Vigilance Acts, which guarantees anonymity and is available in the Group's six languages[3].

3.

3.4.2.3.3 Supplier monitoring[4]

3.4.2.3.3.1 Identifying the CSR risks

The verification of suppliers' compliance with CSR commitments is mainly based on documentary and on-site assessments and audits. The prioritisation of these audits is based on a risk mapping that covers all of EDF's purchasing categories, within the scope of purchases managed by the Group Purchasing Department.

In 2023, the Group Purchasing Department strengthened the performance of its risk analysis with regard to the Duty of Vigilance law. Risk analysis now includes a weighting based on the country or geographic area. See the Vigilance plan – 3.8.6.4.1 "Identifying salient risks".

3.4.2.3.3.2 CSR risk level

CSR risks in terms of purchasing are described in the Vigilance plan in section 3.8.6.4.1 "Identifying salient risks".

3.4.2.3.3.3 Internal service assessments

The monitoring of suppliers, which includes a CSR component, begins with an internal evaluation of the services they provide. Supplier monitoring is mainly carried out by the Division or Contract Management, which uses Performance Assessment Sheets.

Documentary and on-site CSR audits are systematically carried out (see the Vigilance plan – 3.8.6.4.2 "Main prevention, mitigation and monitoring measures implemented – Supplier assessments").

	2022	2023
Number of internal assessments of services	~12,800	~16,500
Number of suppliers assessed	~2,300	2,619

Documentary audits (CSR)

These audits are completed and documented by the supplier and then systematically verified by an independent body, French standards agency AFNOR. The suppliers to be assessed are mainly selected based on the supplier risk mapping and the needs of buyers and business lines, on the contracts in progress. In 2023, the Group Purchasing Department continued the CSR documentary audit campaign on human rights, especially for suppliers in the purchasing categories targeted in international reports on non-compliance with human rights in the fields of textiles, electronics, order-control, and IT equipment.

As part of the same risk management approach, suppliers in categories with major residual CSR risks were surveyed (relocation, document management, handling in tertiary services, fuels, conventional waste, concrete, air transport, application solutions, civil engineering, personal protective equipment and accessories, nuclear maintenance processes, lifting).

The suppliers to be assessed are mainly selected based on the supplier risk mapping, the needs of buyers and business lines, and the contracts being executed. The categories assessed are chosen according to the levels of risk they present, but also to ensure a total coverage of categories with major residual risk over a period of two to three years.

The assessments make it possible for purchasers and suppliers to share an approach of continuous improvement in Corporate Social and Environmental Responsibility.

Over 2023, more than 1,000 suppliers were surveyed through the ACESIA platform.

(1) EDF enables its suppliers to benefit from interest rates based on its own financial risk and credit standards.
(2) mediateur.edf.fr | by post (Médiateur du groupe EDF – TSA 50026 – 75804 Paris cedex 08, France).
(3) https://www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/ethics-and-compliance-programme/whistleblowing-system
(4) This monitoring is performed from supplier qualification onwards. For example, EDF Renewables assesses its suppliers of strategic wind and solar energy equipment in its qualification processes, comprising selection criteria in all CSR fields.

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Note: since most of the assessments were carried out in December 2023, the controls and consolidation of the results by the AFNOR teams are ongoing. Discussions are underway, and will be completed in 2024, to carry out a greater number of documentary assessments by optimising the solicitation of suppliers, which is the limiting factor of the exercise (by enhancing the already existing rating tools, for example, or by combining specific CSR assessments with other assessments carried out by the Purchasing Department).

Pursuant to the General Terms and Conditions of Purchase signed by the supplier as part of the contract binding it to EDF, in the event of an unsatisfactory assessment, an audit may be requested to verify *in situ* by an authorised body whether the social and environmental impacts linked to the activity of the contractor and its sub-contractors comply with the provisions of the contract and EDF's Corporate Social Responsibility Charter. On the other hand, in the event of satisfactory results, the virtuous practices of suppliers can be highlighted, as was the case in the Company's business travel management tool, by indicating establishments that have distinguished themselves positively through their practices.

On-site CSR audits ordered by the Group Purchasing Department

These audits cover all CSR aspects: environmental, social and ethical (in particular human rights) policies, commitments and practices.

On-site supplier audits are conducted by external, independent providers. CSR audits are triggered on the basis of supplier risk mapping and feedback on contract performance conditions, capitalised by the Purchasing Category Managers with the assistance of the business line entities. The purpose of the audits is to test the CSR commitments adopted, and consist of field audits (head office, supplier's production site, or EDF construction site).

CSR and product quality audits are carried out on purchasing categories for which progress is expected in 2023, such as work clothing, real estate works, transformers, metal products, radiation protection, safety equipment and intellectual services.

	2022	2023
Number of on-site CSR audits ordered by the Group Purchasing Department	37	45
Proportion of audits conducted outside France *(in %)*	54	38

Pursuant to the General Terms and Conditions of Purchase signed by the supplier as part of the contract binding it to EDF, in the event of an insufficient or unsatisfactory audit result, the supplier is asked to implement the necessary actions to correct the discrepancies noted in the report. Follow-up audits are then triggered to verify the implementation of the actions. If the follow-up audits still prove to be insufficient, and in the light of all the contractual monitoring elements (insufficient evaluation sheets, inefficient action plans, letter of formal notice without response, etc.), the suspension or breach of contract is provided for in the contractual clauses.

3.4.2.3.4 Responsibility in the fuel supply chain

3.4.2.3.4.1 Coal supply chain

Since the takeover of its coal contracts by JERA Trading (JERAT), EDF no longer has direct contractual relationships with mining companies or the market, but remains an active promoter of Bettercoal, the responsible coal procurement initiative of which EDF was a founding member. Bettercoal brings together energy companies, port institutions and coal terminals to advance CSR in the coal supply chain, particularly in the mines, and notably to ensure respect for fundamental rights. The operational approach is based on a code that sets out ethical, corporate and environmental principles and provisions relevant to mining companies. It takes into account general performance requirements, including management systems, and also performance requirements concerning: ethics and transparency, human and labour rights (such as the prevention of forced and child labour, the right to a decent wage), social issues, including health and safety, and the environment.

JERA Trading, an EDF supplier, has become a member of Bettercoal. In 2023, 52% of the EDF group coal supplies from JERAT were sourced from operators who had adopted the Bettercoal initiative, and 48% from South Africa. This share of supplies not covered by Bettercoal is due notably to the availability of coal of a specific quality that can only come from South Africa, whose mines are not Bettercoal approved. Some South African mines are in the process of applying for membership in 2024.

3.4.2.3.4.2 Uranium supply chain

EDF obtains its uranium supplies over the long term under diversified contracts in terms of origin and suppliers, in most of the main producing countries (Australia, United States, Canada, Kazakhstan, etc.). The clauses authorising the completion of audits and setting out EDF's expectations in terms of enforcement of the fundamental rights and main international standards by suppliers and sub-contractors have progressively been added to contracts.

Audit Framework

The uranium mine audit system used by EDF since 2011 ensures that the ore is extracted and processed in good environmental, social and societal conditions. The assessment method and grid were developed with the World Nuclear Association (WNA)[1]. This method is based on international standards including "The World Nuclear Association's Sustaining Global Best Practices in Uranium Mining and Processing: Principles for Managing Radiation, Health and Safety, and Waste and the Environment", "The Global Reporting Initiative (GRI)'s Sustainability Reporting Guidelines & Mining and Metals Sector Supplement" and "The International Council on Mining & Metals (ICMM)'s Sustainable Development Framework". The issue of safety, which is particularly critical in the mining sector (process safety), constitutes a standardised framework recognised by all players in the sector. It takes into account the issues of human rights and fundamental freedoms (human rights, whistleblowing register, rights of indigenous peoples and radiation protection), health and safety of people and the environment, in the broadest sense of that term (greenhouse gases, water, biodiversity waste, site clean-up after extraction).

Audits

Every year, EDF carries out mine audits through internal means. The reports present the main strengths, recommendations and suggestions. The most ordinary ones relate to health and safety (wearing personal protective equipment such as gloves or goggles), the display of safety instructions, monitoring accidents, performing radiological controls, monitoring environmental footprint (specifically carbon emissions) and proposals relating to well-being in the workplace. Audit recommendations are included in the continuous improvement plans and action plans. Each supplier is audited every three years.

(1) Guidelines for Evaluating Supplier Performance at Uranium Mining and other Processing Sites in the Nuclear Fuel Supply Chain.

Decarbonisation approach

In order to strengthen its CSR commitments, the Nuclear Fuel Division has focused on decarbonisation. The aim of this approach is to highlight and showcase to stakeholders the challenges and ways for its activities to achieve carbon neutrality, and encourage the different links in its value chain to change the direction of their own carbon trajectory. In 2023, the Nuclear Fuel Department extended its approach to issues of adaptation to climate change and the preservation of the biodiversity at its suppliers' facilities.

3.4.2.3.5 Responsible subcontracting

3.4.2.3.5.1 Policy and Agreements

EDF's subcontracting policy focuses on three main themes: providing providers with visibility and ensuring long-term supply partners; helping the Group improve its subcontracting practices by defining criteria to support decision-making in terms of strategy, economics and social impact (CSR and skills maintenance); developing socially-responsible subcontracting practices, *particularly via the new Global Framework Agreement on the EDF* group's Corporate Social Responsibility signed on 19 June 2018 and the agreement signed on 19 October 2006 on socially-responsible subcontracting.

3.4.2.3.5.2 Obligations

The Group may be required to use subcontractors with employees under contracts drawn up in a country other than the one in which it operates. In this case, particular attention is paid to human rights, working conditions, housing conditions and employee health and safety. *The EDF group implements a compliance plan, including* a map of the risks identified in relation to its suppliers and subcontractors, a risk assessment, and the risk mitigation measures taken. CSR governance organised at all levels of the Group: Board of Directors, Executive Committee and Stakeholder Council. CSR Agreement commitments are monitored by the global CSR Committee. For EDF, a Committee to monitor the socially responsible subcontracting agreement, made up of signatory trade union organisations, meets twice a year.

3.4.2.3.5.3 Key events in 2023

In the industrial field

The improvement measures launched in 2015, reflected in the Progress Charter between EDF and the Professional Organisations representing the Group's subcontractors, continued in 2023 and provided for, in particular, support for subcontractors at the Flamanville 3 work site, with a view to reducing the workload.

Regarding the nuclear sector, EDF organises meetings with its suppliers to provide visibility on the 10-year workload. Longer EDF contracts favour long-term relationships with suppliers to capitalise on resources and skills. Example: EPR2 and PIAT (intellectual services and technical assistance) contracts, and catalogue framework agreements that commit EDF to longer terms than in the past.

In the field of Information Systems

The OpenSource policy established in 2016 is still valid. In 2023, it translated into the following additional axes:

- roll-out and support of CSR requirements in the business line Specific Technical Clauses, and integration of requirements *into the body of requirements maintained by the Industrial* Policy (DSIT);
- monitoring of supplier action plans during strategic meetings;
- implementation of the "personal safety" criterion: training, whistleblowing and improvement system;
- study of the use of IT services with the company Innov & Co, in the context of the social and solidarity economy.

In the commercial field

In a context of increased competition and growing customer demands in relation to the energy crisis, the marketer continued to use external contact centres to deal with changes in the workload and cover extended working hours. These external centres are only located in mainland France. External providers are chosen and accredited for customer relations and sales development ("*Engagé RSE Afnor*" label). Moreover, as part of the new contracts for outsourced Customer Relations services that will start in January 2024, the external service providers are setting up a collaboration with companies in the adapted sector, to enhance the CSR approach.

3.4.2.4 Other kind of contribution to local development

The Group contributes to local development through employment, taxes, and procurement, as well as *via* a large number of initiatives promoting a local dynamic, together with its action to facilitate access to energy in developing countries.

3.4.2.4.1 Boosting the economic, social and human environment

At a local level, the Group rolls out a large number of initiatives to help revitalise the economic, social and human fabric in France (*e.g.* "EDF, one river, one region" or socio-economic support for the Cigéo host region in Haute-Marne), in the United Kingdom (*e.g.* socio-economic support for the Hinkley Point regions) or internationally (*e.g.* around the Nam Theun dam in Laos or the Nachtigal dam in Cameroon).

With regard to the financing of diffuse projects, SAFIDI, a wholly-owned subsidiary of EDF *via* the EDEV holding company, is a tool for regional commitment at the service of the EDF group's policies throughout the country. SAFIDI's aim is to support local economic development, industrial establishments and spin-offs *via* crowdlending of job-creating SMEs in key regions and minority equity investments in companies of local interest such as semi-public companies, energy transition-focused SPC subsidiaries, regional recovery funds, *etc.*

During the year, SAFIDI reviewed around 20 cases (equity investments, equity loans, spin-off loans) at the request of the Group's business lines and subsidiaries.

Thus, at the end of the 2023 financial year, SAFIDI had 83 minority equity holdings with an asset value of €30 million and 70 loans with total outstandings of €1.7 million. SAFIDI also owns 100% of the securities in its subsidiary Une Rivière Un Territoire Financement, EDF Hydro's local engagement tool, which is worth €8 million.

3.4.2.4.2 Access to electricity in developing countries

Most major EDF projects, especially those in Africa and Asia, are designed to improve access to electricity on a local, regional and national scale, such the Nachtigal hydropower dam project in Cameroon.

Besides its major projects, EDF intends to develop new business models that combine its traditional know-how with technological and economic innovation. These measures are supplemented by Group sponsorship.

EDF is developing off-grid projects designed to provide residential customers and very small enterprises, mainly in Africa, with electrical services, including ZECI in Ivory Coast or Bboxx in Togo (see section 1.4.5.3.7 "Africa").

The EDF group also supports energy access across the globe in the form of sponsorship, through its Electricians Without Borders (EWB) Foundation, or through partnerships coordinated by its affiliates.

In 2023, the EDF group Foundation supported 289 non-profit projects, for an amount of €5,312,219, including 34 projects, for an amount of €1,520,679, for which electricity is a vector of access to water, health, education or development, through a combined contribution of financing and technical skills from the Group's employees.

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Since 1986, Electricians Without Borders (EWB), of which EDF and Enedis are partners, has been striving to overcome unequal access to electricity and water worldwide.

3.4.3 Responsible development of industrial sectors

The Group is committed to contributing to the development of the industrial sectors needed for the energy transition (renewable energies, batteries, hydrogen, etc.) or their revitalisation (nuclear) by developing, adapting and redeploying the necessary skills, and setting up support, retraining and protection schemes for employees for a just transition.

3.4.3.1 The Group's contribution to the creation of new industrial sectors

The Group's contribution to the creation of new industries is especially noteworthy in the fields of offshore wind power and graphite reactor decommissioning.

3.4.3.1.1 Offshore wind power sector

The three offshore wind power projects at Fécamp, Courseulles-sur-Mer and Saint-Nazaire, with combined total capacity of 1,428MW, were awarded to EDF by the French government in April 2012. Destined to play a key role in the development of the French offshore wind power industry, they are the product of extensive consultation and grassroots work conducted by EDF Renewables and its partners with local stakeholders, government departments, industry, non-profit associations, and local residents. Though the projects in Fécamp and Courseulles-sur-Mer are still in the construction phase, full commissioning has been effective since November 2022 for the Saint-Nazaire project. Since the commissioning, the Saint-Nazaire wind farm produces the equivalent of the annual electricity consumption of 700,000 people, corresponding to 20% of electricity consumption in Loire-Atlantique. The EDF group is thus involved in the creation of a new French industrial sector and new jobs, in particular in Loire-Atlantique.

A partnership entered into with Siemens Gamesa covers the supply of wind turbines to two projects in France (Fécamp and Courseulles); wind turbines for the Saint-Nazaire project will be supplied by GE Renewables Energy.

3.4.3.1.2 Graphite reactor dismantling sector

The Graphite Industrial Demonstrator (*démonstrateur industriel graphite*, DIG) near Chinon (Indre-et-Loire) is a key installation for graphite reactor decommissioning, allowing physical and digital tests to be carried out on models of these reactors. Construction was completed at the end of 2021 and involved a consortium of local contractors (80% of purchases and services were local). The site was inaugurated in the presence of elected officials, local stakeholders and partners, who could see that EDF had kept its commitments, the opportunity this facility provides regarding the creation of direct jobs (20 or more between EDF and its subsidiary Graphitech), and the springboard for innovation that this facility represents.

For the 2020-2023 period the European Inno4graph project, coordinated by EDF's Decommissioning and Waste Projects Department, featured 13 decommissioning stakeholders, including the CEA, SOGIN (Italy), and LEI (Lithuania), as well as Graphitech and Cyclife Digital Solutions, two EDF subsidiaries. The aim of this project is to design NUGG reactor decommissioning tools, which will be tested in the demonstrator.

The graphite industrial demonstrator is the first EDF installation to receive the IAEA (International Atomic Energy Agency)'s "Collaborating Centre" label. This label provides recognition from the international community for EDF's graphite reactor decommissioning strategy. It features a programme of works over the 2021-2025 period.

3.4.3.2 The Group's contribution to revitalising existing sectors

3.4.3.2.1 The excell plan: being present in major nuclear power projects

The excell plan, which was announced in December 2019 and launched in spring 2020, aims to enable the French nuclear industry to restore the most stringent standards and the highest levels of quality and excellence to be at the forefront of major nuclear projects. With half of employees who are set to work in the nuclear field in 2030 not yet involved in the sector, the issue is attracting, training and recruiting, then boosting the experience and skills of newly-hired employees. Multiple actions were taken in 2023 to deal with the issues of the sector's attractiveness, and capitalising on and developing skills. All the commitments are available online (edf.fr/plan-excell). For further details on 2023's achievements in the plan's five major areas of focus, see section 1.4.1.1.1 "The excell plan".

3.4.3.2.2 The Group's contribution to the creation of new industrial sectors

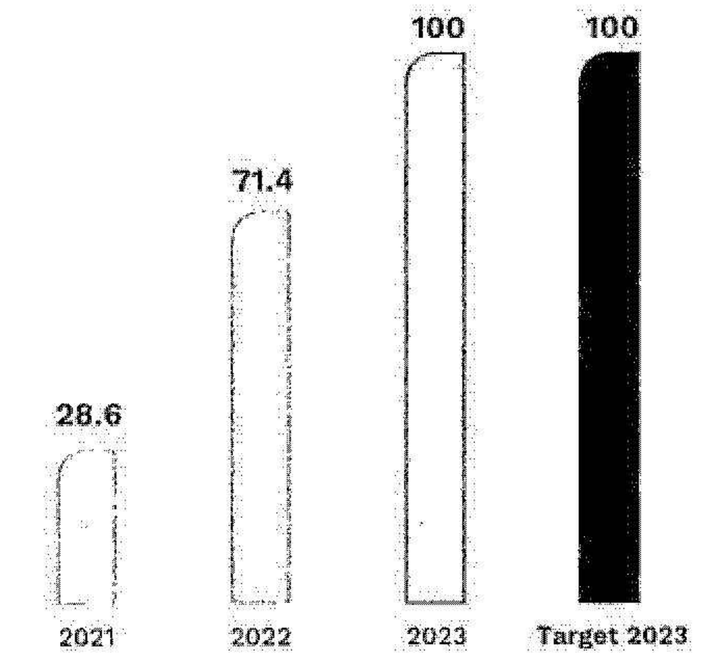
France Relance plan

The action provided for in the excell plan will be further strengthened and stepped up under the stimulus package. On 27 November 2020, the French government announced a sector support plan as part of the *France Relance* recovery plan, with €470 million earmarked for the nuclear industry.

Group key performance indicator

EDF's performance in respect of its "Development of industries" commitment is assessed on the basis of the rollout rate for EDF-backed support initiatives to promote nuclear industry skills insourcing and maintenance as part of the *France Relance* plan. These support initiatives include the creation of a fund to assist SMEs and MSEs in the sector, the setting up of a Nuclear Industry University, support for students through the granting of scholarships, and funding for re-industrialisation and insourcing projects.

Achievement rate of supporting actions backed by EDF, encouraging relocation and maintaining nuclear industry skills (*France relance* programme) (in %)



3.4.3.3 Support in the context of redeployment of sites and professions

All employees affected by job cuts are given specific support. They benefit from specific schemes in terms of priority mobility (individual personalised support and financial support), external career plans and pre-retirement paid leave.

3.4.3.3.1 Declining activities and territories

Power plant closures: greater solidarity

In France, the "business-specific" agreements cover production fleet closures and include dedicated measures to provide recognition and financial assistance. The closures of power plants are accompanied by actions to develop new local economic activities, in order to compensate for the losses of jobs and tax revenue of the municipalities hosting these facilities.

Employees of the Fessenheim (closed in June 2020) and Le Havre (closed in April 2021) power plants benefit from social innovation measures to facilitate their redeployment in the Group's regional host entities or nationwide. At the end of 2023, 97% of the employees of the Fessenheim and Le Havre power plants had found a job at the company.

Instruments to preserve local economic vibrancy: Social Bonds and Ecological Transition Contracts

EDF ensures to develop new local economic activities, to offset the loss of jobs and tax revenues in the affected municipalities.

Use of Social Bonds

For a full discussion, see section 6.7 "Information relating to the allocation of funds raised through Social Bonds issued by EDF".

Use of Ecological Transition Contracts (CTE)

The Group uses Ecological Transition Contracts (*contrats de transition écologique*, CTE) as part of a consultative process bringing together local authorities alongside local NGOs and companies to refocus the local economy around sustainable, job-centred projects. Following the signing of an Ecological Transition Contract, the Aramon thermal power plant in the Gard was replaced with a 5MWp solar power plant, and a local energy transition development plan called CleanTechBooster was implemented. Through the Cleantechbooster accelerator, 32 companies were supported, 300 jobs were maintained, 38 jobs were created and 140 start-ups were matched with big businesses or local authorities[1]. Several projects were set up to develop air quality monitoring in nurseries or treatment of industrial wastewater *via* re-use systems.

3.4.3.3.2 Declining departments or subsidiaries

Enhanced employee mobility and onboarding measures

Prioritising internal mobility

The number of redeployed employees has decreased significantly in recent years (around 200 employees redeployed in 2023). The principle of prioritising internal mobility is nevertheless maintained: any search for candidates must first be the subject of an internal search.

Sandwich-based redeployment courses

The EDF group is continuing to develop retraining courses enabling employees to improve their skills in new jobs. These courses not only target employees positioned in declining jobs but also employees who voluntarily wish to move towards jobs for which there is a need for redeployment. In 2023, 86 employees, including one employee in a redeployment situation, benefited from one of the nine retraining courses provided during the year.

(1) https://cleantech-vallee.fr/cleantech-booster/

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Enedis Conseil & Action and EDF Impulsion

Following the example of 30 other French businesses (who joined forces to form the Association française du conseil interne, *i.e. French internal consulting association*), EDF set up two internal consulting teams.

Enedis Conseil & Action and EDF Impulsion are two entities set up for the EDF group in order to enable high-level executives to receive support in achieving their career goals by putting their skills at the service of the Group's business lines, by carrying out high-stakes operational internal consultancy assignments. These entities provide specific, targeted support for each team member, to help them find a job matching their aspirations and the Group's needs within 18 months.

Since its creation in 2020, EDF Impulsion has recruited 85 experienced managers who have carried out around 180 assignments; 57 of them found a new position after an average period at the entity of 13 months.

Mobility and redeployment in 2023

	2021	2022	2023
Employees who found a job in line with the Group's needs in 2023	703	502	198
Employees which have been redeployed since 2018 (EDF)	2,993	3,495	3,693

3.4.3.3.3 Increased mobility within the EDF group

Internal mobility is now approached on a Group-wide basis, with the aim of building diversified career paths within the major business lines (nuclear, energy services, renewable energies, networks).

The Company strives to involve employees in their career paths by ensuring visibility with regard to the offers available throughout the Group, and by supporting them in better understanding the needs of companies in the short and medium term.

The job offers listed by EDF and its subsidiaries are now accessible to Group employees *via* the Group Mobility Portal.

The EDF group's Mobility Month

The "Mobility Month" operation, the Group's first mobility event initiated in 2022, was renewed in 2023. This mobility e-forum, held in November, enabled over 2,000 employees to discover the professions and job opportunities offered by the various EDF departments and the Group's subsidiaries. More than a hundred stands gave mobile employees the chance to meet nearly 400 HR advisors and managers involved in this event over the month.

CV matching

The candidate matching tool set up on the EDF Recrute site is also deployed on the Group Mobility Portal. The purpose of this new functionality is to optimise the distribution of needs and the supply of skills. Internal candidates can submit their CVs and the tool shows them the offers best suited to their profile.

3.4.4 A data responsible company(1)

3.4.4.1 EDF, the first energy company to be awarded the "Responsible Digitalisation" label

The EDF group is committed to responsible digital transformation that is low-carbon, low-energy, inclusive, ethical, and adds environmental value for its employees and customers.

3.4.4.1.1 Roadmap

This aim has been asserted at the highest level of the Company in the Group's SI 2020–2025 roadmap. On the occasion of a seminar on digital transformation on 17 September 2021, the EDF group Executive Committee affirmed responsible digitalisation as one of its priorities.

This commitment is coordinated by the Digital Transformation Committee, co-chaired by three members of the EDF Executive Committee and implemented through a programme dedicated to responsible digitalisation.

3.4.4.1.2 Responsible Digitalisation Charter

By signing the "Responsible Digitalisation Charter", EDF, Enedis and Luminus (alongside the Belgian Institute) have strengthened their goal, by formally committing to develop sustainable, inclusive and value-creating digital services. Established by the French Institute for Responsible Digitalisation Institute (Institut du numérique responsable - INR), with the support of the French Ministry of Ecological Transition, the charter covers every aspect of responsible digitalisation.

3.4.4.1.3 Responsible Digitalisation Label

Drawing on robust achievements, in March 2021 EDF became the first energy supplier to obtain the Responsible Digitalisation label developed by the French Institute for Responsible Digital Technology with the support of France's Ministry of Ecological and Solidarity Transition, the ADEME research agency, and the WWF. Pursuant to the charter, 20 binding commitments for progress have been made, coordinated within the framework of a 2021-2024 action plan structured around three areas: development of responsible digitalisation by design, improving user experience, and innovation.

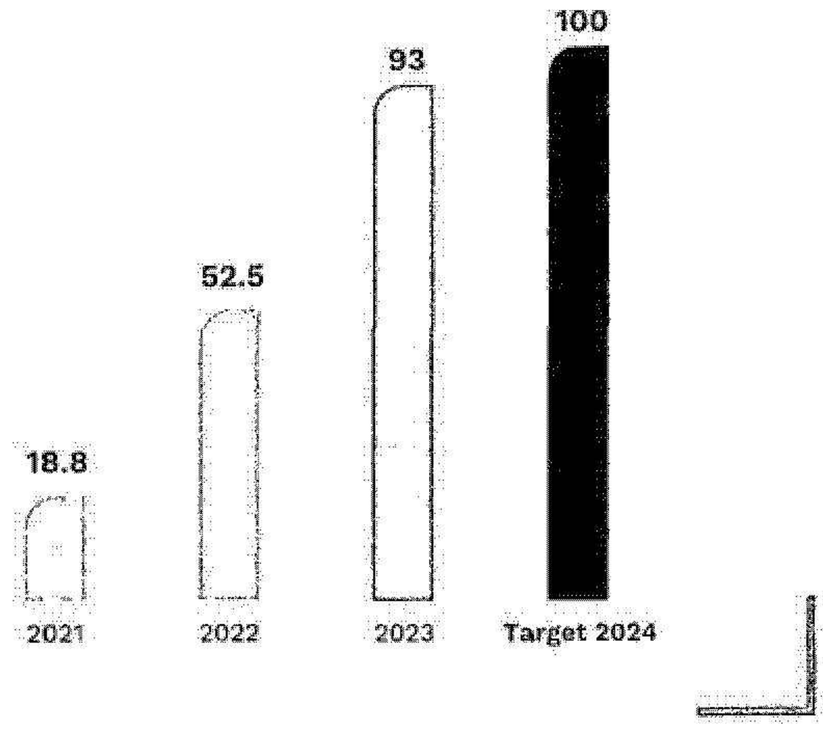
(1) This section may be usefully supplemented by the action taken by R&D in section 1.5.1.4 "Accelerating digital transformation", and the section "Risks related to operational performance" in section 2.2.1, which deals in particular with cybersecurity issues.

3.4.4.1.4 The Group's commitment

Group key performance indicator

The key performance indicator is the achievement of the commitments made to the French Institute for Responsible Digital Technology. The related action plan comprises 18 actions and 32 related deliverables. It must be completed in full by the end of 2024.

Achievement rate of EDF commitments towards the French Responsible Digitalisation Institute (INR) (in %)



3.4.4.2 Acculturation of employees to responsible digitalisation

The Transformation and Operational Efficiency Department set up a mini-site dedicated to Responsible Digitalisation on the EDF group's intranet, which includes educational videos (accessibility, smartphones, printing), Responsible Digitalisation MOOCs, toolkits and interviews with employees, managers and sponsors involved in the approach.

3.4.4.3 Sensible use of digital tools

To highlight and further the commitments made by the business over the last few years in terms of energy sobriety, EDF adopted an internal energy sobriety plan in August 2022 with the aim of reducing the Company's key consumptions by 10% based on proactive measures and employee engagement. Three main levers are used, including the optimisation of digital uses.

3.4.4.3.1 Reduction of environmental impact

Decreasing the carbon footprint of digital technology involves responsible use of IT and telephony. EDF is seeking to reduce the related environmental impact by extending the lifetime of hardware, promoting the circular economy, and seeking to bring down the average electricity consumption of servers. Thus, in 2023 the life of workstations was extended by one year (see also section 3.2.4 "Radioactive and conventional waste, and circular economy").

3.4.4.3.2 Eco-design

Eco-designing digital services allows the key requirements of low-energy use and accessibility to be incorporated from the design stage. With this in mind, in 2021 Dalkia launched the first environmentally-responsible website in the energy sector, dividing the total number of web pages by four, resulting in a 64% reduction in CO_2 emissions compared to the previous website. The efficiency of the code was also reviewed, the number of servers was brought down from seven to two, and the backup space was reduced. The website meets 94% of the French general accessibility improvement guidelines (*Référentiel général d'amélioration de l'accessibilité*, RGAA).

In order to adjust the ecodesign recommendations available in many external standards on the Group's IS context, the Responsible Digitalisation programme made available in 2023 an internal guide on the ecodesign of a digital service, and a guide on Responsible Artificial Intelligence. The latter encourages simplifying AI systems to limit their environmental impact, as well as diversifying source data to prevent bias.

EDF chose to add an end-of-publication date to all its social network posts to avoid unnecessarily maintaining obsolete publications.

3.4.4.4 Digital technology as a vector for responsible action

3.4.4.4.1 Saving of resources

Improving datacentre energy efficiency is a powerful way to reduce the consumption of EDF's digital services. Datacentres have been certified ISO 50001 since 2015 and EDF has already succeeded in reducing their energy consumption by 15% in five years, despite also doubling their computing power.

The EDF group sees digital technology as a key tool for sustainable development. It paves the way for innovations that reduce the Group's carbon or resource impact, and presents the services it provides, such as the EDF Reutiliz digital platform (see section 3.2.4.3.2 "Optimising materials and equipment").

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3.4.4.4.2 Customer energy savings

Digital solutions allow customers to achieve energy savings, too.

EDF customers can use the "e.quilibre" platform and the "EDF et moi" app to track the various ways they use electricity and target energy savings. For more details on these aspects of digital responsibility, see section 3.1.3.2.4 "Earning trust through quality of service".

3.4.4.4.3 *Digital for customer development*

Waste heat from EDF's Val-de-Reuil datacentre (Eure) will be recovered for use by its future business park neighbour, Eurapharma, which will enjoy an ambient temperature of 15 to 25°C in its warehouse. This project, which will start in July 2024 and last 10 years, is a win-win in both ecological and economic terms, with 6GWh carbon-free per year for Eurapharma, and around €1 million in additional Group income over a 10-year period from the sale of waste heat.

For extensive examples of how digital technology is used for customer support and development, see section 3.1.3 "Developing low electricity consumption and innovative energy services".

3.4.4.4.4 Transparency and data sharing (Open data)

Digital tools encourage transparency and data-sharing. Since 2020, the EDF group decided to release its public data, in particular its consolidated financial statements, non-financial performance indicators, the Group's installed capacity, the corresponding generation figures and operational data such as EDF Hydro's average daily river flow data. It is released through an open data platform.

3.4.4.4.5 Inclusion

Digital technology will only be responsible and sustainable if it is also accessible and inclusive, without any form of discrimination. This is why EDF adopted a new digital accessibility policy in 2022, covering both the working environment of disabled EDF employees, accessibility of external and internal digital services (website, mobile apps, intranet, messaging), and digital communication (emailing, newsletters).

3.5 CSR Governance

The CSR governance structure is based on venues for information and forums for dialogue that strive to constantly improve the identification and assessment of the risks and opportunities specific to each issue and each commitment. This continuous identification is complemented by a complete organisational system aimed at controlling the implementation of the Group's commitments, while respecting the management independence of the regulated infrastructure managers.

3.5.1 Group policies

3.5.1.1 The Corporate Social Responsibility (CSR) Policy

The EDF group's Corporate Social Responsibility policy was adopted by the Executive Committee in 2021, replacing the previous Sustainable Development policy.

The Company's environmental, social and economic performance is driven in the first place by the contributions of the various entities. The CSR policy provides a framework for these actions by formulating ordinary requirements and principles of action aimed at implementing the 16 CSR commitments to prove that the Group's *raison d'être* is being carried out. It applies to Group entities without overriding the managerial independence of regulated infrastructure operators, and defines the priorities for 2030 at the Group level, which each entity implements taking into account its specific activities and challenges, in line with the principle of subsidiarity. Where appropriate, an entity may choose to supplement the requirements of this policy.

3.5.1.2 Other policies addressing CSR (expansion of CSR)

In addition to the CSR policy, other Group policies focus on other specific aspects of corporate responsibility (HR policies, Procurement policies, Ethics & Compliance policy, Nuclear Safety policy, etc.). In line with the Group's *raison d'être*, CSR is gradually being extended to all areas of the Group's activity.

3.5.2 CSR governance bodies

3.5.2.1 Board of Directors

The duties, powers, composition and operation of EDF's Board of Directors are described in detail in chapter 4, section 4.2 "Members and functioning of the Board of Directors". The Corporate Responsibility Committee, as one of the Board of Directors Committees[1], examines, in connection with the Group's strategy, the Group's commitments and policies, as well as their implementation, in terms of ethics, compliance, and corporate responsibility. For more information, see section 4.2.3.5 "Corporate Responsibility Committee".

3.5.2.2 CSR Strategy Committee

The CSR Strategy Committee, which is chaired by the Chairman and Chief Executive Officer[2] and composed of the Group's Executive Directors, conducts an in-depth review of all CSR issues, for which it provides strategic management and coordination. Depending on the agenda, the conclusions of the meetings are reported to the Board of Directors[3].

The CSR Strategy Committee met four times in 2023 and notably addressed the development of EDF's responsible and sustainable purchasing, the decarbonisation approach for fuel cycle activities, the Group's activities in terms of its carbon contribution, the Reference Warming Trajectory for Climate Change Adaptation, and the EDF group's biodiversity and natural resources commitments.

3.5.2.3 Sustainable Development Committee (SDC)

The SDC prepares the files presented to the CSR Strategy Committee and acts as a sector committee for environmental and societal competencies. It is chaired by the Impact Director, and is composed of around twenty representatives in charge of sustainable development at their entities. The SDC met six times in 2023.

3.5.2.4 Impact Department

The Impact Department (formerly the Sustainable Development Department) reports to the Innovation, Corporate Social Responsibility and Strategy Director, a member of the Executive Committee.

Ambition

Its aim is to represent a differentiating factor for the Group's environmental and societal performance, as a responsible company and while respecting the management independence of network managers, that creates value for all stakeholders (employees, shareholders, customers).

Contribution to the Group's strategic transformation

It contributes to the Group's strategic transformation, while respecting the principle of the independence of network operators, by supporting the business lines and projects:

- in specifically taking into account environmental and social issues (opportunities and risks);
- in their business choices and actions, in particular by integrating the four key issues derived from the *raison d'être* in the strategic supervision of the operational entities;
- in screening new projects from the point of view of CSR[4].

It is particularly responsible for monitoring the Group's target for reducing "Scope 1" direct GHG emissions[5].

(1) Internal rules of procedure of 8 October 2019.
(2) It also includes the Directors of Communication, the EDF group Foundation and Regional Action.
(3) Through its Social Responsibility Committee.
(4) See section 3.5.4.1 "Integration of the corporate responsibility goals into the Group's strategic process and project screening".
(5) See section 3.6 "Methodology".

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CSR coordination

The Impact Department coordinates CSR in the Group: corporate coordination of the business lines and subsidiaries through the SDC (Sustainable Development Committee) (see section 3.5.2.3 "Sustainable Development Committee"), coordination of the dedicated internal networks such as the EMS and the predictive watch networks (see sections 3.5.4.2 "Environmental management system [EMS]" and 3.5.4.4. "Predictive watch networks"), coordination of relations and dialogue with external partners (see section 3.4.1.1.1 "EDF, a policy of dialogue and consultation").

The detailed outline of the Group's general CSR governance is similar to that shown in section 3.1.4 "EDF climate governance".

3.5.3 Social dialogue

3.5.3.1 International and European social dialogue

3.5.3.1.1 The Global Social Responsibility Agreement

The Group's actions go beyond merely integrating environmental issues into its strategy, as EDF remains a socially-responsible, committed employer and a leader in terms of the professionalism and involvement of its employees. This is the result of various commitments and measures to develop the skills of the Group's employees, the diversity of their profiles, as well as respect for their differences, in order to grant employees a decent living from their work, provide them with a high level of health and safety, and establish a social dialogue based on listening and transparency. These commitments and mechanisms form a core of values that serve as a framework for the activities of the Group's subsidiaries.

Principles of the Agreement

The global framework agreement on social responsibility defines principles in several areas: respect and integrity; the development of women and men; dialogue and consultation; support for local communities and the impact of company policies on local communities.

Scope and duration

All Group employees and subcontractors worldwide are covered by the provisions of this collective agreement, which the Group's subsidiaries apply with a view to continuous improvement by including it in their strategic action plans. Signed in 2018 for an initial period of three years, it was unanimously agreed by the signatories to extend the agreement for a further two years on 29 November 2021.

Agreement monitoring

The EDF group's global Committee for Dialogue on Social Responsibility (CDRS) is made up of representatives of all the signatories to the agreement: 11 trade union organisations and two global trade union federations (PSI et IndustriALL). The annual plenary meeting was held in the Paris region in June, preceded by a working day involving all the signatory trade union organisations. The 2023 edition of this physical meeting was marked notably by the inclusion in the CDRS of a representative of the Polish union NSZZ Solidarnosc. As a representative of the employees of Dalkia Polska and Edison Next Poland (included in the scope of the agreement after the signing of the latter), NSZZ Solidarnosc wished to sit on the CDRS in order to take an active part in the international social dialogue on Group social responsibility.

This meeting also enabled employee representatives to address various topics at the heart of their concerns with Group representatives, such as the latest news on international development projects, the health and safety of employees and service providers, securing skills to respond to the nuclear revival, or the way in which the Group integrates CSR into its purchasing policy.

Duty of vigilance and social dialogue

The CDRS is the main forum for dialogue with employee representatives on the exercise of the EDF group's duty of vigilance. Since the agreement came into force in 2018, a progress report has been made systematically at each meeting of the Agreement Monitoring Committee (three times a year on average). After working on improving the procedures to involve employee representatives in the preparation of the vigilance plan in 2022, in 2023 the CDRS was able to contribute to the preparation of the EDF group's sixth vigilance plan under good conditions, enabling a satisfactory dialogue between management and the members of the CDRS, a number of whose suggestions were taken into account. The CDRS thus praised the quality of the work accomplished and the progress made since the entry into force of the law on the duty of vigilance, and underlined the need to continue on this path to transparency and improvement.

Furthermore, in May 2022 and then in March 2024, employee representatives requested contextual information regarding the NESTOR project (see section 1.4.5.3.8 "Middle East") and expressed their wish to be informed of the developments. The company will continue to address these requests within the framework of social dialogue.

3.5.3.1.2 European Works Council (EWC)

The European Works Council is composed of 38 representatives of the employees of the parent company and the European subsidiaries (French, German, British, Italian, Belgian and Polish).

In 2023, the EWC met twice for two ordinary meetings. The ordinary meetings focused on news from the European subsidiaries, the NUWARD SMR project, the proposed changes to the DIRES and the Group's nuclear activities, the different strategic positions of the EDF group's major European competitors, the anticipation of climate change, the annual presentation of the Group's consolidated financial statements, an exchange with Chairman Luc Rémont, and the latest news on European policies and their consequences for the Group.

The EWC Secretariat met twice in 2023 to prepare for the plenary sessions and discussed the Group's current situation in Europe, and changes in the geographical scope of the EWC. A meeting was held near Hinkley Point C to review progress and conduct a site visit.

Through working groups, EWC employee representatives carry out work at the European level in connection with European news and Group policies (health and safety, site closures, consolidated accounts, energy transition, equality and diversity). In 2023, the Health and Safety WG and the Group Health and Safety Division will coordinate the organisation of the Health and Safety Stop in October 2023 in all the Group's companies in France and Europe.

3.5.3.2 Social dialogue in France

Against a backdrop of protests against the pension reform, the first half of 2023 at EDF was punctuated by a succession of strike days called by an inter-union coalition united in a rejectionist front, tough action on the generation fleet, and an almost complete halt to social dialogue (with an unprecedented interruption of Central Social and Economic Committee (CSEC) meetings from January to mid-May).

There followed an intense period of resumption of social dialogue, between meetings of the CSEC, the France Group Committee and negotiations (leading to unanimous signatures: profit-sharing for 2024, all agreements related to social dialogue for 2023, amendment to the 2023 salary measures agreement). The project to change the nuclear business lines, announced by the CEO in June 2023, opened a new sequence of social dialogue in all its forms (bilateral, inter-union, CSEC, SECs of the entities concerned) during an end of year marked by double elections (election of employee directors from 5 to 12 October, and election of employee representatives to the SEC from 6 to 13 November), which confirmed the reinforcement of the CFE on the trade union organisation chessboard at EDF: plus one employee director seat on the Board of Directors (CGT losing one seat) and the leader in terms of representation at EDF SA (with 2.8 points more than the CGT).

3.5.3.2.1 EDF's 2023 social agenda

The 2023 social agenda was the subject of several discussions with the central union representatives over the year.

Agreements reached unanimously:

- EDF 2023-2025 agreement on equal rights and opportunities and the professional inclusion of people with disabilities;
- collective agreement on the career paths of employees holding representative and/or trade union offices;
- pre-electoral memorandum of understanding relating to the elections of members of EDF's social and economic committees;
- 2023 collective profit-sharing agreement;
- amendment to the collective agreement on individual salary measures for 2023 signed at EDF;
- collective agreement relating to the introduction of the social and economic committees of establishments and of local representatives at EDF;
- collective agreement on the appointment of union representatives and the exercise of trade union rights at EDF;
- amendment no. 1 to the collective agreement relating to EDF contributions to the Group corporate savings plan (Plan d'épargne Groupe - PEG) and the collective retirement savings plan (Plan d'épargne pour la retraite collectif - PERCO) for the period from 1 January to 31 December 2023;
- amendment no. 4 to the regulations of the Group collective retirement savings plan relating to EDF contributions for the period from 1 January 2024 to 31 December 2024;
- amendment no. 23 to the regulations of the Group corporate savings plan relating to EDF contributions for the period from 1 January 2024 to 31 December 2024.

3.5.3.2.2 EDF's consultation and coordination body

The consultation and coordination body of the company (Instance de concertation et de coordination de l'entreprise - ICCE) is a forum for social dialogue, exchange and/or consultation with EDF's representative trade union organisations, led by the Group Social Dialogue Director. Its role is to discuss societal and development issues that do not fall within the remit of employee representative bodies or emerging issues, decisions or policy orientations. In 2023, four face-to-face sessions were held. Twelve topics were presented during these sessions, including the Company's guidelines on the prevention of addictions, the actions carried out as part of the Université des Métiers du Nucléaire, the assessment of salary measures for 2022, the My EDF 2023 survey, the new training platform, and internal mobilisation around EDF's partnership project with the 2024 Olympic Games. In addition, the presentation of the four operational excellence projects launched by the Chairman, as well as the results of the My EDF 2022 survey, were shared with the Group's business line coordinators, who were invited for the occasion.

3.5.3.2.3 EDF's employee representative bodies

In 2023, the map of the employee representative bodies (Instances représentatives du personnel - IRP) included 48 local Social and Economic Committees (SEC) and one Central Social and Economic Committee (CSEC) in EDF SA, as well as a France Group Committee (FGC).

The EDF SA professional elections of 13 November 2023 made it possible to renew all the members of the SECs of the establishments for a new term of office of four years.

3.5.3.2.4 Central Social and Economic Committee

The central SEC is made up of 25 employee representatives and four union representatives.

The usual schedule of the Central SEC was disrupted from January to May by the boycott of meetings decided by the inter-union coalition opposing the pension reform. As a result, out of the 18 meetings convened, seven meetings resulted in an insufficiency report. In addition, eight extraordinary meetings were organised in 2023. The Central CSE had to examine recurring consultations such as the economic and financial situation or the CSR policy, as well as projects such as the acquisition of the nuclear activities of GE Steam Power, inter-department real estate projects, progress of the New Nuclear projects of Flamanville 3, Jaitapur in India, Hinkley Point C and Sizewell C in the United Kingdom, and Dukovany in the Czech Republic. Among the key issues of 2023, the CSEC was consulted on the authorisation dossier for the creation of Penly 3 and 4, and was informed of the state of discussions on the proposed development of the DIRES and the Group's nuclear activities in September.

The Central SEC was renewed following the professional elections at EDF SA, which resulted in the appointment of new Central SEC members. On 19 December 2023, the CSEC started its new term of office for 2023-2027.

3.5.3.2.5 France Group Committee (FCG)

The France Group Committee (FGC) is a forum for dialogue at the Group level in France, and is made up of 28 employee representatives of the Group's subsidiaries (EDF, Dalkia, EDF Renewables, Framatome, Enedis, IZI Confort, Électricité de Strasbourg, Dalkia Electrotechnics).

In 2023, the France Group Committee met three times, the April meeting having been cancelled as part of the boycott decided by the inter-union coalition opposing the pension reform. The three ordinary meetings were used to examine the Group's policies, notably the update of the skills management policy, the employment situation, mobility and training, the Group's economic and financial situation, with the assistance of a chartered accountant for the elected representatives, the Group's strategic orientations, news from the subsidiaries in France and a visit to EDF Renewables' La Turballe offshore wind power site. At the October 2023 meeting, the CEO of the EDF group, Luc Rémont, came to introduce himself and discuss the Group's challenges in France.

3.5.4 Transformation drivers

A company with a mission

The Combined General Meeting of 27 June 2023, recorded Enedis's transformation into "a company with a mission" in the company's articles of association. Enedis thus became the first major French company to do so in the energy sector. This is a historic step in a global transformation process aimed at strengthening the Company's contribution to the challenges of a sustainable society. Enedis defined its *raison d'être*[1] in its articles of association, as well as five social and environmental objectives that it has decided to pursue as part of its activities. These objectives are accompanied by their monitoring methods, and the execution of the mission that the company has set itself will be audited every two years by an independent third-party.

3.5.4.1 Integration of the commitments into the Group's strategic process and project screening

3.5.4.1.1 Screening letters and performance reviews

Commitments are implemented and set out in screening letters specifying the contribution of each of the Group's entities and subsidiaries to achieving the ordinary objective. The system for monitoring these commitments is integrated into the Group's strategic planning loop. Annual performance reviews allow entities and subsidiaries to monitor and control their actual performance.

(1) "Acting for an innovative, efficient and supportive public electricity distribution service. Connecting society through the collective challenge of a sustainable world." See https://www.Enedis.fr/presse/Enedis-devient-entreprise-mission.

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3.5.4.1.2 Investments

Projects and investments subject to the approval of the Group's various Commitments Committees, and particularly those of the Group Executive Committee (CECEG)[1] that are the subject of an opinion of the Sustainable Development Department based on a screening grid that translates the issues of the Group's CSR commitments into operational terms. Where necessary, the Sustainable Development Department organises due diligence investigations specific to these issues.

3.5.4.2 Environmental management system

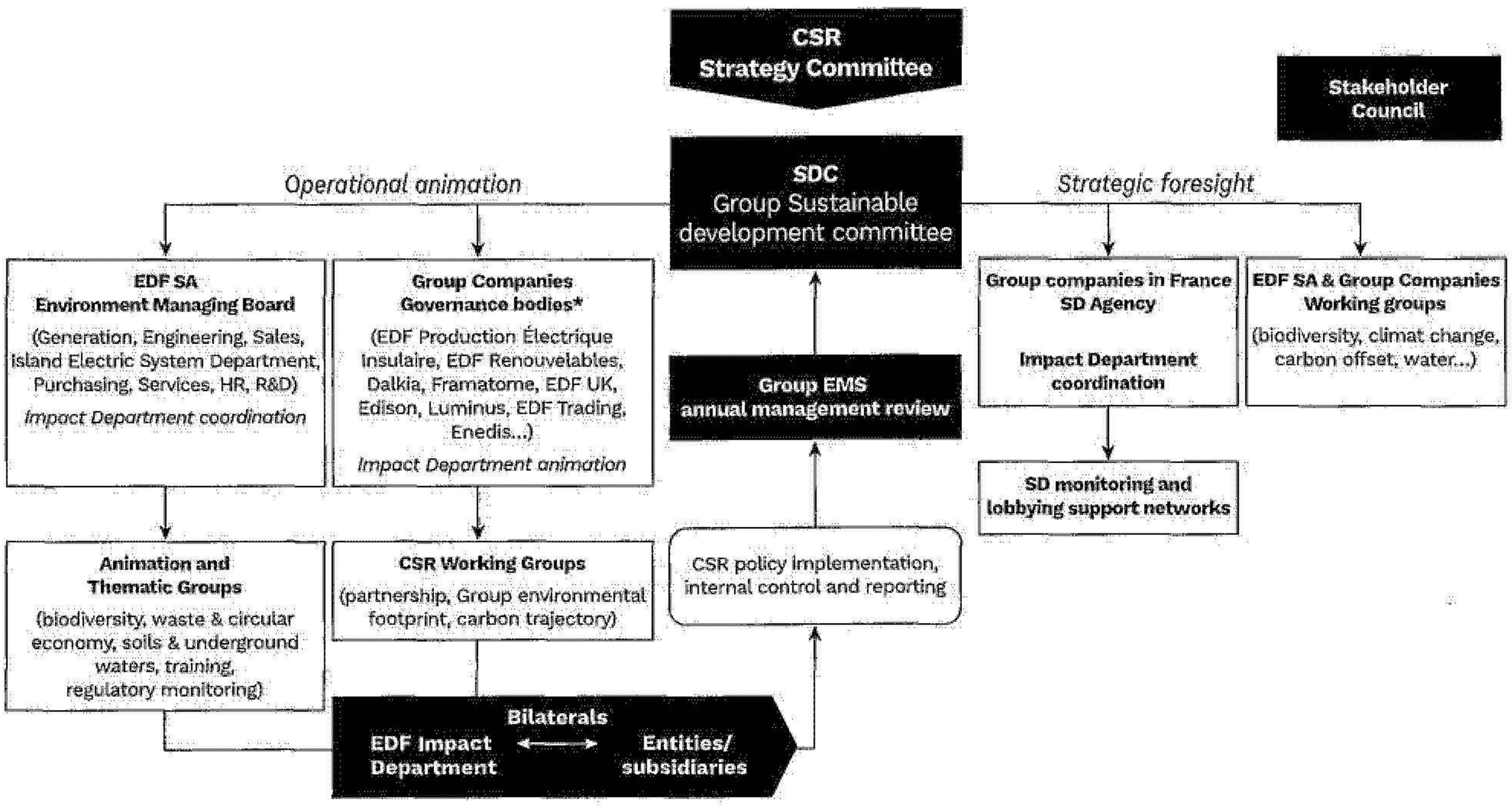
In order to implement the environmental goals and related actions based on its CSR commitments and policy, the EDF group has set up a Group-wide environmental management mechanism using an environmental management system (EMS). This management system is based on EDF's governance bodies (see chapter 4 "Corporate governance" and section 3.5.2 "CSR governance bodies"), which define the environmental guidelines and performance to be achieved, in line with the expectations of external and internal stakeholders.

In accordance with the requirements of the CSR policy, each of the Group's entities[2] has put in place an environmental management approach adapted to its own challenges, defining its organisation and the various levels of responsibility and authority associated with it in order to meet its environmental commitments and control its risks by making appropriate resources (human and financial) available.

The EMS' operation is carried out by Group and business processes that allow for certification to stakeholders:

- controls environmental risks and ensures that the EDF group complies with regulations and its commitments: each entity draws up and implements an environmental programme or action plan that takes into account the Group's commitments concerning it, its significant environmental aspects, and its regulatory obligations, considering its risks and opportunities;
- improves the efficiency of its organisations in a way that is appropriate to the issues at stake: each entity is responsible for its own internal control, internal and external audits of its EMS, and interfaces with the Group EMS;
- mandatory sustainability reporting of the environmental activities of the entities: each entity collects and communicates the required environmental information to the Sustainable Development Department.

The Impact Department is responsible for the overall coordination of the Group's EMS and the necessary interfaces with EDF and its subsidiaries through the operational coordination of environmental management, which involves the participation of each entity with significant environmental impacts at the Group level.



* Environment managing boards or equivalent

This EMS is ISO 14001 (2015 version) certified by the external certification expert AFNOR. All industrial sites are covered by an EMS, over 80% of which are certified.

Over the period from September 2022 to August 2023, the results of the certification audits carried out by AFNOR confirmed the quality of the leadership, strategies and policies developed in line with local issues and the needs and expectations of stakeholders. The auditors also underlined the effective and rigorous coordination of environmental management systems at certified entities and subsidiaries, and noted progress on management of environmental impacts on business lines, with issues relating to CO_2 and biodiversity increasingly taken into account. These audits identified 14 new minor cases of non-compliance, with the 11 minor cases from the previous audit campaign having been generally resolved. Progress is still mainly expected in the systematic consideration of environmental impacts as of the design phase, as part of an approach involving the circular economy and a generalisation of the culture of risk prevention through the performance of regular audits. Improvements are also expected in the methodologies of environmental analyses, the management of action plans with an improved analysis of causes, and the monitoring of the effectiveness of corrective actions.

(1) This undertaking concerns new projects involving investments of more than €50 million, entailing a significant impact on regions and the environment. The Group plans to lower this investment threshold to €30 million by 2030.

(2) Companies with industrial, operational (installation, operation, maintenance), engineering, distribution and marketing activities relating to goods and services.

3.5.4.3 Management of environmental risks

Environmental risks, including those associated with climate change, are fully integrated into the Group's EMS and internal control system in coordination with Group risk management. They are subject to action plans resulting from strategic priorities in the Group's CSR policy.

3.5.4.3.1 Identifying the environmental risks

The identification of environmental risks is part of the Group's overall risk management system (see chapter 2 "Risk factors and control framework"). Each company draws up its own risk map, based on the Group's methodology, and defines action plans to reduce and limit its risks. As in previous years, the most significant factors pertain to the following subjects:

Main environmental risks	
Risk factors	**Activities most affected**
• Climate change and GHG emissions	Power and heat generation activities from fossil fuel
• Impacts of EDF's activities on the air, water and soil and waste production • Protection of biodiversity and services provided by ecosystems • Management of water resources	Power generation activities (nuclear, thermal, hydropower, wind and solar power)

The main change concerns the observation of the effects of climate change with higher temperatures in summer and droughts increasing the pressure on both environments and some of the Group's business lines such as hydropower and nuclear activities.

At the end of 2023, the Group has eight high-threshold[1] Seveso sites and 32 low-threshold sites[2].

3.5.4.3.2 Managing the environmental risks

In order to control risks of industrial incidents or accidents that could harm the natural environment or public health, EDF has implemented a Group environmental management system. It is based on an active investment policy incorporating the best available technologies (BAT) for the protection of the environment; a programme for the deconstruction of industrial assets whose operation has ceased, including decontamination operations if necessary; a staff training and awareness-raising programme for all parties involved, incorporating feedback from actual crises and exercises; inspections and audits on generation and tertiary sites; a crisis management policy.

Crisis management policy

The Group crisis management policy which requires the regular testing of crisis systems through an annual programme of crisis response drills (see section 2.1.3.6 "Crisis management and business continuity").

High-stake environmental event (EVE)[3]

Locally, each of the Group's operational units and companies identify events that could have an environmental impact, manage emergency situations that could result from them, conduct corresponding crisis response drills, implement investigations and monitoring corrective actions, and communicate on environmental events under its responsibility.

No EVE

Actions to closely supervise and monitor production processes have made it possible to avoid high-stake environmental events with a significant impact on the environment. Certain operational events such as hydrocarbon leaks and alignment deficiencies in effluent transfers may result in litigation arising from complaints lodged by NGOs or associations and notices to comply issued by national regulatory authorities (French Nuclear Safety Authority, French Regional Environment, Land Use and Housing Authority, *etc.*).

In 2023, the criminal fines imposed on EDF amounted to €4,500, divided into three fines of €1,500 for environmental offences in the Loiret region.

Reduction of chemical risks

When it is technically feasible, in order to reduce pollution risks, the Group's entities have also implemented a programme to eliminate or substitute certain chemical substances with more environmentally-friendly products. Following on from the R&D studies, substitutions are implemented, such as: environmentally acceptable oils for hydropower generation, fluids for thermal and nuclear power plant turbines in France and the United Kingdom, varnishes and paints (Industrial Division, Property Management and Citelum), and the decision by the Real Estate Department to stop using pesticides.

EDF Hydro, the Real Estate Department and Enedis are continuing their programmes to decontaminate equipment with concentrations higher than 50 ppm for PCBs[4] and PCTs[5]. These action plans continued in 2023 and are on target. Complete disposal is set for the end of 2025 for EDF IES. Thermal and nuclear generation lines no longer have any equipment exceeding the threshold.

3.5.4.4 Predictive watch networks

EDF anticipates changes to environmental and energy policies in order to take appropriate measures to guarantee regulatory compliance and manage business integration or reputational risk issues. To this end, the Impact Department coordinates a predictive watch system that mobilises and coordinates the Group's experts.

(1) These sites include Bellefontaine B, Pointe Jarry, East Port and Jarrie in France, Hole House in the UK, and Collalto, Cellino and San Polito in Italy.
(2) Upper and lower threshold: industrial establishments are "Seveso" classified according to their technological risk depending on the quantities and types of hazardous products they handle. There are two different thresholds which classify establishments as "Seveso low-threshold" or "Seveso high-threshold". The requirements vary significantly between these two types; they are very restrictive for the high-threshold, particularly with regard to the safety management system, informing the public and the prevention plan, *etc.*
(3) High-stake environmental event: an event causing serious environmental damage (areas, resources and natural environments, sites and landscapes, air quality, animal and plant species, biological diversity and balance) combined with extensive media coverage or a financial impact of more than €3 million. An event causing environmental damage and likely to affect human health falls within the scope of a high-stake environmental event for the EDF group.
(4) PCB: Polychlorobiphenyls.
(5) PCT: Polychloroterphenyls.

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3.5.4.5 Controversy management process

The EDF group attaches great importance to identifying, preventing, mitigating and remedying the risks of serious human rights, environmental and health and safety violations in all its activities and projects. Accordingly, in order to identify and anticipate the risks of ESG (Environment, Social and Governance) controversies, EDF has set up a dual system for managing controversies.

- Pursuant to its risk anticipation approach, and thanks to monitoring tools(1), EDF identifies the risks of ESG controversies in France and internationally to which its operating activities and projects may contribute. EDF classifies these risks in consultation with the relevant entities and countries and decides on appropriate measures and/or communication.
- When reacting to the occurrence of risks, EDF responds systematically and transparently to rating agencies that ask for explanations on issues they have deemed controversial. This process is notably applied when screening projects eligible for EDF's green emissions financing.

3.5.4.6 CSR and manager remuneration policy

In line with EDF's desire to promote integrated performance based on both finance and CSR, the annual variable compensation of the Group's executive managers is also based on financial and CSR criteria. The CSR criteria, which can represent up to 15% of the variable remuneration of managers, consist of a climate criterion and two social criteria.

A Climate criterion, based on carbon intensity

[redacted]	Weighting in the Group share of bonuses	2023 result	2023 target objective	2023 attainment rate
Carbon intensity	30%	37gCO_2/kWh	50gCO_2/kWh	120%

Two social criteria

The global LTIR(2) and the commitment index(3) together represent up to 30% (17.5% and 12.5%, respectively) of the bonus linked to objectives that are specific to the different structures of the Group (Divisions, companies). Since 2022, the Commitment Index has replaced the Leadership Index to strengthen the link between executive remuneration and the Group's CSR commitments.

In addition, the long-term remuneration (three-year plan) of certain executives is also based, on top of the financial criteria, on CSR criteria, namely: rating obtained from the firm CDP (climate and water), as well as the percentage of women on the Management Committees and of female managers at Group level. These two criteria account for 20% of this variable remuneration.

In 2024, it is planned to increase the weight of CSR criteria in the annual variable compensation of Group's senior executives by covering all the scopes of the carbon footprint and by introducing a gender diversity criterion, in addition to the one that already exists in the long-term remuneration plan.

3.5.4.7 Partnerships

Partnerships are an important commitment for the Group, which evidence its mobilisation to promote the energy transition in local regions. These partnerships are in line with EDF's *raison d'être*, built through dialogue with stakeholders, and in line with the four major Corporate Social Responsibility issues.

3.6 Methodology

3.6.1 Principles

With regard to environmental, labour and societal indicators, the scope covered by the non-financial reporting(4) is based on the Group's financial consolidation scope. It includes EDF as well as exclusively controlled subsidiaries (full consolidation at 100% of the value of the indicators) in accordance with financial standards (IAS-IFRS).

The contributions of entities accounted for using the equity method are excluded from sustainability reporting, with the exception of the indicator on renewable capacities in net consolidation.

The entities acquired during the financial year are included in the scope of consolidation in the year following the date of acquisition for environmental and societal data, and in the year of acquisition for social data if the acquisition was made more than six months from the reporting date. Data on both workforce and production capacities is presented at 31 December of the relevant year.

The indicators are reported on the basis of:

- the scope of consolidation established by the Financial Department;
- the aforementioned rules in terms of variation of scope;
- the criteria linked to the relevance of the subsidiaries' activities in terms of environmental and societal impact:
  - > for the environmental and societal data, only data from industrial activities that are significant in terms of their environmental impact are reported, therefore the data for some subsidiaries included in the financial scope may not appear in the report due to their activity or their small size with respect to the environmental challenges;
  - > concerning social data, the selection criterion is the entity's workforce (greater than 50).

The environmental and societal data in the statement of non-financial performance are based on methodological sheets. This is the Group's standard for sustainability reporting in force in 2023. If data are missing, particularly during the last days of the year, estimates are made on the basis of the best information available on that date.

(1) Such as RepRisk.
(2) See section 3.3.1.3.3 "Occupational accidents".
(3) See the introduction to section 3.3 "Well-being and solidarity".
(4) Within the meaning of the non-financial performance statement as defined by Order no. 2017-1180 of 19 July 2017 on the publication of non-financial information.

3.6.2 2023 scopes

List of main entities included in the consolidation scope of the labour, societal and environmental data as at 31 December 2023	Scope of environmental indicators	Scope of social indicators
Électricité de France, Enedis, EDF PEI, Électricité de Strasbourg, EDF Renewables EDF ENR, Dalkia, Framatome, Cyclife holding, EDF Energy, Edison, Luminus, EDF Norte Fluminense, MECO, Lingbao	X	X
EDF Trading	X*	X
Citegestion (evolution of Citelum), Iziconfort (formerly Cham), IZI solutions, IZI Solutions Renov, G2S, IZIVIA, Energy2market, Sowee, Hynamics, EDF Andes Spa, China Holding, Agregio Solutions, EDVANCE		X

**Only the subsidiary EDF Trading North America and its own subsidiary EES – EDF Energy Services (USA).*

3.6.3 Details relating to the CSR information

3.6.3.1 Details on the materiality matrix of the EDF group

For the full history of the development of the materiality matrix, see the 2022 URD, unchanged on this point in 2023, section 3.6.3.1 "Details on the materiality matrix of the EDF group".

3.6.3.2 Further details on CSR challenges

For the definition of the 16 CSR challenges, see the 2022 URD, unchanged on this point in 2023, section 3.6.3.2 "Further details on CSR challenges".

3.6.3.3 Details on key performance indicators (KPI)

Commitment to a bold carbon strategy

KPI: Carbon intensity: specific CO_2 emissions from electricity and heat generation

The indicator is the ratio of the direct CO_2 emissions of electricity and heat generating plants to their related generation. The scope covers the Group. The 2023 value of this indicator is subject to a reasonable assurance check by PwC (√). The indicator is for the Group scope.

Commitment to carbon contribution

KPI: Deployment rate of the framework guidelines on carbon contribution solutions

In order to raise the entities' awareness of the notion of carbon contribution and to provide them with a framework for their carbon credit purchasing initiatives, EDF's Impact Department finalised a policy application guide on 18 May 2021, which was updated in 2023. The calculation of the indicator is based on the design and deployment of this guide in the entities, and its implementation within the relevant entities. The indicator's scope covers the Group.

Commitment relating to climate change adaptation

KPI: Deployment rate of new climate change adaptation plans within concerned entities

The calculation of the indicator is linked to the deployment stages of the new climate change adaptation plans. In line with the requirements of the TCFD and the challenge of adapting the Group's facilities to the risks associated with climate change, EDF reviews its adaptation plans every five years. The indicator is calculated on the basis of the progress of the implementation of the new plans between 2021 and 2023 within the relevant entities. The indicator's scope covers the Group.

Commitment relating to the development of electricity uses and energy services

KPI: Avoided CO_2 emissions thanks to sales of innovative goods and services

In 2023, EDF calculated the emissions saved through the following activities carried out by EDF SA, Dalkia, Luminus, EDF UK, and Edison: development of renewable energies in heating networks; energy efficiency; photovoltaic production (installations sold to customers and self-consumption, excluding EDF installations injecting their production into the network); electric mobility; and residential heat pumps. The indicator corresponds to the gap in emissions from the product or service sold and emissions in a baseline scenario established for each product or service. This indicator is calculated by including direct and indirect emissions from the life cycle analysis on an annual basis.

Biodiversity commitment

KPI: Achievement rate of "Act4nature international" commitments (2023-2025)

EDF has introduced this indicator in 2020, replacing the previous indicator relating to the ecological knowledge of land. This new indicator reflects the Group's commitments in the Act4nature international system which is a Group-wide initiative.

The objectives are labelled in the external "Act4nature international" scheme, supported by the "Business for Nature" initiative. To date, this indicator is calculated in the form of an achievement rate for the actions undertaken from 2023 to 2025. This achievement rate covers the 18 actions that meet the Group's 2023-2025 commitments in terms of: reducing the contribution of activities to major pressure factors; preservation, restoration, regeneration; improving knowledge and sharing it; transformation of our processes, our organisation and our skills.

Responsible land management commitment

KPI: Implementation rate of innovative solutions encouraging multifunctional land use

The introduction of innovative solutions for multi-use of land is based on the commissioning of agrivoltaic projects and/or floating solar power projects. The commissioning of the Group's flagship projects by 2026 at the latest shall signal full deployment. The indicator's scope covers the Group.

Integrated and sustainable water management commitment

KPI: Water intensity: water consumed/electricity generated by the fleet

The indicator is the ratio of water consumed to the electrical generation of the Group's fleet (l/kWh). Water consumption for heat generation and other Group activities is not taken into account to calculate the indicator. The indicator's scope covers the Group. The 2023 value for this indicator is subject to reasonable assurance check by PwC (√).

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Commitment relating to radioactive and conventional waste and the circular economy

KPI: Annual rate of conventional waste directed towards a waste recovery industry

The denominator of the indicator corresponds to the total quantity of conventional hazardous and non-hazardous waste disposed of over a one-year period. The tonnages of conventional hazardous and non-hazardous waste corresponding to the reporting period take into account waste: associated with normal activity (normal operating production) or exceptional activity (site, works, construction, dismantling, *etc.*); generated over a previous period, stored on site since then due to the absence of a suitable treatment channel or pending massification before disposal, but disposed of over the period in question (destocking of waste generated over a previous period). The result of the performance indicator corresponds to the proportion of conventional hazardous and non-hazardous waste directed to a recovery channel compared to the sum of conventional hazardous and non-hazardous waste disposed of. The indicator's scope covers the Group.

Safety, health and security for all commitment

KPI: Global LTIR

The Group's overall Lost Time Incident Rate (LTIR) represents the number of work-related accidents (employees and service providers, whatever the level of subcontracting, including co-contracting and temporary staff) with lost time of one day or more, occurring over a 12-month period, divided by one million hours worked. The hours worked used for calculating the frequency rate are actual hours corresponding to the hours of "exposure to risks" according to CNAM[1] (French national insurance body). The indicator's scope covers the Group.

As regards temporary employees and service providers, the accidents are declared by the temporary employment agency and by the service provider's employer in accordance with applicable local labour regulations. These include accidents that occurred in the course of work performed on behalf of EDF group on its facilities, equipment, sites, networks, *etc.* Activities conducted by service providers on their own sites, outside EDF group's facilities, are not taken into account.

For a "contracting" company, subcontracting involves entrusting a company, known as the "service provider", with carrying out one or more projects involving studies, design, development, manufacturing, implementation or maintenance. These include any interventions carried out by service providers under a contract on EDF group's facilities, equipment (sites, networks, *etc.*) within the scope of subcontracting as set out in section 3.4.2.3.5 "Responsible subcontracting". These include the number of workplace accidents declared in accordance with applicable local labour regulations, the circumstances of which demonstrate that they are work-related. Dizzy spells and accidents during team-building activities, and accidents in daily life occurring in the workplace are not taken into account.

Ethics, compliance and human rights commitment

KPI: Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure

The target for this KPI is 100% each year. The timeframe should not exceed one month from receipt of the alert. The key performance indicator selected concerns the reports made on the BKMS® System platform. This platform guarantees data encryption and storage on a confidential external server, not connected to the EDF group's information systems. This indicator serves to illustrate on an ongoing basis the importance that EDF attaches to taking alerts seriously and the resources implemented to process alerts made by whistleblowers *via* the Group-level whistleblower system.

Commitment to equality, diversity and inclusion

KPI: Gender balance index, percentage of women in the Management Committees of the Group's entities

Management Committees are decision-making bodies with part or all of the following features:

- the Chairman of the Committee is an executive manager or senior manager;
- the Chairman of the Committee has a delegation of authority over capital expenditure related to the Company's objects;
- the Chairman of the Committee has disciplinary authority over all or some of the entity's employees;
- the number of members of the Committee represents 1.5-2% of the entity's total workforce;
- the Committee meets at least once a month.

Members of more than one Executive Committee within one subsidiary, or members of both a subsidiary's Executive Committee and an EDF group Executive Committee are only counted once. This indicator is calculated by finding the ratio of the number of women on Executive Committees to the number of people on the Executive Committees. The indicator's scope covers the Group. All female members of the Management Committee are counted, regardless of their status (statutory, non-statutory, permanent, fixed-term, AMADOE[2], secondment, *etc.*). The figures are as at the end of November and not as at 31 December. The reporting therefore covers the period from November N-1 to November N.

Commitment relating to energy insecurity and social innovation

KPI: Advisory actions carried out with customers within the framework of the Energy Support Service

Energy Support is a telephone system using customer support staff and solidarity advisors. This service is aimed at any customer experiencing difficulties, particularly payment difficulties. After analysing the situation, the customer support staff member proposes the most appropriate solutions: personalised advice on payment methods, energy savings and, if necessary, thermal renovation measures. The initial collection is carried out directly by the customer support staff and solidarity advisors and recorded in the Sales IS tools provided for this purpose. The KPI records the number of advisory actions carried out with customers within the framework of the Energy Assistance system. The indicator's scope covers EDF SA and is calculated in calendar years.

Commitment to dialogue and consultation with stakeholders

KPI: Annual rate of projects for which a dialogue and consultation procedure is engaged

This is the number of projects over €50 million for which an appropriate dialogue and consultation process has been undertaken in line with the so-called "Equator"[3] Principles in relation to the number of projects in the scoping phase or in the commitment phase at the Group Executive Committee Commitments Committee (CECEG). The indicator is obtained on the basis of the CSR screening grid used to evaluate projects that have passed through the Group Executive Committee Commitments Committee. The indicator's scope covers the Group and is calculated on a calendar year basis.

Responsible territorial development commitment

KPI: Annual rate of procurement from SMEs in France

The indicator is the ratio, expressed as a percentage, of the annual volume of procurement by EDF and Enedis from SMEs located in France, to the annual volume of total procurement in France by EDF and Enedis. SMEs are identified based on INSEE (French National Institute of Statistics & Economic Studies) categories, stipulating that an SME (Small- and Medium-Sized Enterprise) has fewer than 250 staff and annual sales not exceeding €50 million. Suppliers are

(1) Conservatoire national des arts et métiers
(2) Staff seconded to external bodies.
(3) equator-principles.com.

ranked in the SME category by a service provider that EDF tasks with analysing the supplier list, checking that these SMEs are not controlled above 25% by a Big Business or by an MMC. The scope covers France, where the SMEs' locations are certified based on their French business number (SIREN). The indicator's scope covers EDF and Enedis and is calculated on a calendar year basis.

Development of industrial sectors commitment

KPI: Achievement rate of supporting actions backed by EDF encouraging relocation and maintaining nuclear industry skills (*France Relance* Programme)

The indicator is the ratio, expressed as a percentage, between the number of actions carried out (completed) and the total number of actions programmed among the EDF actions supported by the *France Relance* programme. This action plan includes three main areas: the contribution to a support fund for SMEs/intermediate-sized companies in the nuclear sector, the reinforcement of skills and lastly reindustrialisation. In 2023, one of the seven actions initially defined became inapplicable and was therefore removed from the scope of the KPI. In addition, one of the six remaining actions, relating to the number of graduate scholarship holders, was updated. The rate of completion is therefore now based on the balance of actions completed for the six total actions covering the three areas mentioned above.

This indicator's scope covers France.

Commitment relating to the responsible digital development

KPI: Achievement rate of EDF's commitments towards the French Institute for Responsible Digitalisation Institute (INR)

The indicator is the ratio, expressed as a percentage, between the number of actions carried out (completed) and the total number of actions to which EDF has committed as part of its Digital Responsibility approach. This action plan stems from the commitments made by EDF as part of its Digital Responsibility certification by the French Responsible Digitalisation Institute (INR). These commitments shall also be subject to an audit by Bureau Veritas. It covers several areas, including communication, the workplace, skills, procurement policy, responsible design and data centres. The indicator's scope covers EDF.

3.6.3.4 Further details on social, environmental and societal data from the Statement of non-financial performance

The environmental and societal data in the Statement of non-financial performance are based on methodological sheets. This is the Group's standard for sustainability reporting in force in 2022. All of the indicators relating to consumption and emissions are produced based on the processes for electricity and heat generation and marketing, and the other processes related to these activities. If data are missing, particularly during the last days of the year, estimates are made on the basis of the best information available on that date.

Dalkia's environmental indicators in relation to energy are consolidated over a sliding year, from 1 December N-1 to 30 November N. Other indicators are reported over year N.

Details of the Group's greenhouse gas report

The EDF group's GHG report covers the three scopes of the GHG Protocol[1], including emissions of the six greenhouse gases of the Kyoto Protocol (CO_2, CH_4, N_2O, HFC, PFC, SF_6) expressed in CO_2 equivalent (CO_2e). All significant items listed by the GHG Protocol are accounted for, ranging from fuel manufacturing to employees' office life:

- Scope 1 covers the direct emissions generated by our assets: CO_2, CH_4 and N_2O emissions from thermal power electricity and heat generation plants, consumption of fossil fuels for heating, fuel consumption of the fleet of vehicles and machinery, fugitive emissions from hydropower plant reservoirs, fugitive emissions of SF_6 and refrigerating agents;
- Scope 2 covers indirect emissions linked to losses in the electricity networks of our electricity distribution companies and those linked to the purchase of energy for our own needs: electricity consumption of tertiary buildings and data centres, consumption of heating and chilled water networks for our own use;
- Scope 3, which comprises 15 categories (as defined by the GHG Protocol), relating to other indirect emissions generated by suppliers (purchases of goods and services, upstream for fuels including nuclear, leased assets, downstream freight of by-products), customers and suppliers (upstream and combustion of gas, generation of electricity and heat purchased for resale to end customers) or at the EDF group and its suppliers (depreciation of fixed assets, emissions from non-consolidated investments, upstream and losses from consumption of electricity, heat and cooling for own use, waste management, employee travel, *etc.*)[2].

The EDF group's GHG report scope includes the following businesses and their subsidiaries, based in France and more than thirty other countries: EDF, EDF PEI, Dalkia, Edison, Enedis, Électricité de Strasbourg, EDF Trading North America, EDF Energy, Framatome, EDF Renewables, Norte Fluminense, MECO, Luminus, EDF China. The main companies not controlled by the EDF group and included in Scope 3 of the Group GHG report are as follows: Shandong Zhonghua, Datang San Men Xia, Fuzhou, Nam Theun, Sinop, Enercal, Électricité de Mayotte, Generadora Metropolitana and Elpedison. The emissions of these companies are included on the basis of the Group's share of ownership of the Company. The emissions of companies not included in the EDF group's carbon report are estimated to be insignificant as they represent less than 5% of the emissions recorded.

Due to the complexity of gathering information in January, certain categories of GHG Protocol items are estimated based on the GHG report for the year N-1 and updated in the current year for the following financial year. The total emissions of these estimated items only account for 0.8% of the emissions of the 2022 GHG report.

Details on the EDF group's direct greenhouse gas emissions[3] (Scope 1)

The EDF group Scope 1 emissions (CO_2 equivalent) are comprised of direct emissions of CO_2, N_2O, CH_4, SF_6 and other minor emissions, estimated based on the full GHG report for year N-1. The Global Warming Potential (GWP) coefficients were updated based on the reference from the latest IPCC report (see sixth IPCC report). They are 27.9 for CH_4, 25,200 for SF_6 and 273 for N_2O. The scope covers the Group. The 2023 value for this indicator is subject to reasonable assurance check by PwC (√).

(1) The GHG Protocol is the carbon compatibility method most widely recognised internationally. Launched in 1998 by the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), it was developed in partnership with businesses, NGOs and governments. It provides a set of resources, tools and data to calculate carbon footprints (ghgprotocol.org/).

(2) The results of the Group's greenhouse gas report in 2023 are presented in section 3.1.1.2.3.

(3) Direct carbon emissions, excluding life cycle analysis of generation plants and fuel.

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NB: with regard to the amount of electricity and heat generated from renewable energies, in the specific case of Dalkia, and for reasons of technical collection within the time allowed, the amount of electricity is measured while the amount of heat generated from renewable energies is estimated on the basis of reference yields with regard to the consumption of renewable fuels. The associated biogenic emissions are presented in the Group's Carbon Report, published annually on the www.edf.fr website.

Details on the net installed renewable capacity (in GWe)

The net renewable electricity capacities correspond to the electricity generation capacities of the entities in which the Group has a significant stake, and whose capacities are consolidated in proportion to the percentage of ownership.

Details on the rate of regional monographs in the framework of the CEMA Action Plan (ADAPT)

This is an indicator to measure the progress of the ADAPT programme CEMA plan (see section 3.1.2.5). The target is to have completed the monographs of the following 12 metropolitan regions by 2025: Auvergne-Rhône-Alpes, Bourgogne-Franche-Comté, Bretagne, Centre-Val de Loire, Grand Est, Hauts-de-France, Île-de-France, Normandie, Nouvelle-Aquitaine, Occitanie, Pays de la Loire, Provence-Alpes-Côte d'Azur.

Details on the number of smart meters installed

The indicator takes account of the total number of smart meters installed (set up) on 31 December of the financial year. This total includes all meters installed since the start of the smart meter deployment programme. The Group's only entities with this activity are Enedis, IES, EDF in the UK and the International Division. The scope covers the Group.

Details on the EDF group's Electric Vehicles rate in the fleet of light vehicles

The indicator is the ratio between the number of electric vehicles (according to the low carbon criteria of the EV100 initiative)(1) and the total number of vehicles in the EDF group's fleet of registered light vehicles at 31 December of each year (owned or long-term leased). It should be noted that, without this having a significant impact on the Group's figures, the data on the number of light vehicles in the fleet of certain companies is not updated annually. In the future, emergency response vehicles will be removed from the total number of EDF group vehicles (their electrification could cause safety difficulties, for example in the case of a vehicle not equipped with the autonomy or load required to accomplish its mission at a given time). The scope covers the Group.

Further details on the indicators relating to water

Indicators on cooling water include water withdrawn and water returned to rivers, the sea and water tables. For nuclear power plants located by the sea and for thermal power plants, the amounts of cooling water withdrawn/returned are calculated on the basis of the operating times and nominal flows of the pumps. This indicator does not include data relating to MECO, as water consumption is negligible (open cooling circuit).

Further details on air emissions

Air emissions from thermal power plants of the EDF group are measured or calculated on the basis of analyses of the fuels or based on standard emissions factors. The Group's SF_6 emissions are calculated, as a matter of priority, on the basis of a mass balance or, to a lesser extent, using an estimation method approved by Executive Management at the entity in question (for example, application of a leakage rate). Emissions from certain power plants are not material for the Group and as such are not reported. This is the case for dust emissions from CCG power plants (excluding EDF), N_2O and SF_6 emissions from the MECO CCGT power plant, and emissions from the Dalkia Barkantine power plant in the United Kingdom. The indicator's scope covers the Group.

Further details on radioactive waste

EDF

Indicators pertaining to "short-lived very low level radioactive Waste (VLLW-SL) from operations and from decommissioning" take into account the actual volume of the VLLW-SL directly evacuated from the Industrial Gathering, Storing, and Stockpiling Centre (Centre Industriel de regroupement, d'entreposage et de stockage – CIRES) from the generation sites.

Indicators pertaining to "short-lived low and intermediate level radioactive waste (short-lived LLW and ILW) from activity and from decommissioning" take into account the actual volume of the short-lived LLW and ILW waste directly evacuated to the Aube Storage Centre (CSA) from the generation sites.

In each case, those volume correspond:

- to the volume of waste produced in the year for operating;
- to the volume of waste shipped in the year for sites being decommissioned.

Since 2016, the reduction in the volume contributed by treatment before storage (by ANDRA) has applied to VLLW-SL and to packages sent by Centraco, where applicable. It includes the reduction in volume resulting from treatment before storage (the case of super-compacted waste).

For the indicator "long-lived high- and intermediate-level solid radioactive waste" (HILW-LL), the packaging of the waste is taken into account in the calculation.

Given the technical constraints linked to processing operations, the packages are produced approximately 10 years after the fuel has effectively generated waste. The indicator is thus an estimate that relies on the long existence of current practices of packaging of long-lived waste that projects the current packaging ratio into the near future (number of packages effectively created following the processing of one tonne of fuel). This ratio essentially depends on the mixtures used to optimise the operations:

- for waste generated directly from spent fuel: it is produced through a combination of factors taken from the national inventory of radioactive materials and waste prepared by the French National Agency for Radioactive Waste Management (ANDRA);
- for waste not generated directly from fuel (control rods, etc.) and for which an average lifespan of 10 years is assumed: it is produced on the basis of feedback.

Framatome

Radioactive waste data from Framatome in France is similar to EDF's dismantling waste and so can be consolidated. Internationally, Class A waste (United States and Belgium), comparable to very low-level waste, are not consolidated. Radioactive waste is shipped and handled in accordance with domestic regulations in force in each country.

(1) 100% electric battery-powered vehicle, rechargeable hybrid vehicle with an electrical range of at least 50km, vehicle equipped with a range extender with an electrical range of 50km, hydrogen vehicle.

EDF in the United Kingdom

The data relating to the indicator "intermediate-level radioactive waste" of nuclear activities of EDF in the UK, are founded on the inventory of radioactive waste produced during the year, established by the Nuclear Decommissioning Authority. This is an estimate of the annual volume of waste that will be considered and classified as intermediate-level radioactive waste at the end-of-life of the nuclear generation sites. These estimates include packaging necessary to allow the transport of wastes off site. All of the intermediate-level radioactive waste is temporarily stored at the nuclear generation sites while waiting for a national decision on their final processing. An update of the national inventory was performed in 2019 and the inventory was published on the official site of the "UK Radioactive Waste Inventory". "Low-level radioactive waste" includes desiccants that are sent for processing in the form of intermediate-level waste in compliance with applicable regulations.

Further details on solid radioactive waste from operations

The indicator concerns solid waste from the active nuclear generating fleet. In France, the indicator covers long-lived high- and intermediate-level waste. In the UK, the indicator covers low-level waste (only category of radioactive waste transported off generation sites). The scope covers the Group where radioactive waste-related activities concern: EDF and EDF in the UK.

Details on the number of significant level 2 events on the INES scale

The indicator concerns the number of level-2 major events on the INES (International Nuclear Event Scale). The indicator's scope covers the Group.

Number of fatal accidents related to business-specific risks (employees and service providers)

The indicator takes account of the number of fatal accidents linked to business risks occurring in the year. The indicator's scope covers the Group.

Fatal accidents involving employees linked to business risks correspond to fatal accidents of employees at work, employees of the Company, including work-study students and apprentices. Fatal malaises are excluded from this scope. Employee transit accidents while on work-related business are taken into account, excluding those occurring in transit between home and work.

Fatal accidents involving service providers linked to business risks include fatal accidents involving service providers that occurred during the course of work performed on behalf of the Company regardless of the level of subcontracting. Fatal malaises are excluded from this scope. Traffic accidents on duty and commuting accidents between home and the usual place of work are not included in the published figure taken into account.

Percentage of employees who have benefited from a skills development action

The indicator is calculated by finding the ratio of the number of employees having benefited from a skills development action to the actual workforce at the end of the period. Skills development actions include training courses, hours spent in school by people on professionalisation contracts and professionalisation actions. The employees counted are those (including professionalisation contracts) who are present or not in the workforce at the end of the period and who have participated in at least one skills development action during the year.

Professionalisation actions are intended to transform theoretical skills and knowledge taught mainly in training into practical skills, anchored by their implementation in work situations. They have been formally integrated into the definition of the indicator for 2021. The trainings for which supporting documentation is not received on the date of closure of the reporting and professionalisation actions which are not registered with a supporting document are not taken into account. All professionalisation initiatives are recorded in the MyHR Group tool, which will make it easier to monitor them. The indicator's scope covers the Group.

Further details on the workforce and transfers

Since 2011, the population considered in data collection is all employees who have a non-suspended employment contract with one of the Group's companies. For entities having left the consolidation scope during the year in question:

- the indicators calculated in aggregate since the start of the year take into account those entities for the period during which they belonged to the scope of consolidation;
- indicators measured at 31 December represent the situation at the end of the year and do not take into account the entities which have left the scope of consolidation.

The workforce includes employees shared between EDF and ENGIE. An employee working 50% for EDF is counted for 0.5 in the published workforce.

The "Other arrivals" and "Other departures" indicators are therefore not included in hirings, resignations or dismissals. They include in particular:

- movements between companies of the Group;
- changes in the workforce covered by the status of the electricity and gas industries;
- movements of certain categories of employees, in particular those with rotating shifts, doctors and personnel made available by outside entities.

The 2023 value for this indicator are subject to reasonable assurance check by PwC (√).

Further details regarding the number of hours worked

- Number of hours worked by employees: the value to take into consideration is the number of hours worked and the "time an employee is exposed to risk under the orders of an employer". An additional hour counts as an hour worked regardless of the manner or level of remuneration.
- Number of hours worked by service providers: the number of hours worked by service providers can be calculated in various ways depending on the type of contract or the nature of the service performed. When there is no way to formally ascertain the number of hours worked, the hours can be counted using time sheets from services provider employers, through time tracking tools or estimated based on a predetermined fixed hourly rate. Activities conducted by service providers on their own sites, outside EDF group's facilities, are not taken into account. The hours worked during services involving the transport of equipment or merchandise are not taken into account.

Further details on calculating absenteeism

At the Group level, the "average number of absences per employee and per year" is the sum of absences due to sickness, transit accidents and domestic accidents, counted in days worked in proportion to time worked by employees and absences due to work-related accidents, counted in calendar days.

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In its calculation of absenteeism, EDF includes absences for the following reasons: absences due to sickness, work and travel related injuries as well as domestic accident. Legal absences due to maternity (excluding pathologies) are not taken into account. Absences related to company and union activities, pre-retirement leave and maternity leave are not included. The number of hours worked used in the calculation of the absenteeism rate is the number of hours theoretically worked. Absences due to part-time work on health grounds are taken into account to the tune of 50% of the contractual working time.

Further details on counting occupational diseases

Since 2020, the number of occupational illnesses is published at Group level according to the definition shared by all the Group's subsidiaries, *i.e.* the number of employees present on the 31 December having declared an occupational illness during the financial year that has not been rejected by CPAM.

Further details on the indicators on employees with disabilities

In countries in which regulations do not impose any mandatory declaration of the number of employees with disabilities, the reported data are provided on the basis of voluntary statements of employees.

Further details of expenditures for skills development actions

Skills development expenditure corresponds to all expenditure incurred for the training and professionalisation of employees (whether or not present at the workforce on 31 December) between 1 January and 31 December (based on the completion dates of the actions concerned).

Details on the number of customer visits on digital consumption monitoring platforms

This indicator counts the number of domestic customer visits on digital consumption monitoring platforms (e-quilibre, EDF & moi). The scope covers EDF (excluding overseas department and Corsica) given that the deployment of digital platforms in those areas has not been finalised. The indicator's scope covers EDF.

Details on the rate of employees covered by a collective bargaining agreement

The social dialogue indicator measures the existence of collective agreements in the key companies controlled. These agreements guarantee negotiations with employee representatives to define the status of employees. In accordance with ILO principles, agreements can be sectoral, national, regional, or at the level of an organisation or a site. There are two types of collective bargaining agreements: collective bargaining agreements for divisions are written agreements on working conditions with an employer, a group of employers or one or more professional organisations; collective bargaining agreements for employees are agreements involving one or more employees representative organisations or, in the absence of such bodies, the representatives officially elected by the employees and authorised by the employees to represent them, in accordance with national laws and regulations in force.

Through the channel of HR managers, each division or subsidiary reports once a year on the number of employees benefiting from a collective agreement. The indicator is the ratio between these employees and the actual workforce at 31 December. The indicator's scope covers the Group.

3.7 Appendices and Independent Third-Party report

3.7.1 Contribution to UN Sustainable Development Goals

As part of its work, the WBCSD[1] has identified priority Sustainable Development Objectives to which companies in the electricity sector must contribute in order to maximise their positive impacts or minimise their negative impacts[2]. The following table summarises EDF's contribution in relation to this analytical grid, and assesses its contribution in relation to the commitments, policies and actions undertaken (with cross-references to the relevant sections of the Statement of non-financial performance).

The following table assesses the EDF group's contribution to the other UN Sustainable Development goals:

3.7.2 Accountability with regard to the recommendations of the High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (UN HLEG)

This table summarises the alignment of the EDF group's commitments with regard to UN HLEG recommendations.

Recommendation	Description	EDF group's level of alignment
1. Net zero announcement	Businesses that commit to achieving net zero must have this commitment validated by a third-party organisation (*e.g.* SBTi, TPI, ISO, PCAF, PACTA). This commitment must cover 3 emissions scopes, for all the business's activities and all geographical zones, and must target net zero no later than 2050.	Net zero commitment still requiring validation by a third-party organisation
2. Net zero objectives	Businesses' net zero commitments must cover the full carbon trajectory, and not only the long-term objective. The trajectory must be aligned with the IEA NZE scenario or with the NGFS, OECM or IPCC 1.5°C scenarios with limited or zero overshoot. Intermediate emissions reduction objectives for 2025, 2030 and 2035 must be set (in absolute emissions and not only in intensity, halving emissions between 2020 and 2030) as well as specific objectives for methane when relevant.	1.5°C alignment still requiring validation by a third-party organisation
3. Carbon offsetting	Businesses are "strongly encouraged" to use carbon credits, but these cannot be used to achieve intermediate emissions reduction objectives. Only high environmental and societal integrity carbon credits based on carbon sinks can be used to neutralise a business's residual emissions to achieve net zero. Emissions relating to carbon sinks and land use must be accounted for separately.	Aligned
4. Transition plan	Corporate transition plans must contain the following: emissions reduction objectives, GHG emissions assessment verification method, emissions reduction action plan, specific action plan to reduce emissions relating to services and products sold by the business, supplier engagement plan, carbon capture, governance, management profit-sharing, investments (based on the taxonomy), R&D expenditure, stranded assets, public positions on the climate, just transition, and protection of ecosystems. Transition plans must be updated every five years and progress reported annually.	Aligned but more in-depth measures required in accordance with the CSRD
5. Exiting fossil fuels and accelerating renewables	Businesses must commit to exiting coal for generating electricity by 2030 for the OECD and by 2040 for the rest of the world; Use of other fossil fuels must be progressively reduced in line with the IEA NZE scenario. This transition must "avoid" being based on the sale of assets. Businesses must set themselves specific renewable energy supply objectives.	Aligned
6. Lobbying and advocacy	Businesses must publish the list of their equity holdings in professional associations as well as their positions on climate policies to achieve 1.5°C and on carbon pricing.	Aligned
7. Biodiversity	Businesses must target zero deforestation by 2025 (including *via* suppliers) and zero land take from remaining natural ecosystems by 2030. Businesses must invest in protecting and restoring ecosystems beyond their own value chain, including by purchasing high-integrity carbon credits. Businesses must anticipate the implementation of the TNFD.	Aligned but more in-depth measures required in accordance with the TNFD
8. Transparency and accountability	Businesses must annually report their GHG emissions assessment verified by a third-party organisation and their progress towards their net zero objectives, in a format compatible with the future UNFCCC platform. Businesses are required to conduct external assessments also covering their climate governance, KPIs, and internal control processes.	Aligned
9. Just transition	Businesses with activities in developing countries must demonstrate how they contribute to the economic development of these regions, their resilience, access to energy, combating inequality, *etc.*	Aligned (Just transition plan)
10. Regulations	Not applicable to businesses.	Non-applicable

(1) The World Business Council for Sustainable Development (WBCSD) is a coalition of international companies created in 1995 and united by an ordinary commitment to sustainable development.
(2) WBCSD, Sector Transformation: An SDG Roadmap for Electric Utilities, 2020.

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3.7.3 Compliance with best international standards

Global Compact[1]

The United Nations Global Compact brings together, under the aegis of the UN, companies and NGOs committed to 10 guiding principles articulated in four areas: human rights, labour rights, the environment and the fight against corruption. EDF has been committed to the United Nations Global Compact since 2001 and has published a Communication on Progress (CoP) at the "Advanced" level every year since 2012.

The Group also complies with the Declaration of the Rights of the Child, the Convention on the Elimination of All Forms of Discrimination Against Women, the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, and the United Nations Convention against Corruption. EDF promotes international human rights law by recognising the ILO's fundamental conventions, which guarantee fundamental labour principles and rights, and the fight against discrimination.

Global reporting Initiative (GRI)[2]

The GRI is an independent international non-profit organisation created in 1997 by the non-profit CERES (Coalition for Environmentally Responsible Economies) and the UNEP (United Nations Environment Programme). GRI helps companies and governments around the world to understand and communicate their impact on critical sustainable development issues such as climate change, human rights, governance and social well-being. This enables concrete actions to be taken to create social, environmental and economic benefits for all.

EDF has a long history of integrating GRI Standards as they evolve. A table comparing the Group's indicators and those proposed by the GRI is available on the edf.fr website and in the ESG Pack.

Sustainability Accounting Standards Board (SASB)[3]

Created in 2011, the SASB (Sustainability Accounting Standards Board) is an independent, non-profit standard-setting body that develops and maintains reporting standards enabling companies around the world to identify, manage and communicate non-financial and financial information of material importance to investors. The SASB standards are evidence-based, developed with broad market participation and designed to be beneficial to companies and useful to investors. The SASB has established standards specific to 77 industry sectors identified in its Sustainable Industry Classification System® (SICS®).

EDF is the first European energy company to act as an advisor within the SASB organisation[4]. As such, EDF has been proactively involved since 2020 in the process of revising this standard to enable its use worldwide. EDF was one of the main contributors to the SASB "Globalization Project"[5], which remains to this day, for certain subjects, specific to the American market, particularly in terms of the environment or regulation.

For items for which the standard is identical (*e.g.* GHG protocol) or close to the standards used in France and Europe, EDF's 2022 Statement of Non-Financial Performance covers most of the reporting topics required by the SASB for the "Electric Utilities & Power generators" sector:

	NFPS sections
Greenhouse Gas Emission & Energy Resources Planning	Section 3.1.1
Air Quality	Section 3.3.1.6
Water Management	Section 3.2.3
Coal Ash Management	Section 3.2.4.3
Energy Affordability	Sections 1.4.2.1.2, 1.4.2.1.3, 1.4.2.2.1.1 and 3.3.4
End use efficiency and Demand	Section 3.1.3.3
Nuclear Safety and Emergency management	Section 3.3.1.1
Grid Resiliency	Section 3.1.3.2.1

3.7.4 European taxonomy

3.7.4.1 Applicable regulatory framework

As part of the Green Pact for Europe aimed at achieving carbon neutrality by 2050 and pursuant to Regulation 2020/852 of 18 June 2020 (known as the "Taxonomy Regulation"), on 4 June 2021 the European Commission adopted Regulation (EU) 2021/2139, which defines the criteria for the technical examination of the eligibility and alignment of activities with regard to the first two environmental objectives (mitigation of climate change and adaptation to climate change).

Regulation (EU) 2021/2178, known as "Article 8", on the content and presentation of the information to be disclosed, was adopted on 6 July 2021. Regulation (EU) 2022/1214 covering certain activities in the nuclear and gas sectors was adopted on 9 March 2022. Lastly, Regulations (EU) 2023/2485 and 2023/2486, amending Regulations 2021/2139 and 2021/2178, respectively, were adopted on 27 June 2023. In particular, Regulation 2023/2486 adds, as of 2023, the analysis of the eligibility of activities with regard to the four other environmental objectives (aquatic and marine resources, circular economy, pollution and biodiversity), to the two objectives already targeted by the regulations.

Thus, this regulation aims to determine the conditions under which economic activities can be considered as contributing substantially to the six environmental objectives in order to direct capital flows towards them, according to transparent criteria.

An activity is said to be **eligible** for the taxonomy if it is included in the list of activities featuring in the regulations.

(1) globalcompact-france.org.
(2) globalreporting.org.
(3) sasb.org.
(4) sasb.org/standard-setting-process/standards-advisory-group/#if.
(5) sasb.org/standard-setting-process/active-projects/standards-internationalization-advancement/

An activity can contribute to the climate goals:

- based on its **own performance** (for example, in the case of the EDF group: the generation of electricity from renewable sources); or
- when it directly enables the exercise of other sustainable activities. It is then qualified as an **enabling activity** (for example, in the case of the EDF group: the electricity transmission activity); or
- if it supports the transition to a climate-neutral economy and there is no technologically and economically feasible low-carbon alternative. In this case, it is considered to be **transitional** (for example, in the case of the EDF group, certain activities in the nuclear sector).

An eligible activity will be considered **"aligned" with the Taxonomy** if:

- it complies with the technical criteria of contributing substantially to one of the six environmental objectives (e.g. in relation to emission thresholds);
- it meets the so-called "Do No Significant Harm" (DNSH) criteria, i.e. it does not significantly harm the other environmental objectives; and
- it complies with the minimum safeguards in terms of the protection of human rights, the fight against corruption, taxation and the fight against anti-competitive practices (see section 3.7.4.3.3 "Compliance with minimum safeguards").

Pursuant to the aforementioned regulations, the Group presents the three required indicators, based on its consolidated financial statements: the proportion of turnover, capital expenditure ("CAPEX$_T$") and operating expenditure ("OPEX$_T$") associated with aligned economic activities eligible for the Taxonomy.

3.7.4.2 Eligibility of Group activities for the Taxonomy

As the world's leading generator of electricity with no direct CO_2[1] emissions, the Group is making a major contribution to the objective of mitigating climate change. A very large part of the Group's investments is dedicated to the maintenance and life extension of its non-carbon generation assets (for example, an average investment of €4.7 billion per year in the *Grand Carénage*" major overhaul programme), which are governed by regulatory safety frameworks (for hydropower and nuclear) and which include the examination of extreme risks including climate events.

The main objective of these investments is to mitigate climate change and contribute to the resilience of the electricity system, while integrating the challenges of adapting generation assets. The Group's investments amounted to €19.1 billion[2] in 2023, 95% of which was dedicated to decarbonisation. As, in 2023, the share of these investments contributing exclusively to the objective of adapting to climate change was not significant (see section 3.1.2.2), the Group's taxonomy ratios were therefore only presented under the prism of change climate mitigation.

In addition, as a producer and marketer of electricity and energy services, the Group does not contribute substantially to the activities covered by Regulation (EU) 2023/2486 in respect of the sustainable use of water resources, the transition to a circular economy, pollution prevention/reduction and biodiversity protection/restoration. However, it is important to note that since the Group's is based on a systemic vision of global issues, the Group incurs expenses to ensure that these objectives are not undermined, notably as regards the protection of aquatic resources and biodiversity.

3.7.4.2.1 EDF group activities eligible for the Taxonomy

Under the previous definition, the following Group activities contribute substantially to mitigating climate change:

- **nuclear energy activities conducted in European Union countries** which include:
  - > safe construction and operation of new nuclear power plants to produce electricity or heat, including to produce hydrogen, using best available technologies (4.27): projects authorised no later than 2045 by the competent authorities for the construction and safe operation of best available technologies nuclear reactors (covers the generation of electricity, heat and hydrogen, as well as the upgrading of these reactors). For the Group, these activities mainly concern the Flamanville 3 power plant, as well as studies conducted in connection with SMR and EPR2 projects in France,
  - > the generation of electricity from nuclear energy at existing facilities (4.28) in France and Belgium: projects authorised no later than 2040 by the competent authorities aimed at extending the operating lifespan of existing reactors.

    This last activity in France was analysed by taking into account operation and maintenance activities (regulatory controls, maintenance programmes, etc.), modifications, replacements of large components, and operations that comply with the generic ASN notices received (900MW series) or to be received by 2040 (1,300MW and 1,450MW series) and with the technical requirements that allow the French nuclear fleet to continue operating beyond 40 years. All activities across the nuclear fleet in operation in France are eligible under activity 4.28.

    As a result of this definition, activities related to nuclear generation and the construction of new nuclear power plants in the United Kingdom are excluded from the European taxonomy. This significantly penalises the taxonomy ratios of the Group, which is making significant investments in the Hinkley Point C project;
- **electricity distribution:** construction and operation of interconnected electricity distribution and transmission networks (4.9);
- **electricity generation from renewable energies, excluding hydropower,** which include:
  - > electricity generation using solar photovoltaic technology (4.1),
  - > electricity generation from onshore and offshore wind power (4.3),
  - > electricity storage (4.10),
  - > maintenance and repair of renewable energy technologies (7.6);
- **electricity generation from hydropower power plants:** construction and operation of power generation facilities using hydroelectric power plants (reservoir power plants, run-of-river power plants, and pumped-storage power stations) (4.5; 4.10);
- **district heating/cooling distribution, cogeneration of heat/cold and power from bioenergy** (4.15; 4.20);

(1) World ranking of zero direct CO_2 emissions power producers (2022, TWh) (enerdata.net).
(2) Net investments presented in the cash flow statement (CFS) in the "2023 review of the financial position and results" (see section 5.1.4 "Net financial debt, cash flows and investments").

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- **energy efficiency and performance services, research and development that** correspond to:
  - > installation, maintenance and repair of energy efficiency equipment (7.3), and professional services related to the energy performance of buildings (9.3),
  - > research, development and innovation expenditures to reduce or avoid emissions (9.1);
- **fossil gas related** activities, which include:
  - > electricity generation from fossil gaseous fuels (4.29),
  - > high-efficiency co-generation of heat/cold and power from fossil gaseous fuels (4.30).

This table summarises nuclear energy and fossil gas related activities. It is applicable for every Taxonomy indicator (see section 3.7.3.4):

	Nuclear energy related activities	
1	The undertaking carries out, funds or has exposures to research, development, demonstration and deployment of innovative electricity generation facilities that produce energy from nuclear processes with minimal waste from the fuel cycle. (4.26)	NO
2	The undertaking carries out, funds or has exposures to construction and safe operation of new nuclear installations to produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen generation, as well as their safety upgrades, using best available technologies. (4.27)	YES
3	The undertaking carries out, funds or has exposures to safe operation of existing nuclear installations that produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen generation from nuclear energy, as well as their safety upgrades. (4.28)	YES
	Fossil gas related activities	
1	The undertaking carries out, funds or has exposures to construction or operation of electricity generation facilities that produce electricity using fossil gaseous fuels. (4.29)	YES
2	The undertaking carries out, funds or has exposures to construction, refurbishment, and operation of combined heat/cool and power generation facilities using fossil gaseous fuels. (4.30)	YES
3	The undertaking carries out, funds or has exposures to construction, refurbishment and operation of heat generation facilities that produce heat/cool using fossil gaseous fuels. (4.31)	NO

3.7.4.2.2 Group activities not explicitly mentioned in the regulation

Some of the Group's activities are not explicitly mentioned in the regulation but, after analysis, have been considered as contributing substantially to mitigating climate change because they can be linked to eligible activities.

Therefore, **sale of electricity from Purchase Obligations:** this legislative and regulatory mechanism in force in France obliges EDF to purchase electricity generated by certain 100% renewable energy sources and to resell it to customers on the same basis as EDF's own generation.

On the other hand, with regard to the aggregation activity: this activity consists of selling the electricity purchased from (renewable) electricity producers or from players with load-shedding capacities. Even though aggregation plays a key role in the development of renewable energies, and therefore in the mitigation of climate change, it was not selected as eligible because the core of the business model is similar to marketing, which is excluded from the Taxonomy.

3.7.4.2.3 Activities not eligible under current legislation

The activities below are those for which the Group has not identified a direct contribution to one or more objectives of the European Taxonomy or which are not covered by regulation:

- marketing of electricity not produced by EDF or whose source of production is not eligible;
- marketing of gas;
- purchases and sales on wholesale markets in connection with electricity and gas optimisation transactions;
- generating electricity from nuclear energy outside the European Union;
- nuclear services and fuel sales.

It should be noted that **Turnover$_T$**, as defined by the taxonomy, corresponds to the total amount of turnover falling under the scope of IFRS 15 "Revenue from contracts with customers".

For the Group, this definition therefore excludes "Trading" activity margin from the Taxonomy turnover, despite this is disclosed in sales in the financial statements.

3.7.4.3 Alignment of the Group's eligible activities

An eligible activity will be said to be "aligned" with the Taxonomy if it meets the technical criteria of a substantial contribution to one of the six environmental objectives, if it meets the "Do No Significant Harm – DNSH" criteria, *i.e.* that it does not significantly harm the other environmental objectives, and if it complies with the minimum safeguards.

The approach and conclusions of the analyses carried out on these conditions are detailed below.

3.7.4.3.1 Substantial contribution criteria

In order to assess the alignment of its activities, each Group entity has verified compliance with the criteria for substantial contribution to climate change mitigation.

All of the Group's eligible activities meet the substantial contribution criterion, with the exception of one low-capacity hydropower plant.

3.7.4.3.2 DNSH criteria analysis

When analysing the **DNSH criteria**, EDF relies on its **Environmental Management System (EMS)**, its Corporate Social Responsibility (CSR) policy, as well as its Ethics Charter that commits its entities to a precautionary approach, to acting responsibly and to developing technologies which respect the environment. Management of identified risks, including those associated with climate change, is fully integrated into the Group's global risk management process and internal control system. The most significant risks are covered in risk control plans in conjunction with the CSR.

Pursuant to the policy, the EDF group undertakes to evaluate the impacts of climate change on future and existing activities; adapt existing installations to make them less sensitive to climatic conditions and more resilient to extreme weather events; incorporate climate change scenarios in the design of new installations, adapt the Group's solutions, internal operations, and expertise to encompass climate change and take into account the eco-systemic dimension of climate change.

All EDF group entities take account of climate risks in mapping their risks, including both physical risks and so-called transition risks. The DNSH criteria were analysed for each Group activity.

The Group's EMS covers the environmental objectives of the Taxonomy as described in the paragraphs below.

As a manager of reservoirs and major user of water resources, the EDF group is committed to **integrated and responsible water management**, both in terms of quantity and quality. The Group also ensures that water is shared within the regions in which it operates by fully taking into account the local water situation (multi-use under climate constraints).

With regard to **waste management and the circular economy**, optimising the use of the natural resources consumed by the Group's value chain is an essential component of the Group's corporate responsibility (see section 3.2.4). The Group's action therefore focuses on three priorities: eco-social-design, the functional economy and industrial ecology.

The Group also takes full responsibility for radioactive waste and, in France, uses procedures to decommission closed nuclear power plants that are completely safe and protect the environment. It optimises and manages the operating and decommissioning radioactive waste for which it is responsible and develops treatment processes to reduce the volume of stored waste.

With regard to the **prevention and control of pollution**, when it is technically feasible, in order to reduce the pollution risks, the Group's entities have also implemented a programme to eliminate or substitute certain chemical substances with more environmentally-friendly products. This work focuses as a priority on CMR (carcinogenic, mutagenic, or reprotoxic) substances or those considered subject for concern. The application of BAT (best available techniques) in facilities' pollution management processes ensures optimised management of the waste produced.

Nuclear safety is the Group's top priority and a major, ongoing concern for the Group throughout the entire cycle, from procurement of fuel to decommissioning and waste management. It is based on technical and organisational specifications aimed at preventing a nuclear accident, and in the hypothetical case of such an accident, at limiting the consequences thereof.

Protection and restoration of biodiversity and ecosystem is also a major challenge for the EDF group. The action taken by the Group is structured around the following priorities: reducing the contribution of its operations to major biodiversity pressures, recreating spaces and conditions promoting biodiversity, improving and sharing knowledge, strengthening governance and raising awareness of biodiversity-related issues.

Furthermore, the Group made commitment towards biodiversity through two voluntary schemes: *Entreprises engagées pour la nature* and Act4nature international.

3.7.4.3.3 Compliance with minimum safeguards

The Group's compliance with the minimum safeguards criterion relies on robust processes regarding protection of human rights (see section 3.3.2.3 "Human rights"), combating corruption (see section 3.3.2.2 "Anti-corruption and other compliance programmes"), taxation (see section 3.4.2.2.1 "Group tax policy"), and combating anti-competitive practices (see section 3.3.2.2.5 "Preventing breaches of competition law").

These commitments are also published in the "Human rights and fundamental freedoms, health and safety, environment, and business ethics: the EDF group's commitments and requirements"[1] standards. Their implementation is based on principles of action that apply to all the Group's activities and which, as part of a continuous progress approach, notably address:

- initial and ongoing screening and management of environmental and societal impacts and risks, including those caused by operations as part of its business relationships;
- organisation, throughout the world, of transparent dialogue and consultations for each new project. EDF strives to implement its commitments in the early stages of its investment processes, including in its business relationships by requiring its suppliers and subcontractors to comply with CSR requirements for operations related to their joint business relationships, with a specific focus on the rights of local and indigenous communities and vulnerable groups;
- systems for collecting and processing reports of wrongdoing, that are accessible and notified to anyone who could be impacted by the Company's operations, guaranteeing the confidentiality of the reports and protecting internal whistleblowers (employees and external staff). These reports are evaluated and, if necessary, remedial measures are taken;
- in the event that a Group entity is warned, sanctioned or convicted by authorities in the field of human rights, taxation, combating corruption or anti-competitive practices, the Group reviews the relevant processes and puts in place remedial actions to ensure continued compliance minimum safeguards.

This public document applies to EDF and the companies it controls[2]. As far as Enedis is concerned, the subsidiary has drawn up its own vigilance plan to meet the requirements of French Law 2017-399 of 27 March 2017.

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(1) Framework available on EDF website https://www.edf.fr/edf/dispositif-alerte-groupe.
(2) Excluding Enedis, the distribution network operator, a subsidiary managed in compliance with the rules of management independence, as defined in the French Energy Code.

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3.7.4.3.4 Analysis of nuclear activity

For the analysis of the technical and environmental alignment criteria relating to its nuclear activities in France, the Group relies on Regulation (EU) 2022/1214 relating to certain nuclear activities. The analyses carried out cover the existing nuclear fleet, as well as projects for the construction and operation of new facilities (Flamanville 3 power plant, studies under way for the EPR2 and the SMRs).

In summary, the assessment of compliance with the technical criteria is notably based on:

- the transposition into French law of the Euratom directives and compliance with the Euratom treaty and European Union legislation on environmental law (criteria 1.a and 1.b);
- the legal and regulatory framework set up in France to secure the financing of long-term expenses relating to decommissioning of basic nuclear facilities as well as long-term storage of radioactive waste, *via* the obligation for operators of nuclear facilities to create funds (dedicated assets[1]); the entire system is overseen by the administrative authorities (criteria 1.c, 1.d and 4);
- the existence of operational permanent storage facilities in France for all very low-level and short-lived low- and intermediate-level radioactive waste from nuclear facilities in operation or being decommissioned, as well as the French national radioactive substance and waste management plan (PNGMDR – *Plan national de gestion des matières et déchets radioactifs*) governing the commissioning in France of high-level radioactive waste storage facilities[2] (criteria 1.e, 1.f and 7 for activity 4.27, criteria 1.e, 1.f and 7 for activity 4.28);
- EDF's compliance with applicable nuclear safety requirements, as demonstrated by the results of the inspections by the French Nuclear Safety Authority (Autorité de sûreté nucléaire), particularly regarding the performance of metallic nuclear fuel cladding in the event of an accident (criterion 2);
- the implementation of the project notification process in accordance with Article 41 of the Euratom treaty currently in force (criterion 3);
- compliance with the safety criterion defined by Directive 2009/71/Euratom, particularly relating to extreme natural risks established by the regulation and the most recent IAEA and WENRA international guidelines. This compliance was demonstrated, in terms of the existing nuclear fleet, by the periodic safety review process implemented regarding facilities and governed by law (criteria 5 to 7 for activity 4.27 and criteria 5 and 6 for activity 4.28).

Environmental criteria were analysed based on:

- the Life-Cycle Assessment of EDF's nuclear kWh published in 2022 concluded on a carbon content below 4gCO_2e/kWh, very well below the threshold of 100gCO_2e/kWh (substantial contribution criterion);
- the safety review system implemented during periodic reviews, which aims to improve protection against risks or disadvantages of basic nuclear facilities regarding safety, health and public health or protection of nature and the environment as much as possible, under economically acceptable conditions, taking account of the state of knowledge, techniques and practices, and the characteristics of the facility's environment (Article L. 593-18 of the French Environment Code) DNSH criterion "climate change adaptation"), as well as the GIEC scenarios[3] (DNSH criterion "adaptation to climate change");
- the regulatory framework specific to each nuclear power plant defining the requirements to be met regarding water sampling conditions, radioactive, chemical and thermal waste discharge limits, and the obligation to regularly monitor the environment, make declarations to the public authorities, and inform the public (DNSH criterion "sustainable use of water and marine resources");
- the implementation by the Group, within the regulatory framework set for it, of the nuclear fuel cycle closure strategy as defined in national energy policy guidelines. Furthermore, the Group optimises and manages conventional and radioactive waste relating to operation and deconstruction for which it is responsible and develops treatment channels to reduce the volume of stored waste (DNSH criterion "transition towards a circular economy");
- the implementation of administrative procedures defined by regulations, required to obtain the necessary authorisations in terms of radioactive discharges. In terms of management of spent fuel and waste, the PNGMDR complies with the Euratom directives and is designed to guarantee sustainable management of radioactive substances and waste in accordance with the protection of personal health, safety, and the environment (DNSH criterion "pollution prevention and control");
- the impact assessments and analyses of effects on the environment and biodiversity conducted for each facility upstream from its construction and updated taking account of regulatory changes, modifications to facilities and new environmental data according to the criteria defined by amended directive 2011/92/EU (DNSH criterion "prevention and restoration of biodiversity and ecosystems").

Following the analyses conducted, the Group concluded that its nuclear activities in France are aligned with the Green Taxonomy for the fleet in operation and for new facility construction projects.

3.7.4.3.5 Conclusion on the alignment of the Group's activities

- **Nuclear activities:** nuclear activities in the European Union, for the existing nuclear fleet and for projects to build new facilities, are aligned.
- **Fossil gas related activities:** to date, due to technical criteria particularly in terms of maximum emissions level (gCO_2/kWh), all the Group's gas-fired energy generation activities are eligible, but not aligned.
- **Electricity distribution:** all the technical criteria are met and this activity is aligned.
- **Power generation from renewable energies (other than hydropower):** all the technical criteria are met and this activity is aligned.
- **Eligible heating or cooling networks and cogeneration facilities:** those using more than 50% renewable energy, 50% waste heat, 75% heat from co-generation, or 50% a combination of these types of energy or heat are considered aligned.
- **Electricity generation from hydropower:** only a tiny fraction of the activities does not meet the technical criteria for substantial contribution.
- **Eligible energy efficiency and performance, research and development services:** they were considered as aligned with the Taxonomy.

(1) See chapter 6 "Financial statements", note 15.1.2.2 "Strategic allocation and composition of dedicated assets" to the consolidated financial statements at 31 December 2023.
(2) The Cigéo project is also the French deep geological storage facility project for long-lived medium and high-level radioactive waste. It is designed to store highly radioactive and long-lived waste generated by all French nuclear facilities. (See chapter 1 "The Group, its strategy and activities", section 1.4.1.1.2.3 "The issues relating to the nuclear activity").
(3) Climate change assessment reports: impacts, adaptation and vulnerability, published periodically by the Intergovernmental Panel on Climate Change (IPCC), the United Nations body responsible for assessing climate change science: https://www.ipcc.ch/reports/.

3.7.4.4 Taxonomy indicators

The three Taxonomy indicators: proportion of turnover ("Turnover$_T$"), proportion of capital expenditure ("CAPEX$_T$") and proportion of operating expenditure ("OPEX$_T$") are based on consolidated Group data (excluding companies accounted for by the equity method) (See chapter 6 "Financial statements").

When the definitions in the regulation do not provide sufficient precision, the main rules applied by the Group are specified.

Summary of the distribution activities

As explained, the Group's activities mainly contribute to the climate change mitigation objective and only marginally to the climate change adaptation objective. Moreover, the Group's activities do not make a substantial contribution to the other four environmental objectives. Consequently, the Group's Taxonomy ratios are only presented under the prism of climate change mitigation (see section 3.7.4.2).

2023	Proportion of CAPEX		Proportion of turnover		Proportion of OPEX	
By objective:	**Taxonomy-aligned**	**Taxonomy-eligible**	**Taxonomy-aligned**	**Taxonomy-eligible**	**Taxonomy-aligned**	**Taxonomy-eligible**
Climate change mitigation (CCM)	64%	67%	53%	59%	70%	73%
Climate change adaptation (CCA)	n/a	n/a	n/a	n/a	n/a	n/a
Water (WTR)	n/a	n/a	n/a	n/a	n/a	n/a
Pollution (CE)	n/a	n/a	n/a	n/a	n/a	n/a
Circular economy (PPC)	n/a	n/a	n/a	n/a	n/a	n/a
Biodiversity (BIO)	n/a	n/a	n/a	n/a	n/a	n/a

2022	Proportion of CAPEX		Proportion of turnover		Proportion of OPEX	
By objective:	**Taxonomy-aligned**	**Taxonomy-eligible**	**Taxonomy-aligned**	**Taxonomy-eligible**	**Taxonomy-aligned**	**Taxonomy-eligible**
Climate change mitigation (CCM)	66%	69%	38%	44%	72%	74%
Climate change adaptation (CCA)	n/a	n/a	n/a	n/a	n/a	n/a
Water (WTR)	n/a	n/a	n/a	n/a	n/a	n/a
Pollution (CE)	n/a	n/a	n/a	n/a	n/a	n/a
Circular economy (PPC)	n/a	n/a	n/a	n/a	n/a	n/a
Biodiversity (BIO)	n/a	n/a	n/a	n/a	n/a	n/a

n/a: not applicable.

3.7.4.4.1 "CAPEX$_T$" investment indicator

Definition of the indicator and calculation method

The "CAPEX$_T$" ratio referred to in Article 8.2.b of Regulation (EU) 2020/852 is calculated using:

- **in the denominator:** all investments known as "CAPEX$_T$", including gross additions to property, plant and equipment, intangible assets and rights of use (IFRS 16 Leases), including those resulting from business combinations (acquisition of a subsidiary) in the consolidated accounts. It therefore does not include financial investments made by the Group in companies accounted for using the equity method, or investments made by these entities. CAPEX$_T$ do not include investment grants;
- **in the numerator:** capital expenditures related to:
  - an eligible (or aligned) activity: CAPEX related to assets or processes associated with Taxonomy-eligible (or -aligned) activities,
  - a CAPEX plan whose objective is to create or transform an activity that will be Taxonomy-eligible or aligned,
  - individually eligible (or aligned) investments that are not related to a core eligible (or aligned) business (not significant for the Group). The main individual investments for which alignment is not analysed concern leased buildings and car fleets.

Supporting assets such as IT systems have been considered aligned when they relate to entities whose overall activities have been classified as aligned. For entities with a complex allocation of support functions between aligned and non-aligned activities, support assets are classified as non-aligned.

Breakdown of CAPEX$_T$ by activity according to the Taxonomy

CAPEX$_T$ investments for the financial year increased by €3.4 billion to €22.7 billion in 2023, compared to €19.3 billion in 2022. Their breakdown between activities remained stable and the proportion of CAPEX$_T$ relating to sustainable (aligned) activities decreased from 66% in 2022 to 64% in 2023. They were largely made in electricity distribution activities (deployment of network, meters), nuclear activities (particularly the *Grand Carénage* programme) and renewable energies.

As indicated, the exclusion of the United Kingdom from the taxonomy on nuclear activities affects the ratios of the Group, which has notably invested significant amounts as part of the Hinkley Point C project. CAPEX$_T$ associated with the generation of nuclear electricity or the construction of new nuclear facilities in the United Kingdom, not eligible, amounted to €5.8 billion in 2023, or 25% of the Group's CAPEX$_T$.

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2023 CAPEX					Substantial contribution criteria						Does Not Significantly Harm (DNSH) criteria									
Economic activities	Code(s) (2)	Capex (3)	Proportion of CAPEX (4)		Climate change mitigation (6)	Climate change adaptation (7)	Water (7)	Pollution (8)	Circular economy (9)	Biodiversity (10)	Climate change mitigation (11)	Climate change adaptation (12)	Water (13)	Pollution (14)	Circular economy (15)	Biodiversity (16)	Minimum safeguards (17)	Proportion of Taxonomy aligned CAPEX Year N-1 (18)	Category enabling activity (19)	Transitional activity category (20)
A. TAXONOMY-ELIGIBLE ACTIVITIES		In millions of euros	%		Y/N/NEL[1]	Y/N/NEL[1]	Y/N/NEL[1]	Y/N/NEL[1]	Y/N/NEL[1]	Y/N/NEL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	H	T
A.1 Environmentally sustainable activities (Taxonomy-aligned)																				
Electricity generation from nuclear energy in existing installations	4.28	4,992	22%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	23%	-	T
Construction and safe operation of new nuclear power plants	4.27	834	4%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	3%	-	T
Transmission and distribution of electricity	4.9	5,296	23%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	25%	H	-
Electricity generation from hydropower	4.5	463	2%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	2%	-	-
Electricity generation from wind power	4.3	901	4%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	6%	-	-
Electricity generation using solar photovoltaic technology	4.1	1,589	7%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	5%	-	-
Storage of electricity	4.10	27	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Installation, maintenance and repair of renewable energy technologies	7.6	14	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Electricity generation from bioenergy	4.8	77	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Transport networks, distribution of low-carbon renewable gases	4.15	138	1%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	-	-
Installation, maintenance and repair of energy efficiency equipment	7.3	20	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Specialized services related to the energy performance of buildings	9.3	66	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Heat/cold generation through bioenergy	4.24	24	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Infrastructure favouring low-CO_2 road and public transport	6.15	31	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Installation, maintenance, repair of electric vehicle charging stations	7.4	15	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
CAPEX of environmentally sustainable activities (Taxonomy-aligned) (A.1)		**14,489**	**64%**		**64%**						**64%**	**64%**	**64%**	**64%**	**64%**	**64%**	**64%**	**65%**		
of which enabling		**5,471**	**24%**		**38%**						**38%**	**38%**	**38%**	**38%**	**38%**	**38%**	**38%**	**27%**		
of which transitionnal		**5,826**	**26%**		**40%**						**40%**	**40%**	**40%**	**40%**	**40%**	**40%**	**40%**	**27%**		
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)					EL/NEL	EL/NEL	EL/NEL	EL/NEL	EL/NEL	EL/NEL										
Electricity generation from fossil gaseous fuels	4.29	411	2%		el	nel	nel	nel	nel	nel								3%		
Installation, maintenance and repair of energy efficiency equipment	7.3	8	0%		el	nel	nel	nel	nel	nel								0%		
Transport networks, distribution of low-carbon renewable gases	4.15	18	0%		el	nel	nel	nel	nel	nel								0%		
High-efficiency heat/cold cogeneration elec. gaseous fossil fuels	4.30	48	0%		el	nel	nel	nel	nel	nel								0%		
Electricity generation from a hydropower power plant	4.5	12	0%		el	nel	nel	nel	nel	nel								0%		
Anaerobic digestion of organic waste	5.7	12	0%		el	nel	nel	nel	nel	nel								0%		
Acquisition and ownership of buildings	7.7	240	1%		el	nel	nel	nel	nel	nel								0%		
CAPEX of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		**749**	**3%**		**3%**													**3%**		
Total (A.1 + A.2)		**15,238**	**67%**															**69%**		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
Electricity generation from nuclear energy and construction of new nuclear power plants	4.27, 4.28	5,772	25%																	
Other non-eligible activities		1,702	8%																	
CAPEX of Taxonomy-non-eligible activities (B)		**7,474**	**33%**																	
TOTAL (A + B)		**22,712**	**100%**																	

(1) Yes, Taxonomy-eligible and Taxonomy-aligned activity with the relevant environmental objective.
N – No, Taxonomy-eligible but not Taxonomy-aligned activity with the relevant environmental objective.
NEL – Not eligible, Taxonomy non-eligible activity for the relevant environmental objective.
EL – Eligible, Taxonomy eligible activity for the relevant objective.

Information on the CAPEX plan

For the years 2024, 2025 and 2026, the Group forecasts an increase in annual investments and expects to reach €25 billion[1] per year, at least 90% of which will be allocated to decarbonised activities.

Information on "green" financing

On 21 August 2023, EDF issued CHF325 million (around €339 million) in green bonds, the net proceeds of which were used to refinance investments in electricity distribution in the first half of 2023, notably to adapt the network to the needs of the energy transition.

On 28 November 2023, EDF issued senior green bonds dedicated to the existing nuclear fleet, for a nominal amount of €1 billion. The net proceeds of the bond were used to refinance pre-2023 investments in existing nuclear reactors in France as part of the extension of their lifespan, as defined in EDF's Green Financing Framework.

The allocation of funds raised via EDF's green financing was certified by one of the Statutory Auditors (see section 6.7 "Information on the allocation of the funds raised as part of EDF's green financing" of the Universal Registration Document). It is available on the page dedicated to sustainable finance on the EDF website.

(1) According to the definition applied for the net investments presented in the cash flow statement (CFS) of the "Review of the financial position".

Reconciliation between CAPEX$_T$ and investments presented in the consolidated cash flow statements and in the cash flow statement table

The following table provides a reconciliation between the net investments presented in the cash flow statement (CFS) in the consolidated financial statements (see section 6.1 "Consolidated financial statements at 31 December 2023"), on the one hand, and in the cash flow statement (CFS) in the review of the financial position and the 2023 results (see section 5.1.4 "Net financial debt, cash flows and investments"), on the other, and the CAPEX$_T$.

(in millions of euros)	31/12/2023	31/12/2022	Changes
Capex$_T$	**22,712**	**19,315**	**3,397**
Effect of changes in the scope of consolidation	(157)	(213)	56
Increase of the right of use asset (leases)	(711)	(390)	(321)
Change in payables on acquisition of fixed assets	(823)	(388)	(435)
Intangible and tangible investments in the CFS (see section 6.1)	**21,021**	**18,324**	**2,697**
Investment subsidies	(313)	(554)	241
Other including effects of deconsolidation	(1,608)	(1,375)	(233)
Net investments in the CFS (see section 5.1.4)	**19,100**	**16,395**	**2,705**

Additional information on nuclear energy and fossil gas related activities regarding CAPEX$_T$

	Taxonomy-aligned economic activities (denominator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	834	4%	834	4%	-	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	4,992	22%	4,992	22%	-	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX**	**8,663**	**38%**	**8,663**	**38%**	**-**	**0%**
8	**TOTAL CAPEX$_T$**	**22,712**	**100%**	**22,712**	**100%**	**-**	**0%**

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	Taxonomy-aligned economic activities (numerator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of CAPEX	834	6%	834	6%	-	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of CAPEX	4,992	34%	4,992	34%	-	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of CAPEX**	**8,663**	**60%**	**8,663**	**60%**	**-**	**0%**
8	**Total amount and proportion of taxonomy-aligned economic activities in the numerator of $CAPEX_T$**	**14,489**	**100%**	**14,489**	**100%**	**-**	**0%**

	Taxonomy-eligible but not taxonomy-aligned economic activities	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
4	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	411	2%	411	2%	-	0%
5	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	48	0%	48	0%	-	0%
6	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX**	**290**	**1%**	**290**	**1%**	-	**0%**
8	**Total amount and proportion of taxonomy eligible but not taxonomy-aligned economic activities in the denominator of $CAPEX_T$**	**749**	**3%**	**749**	**3%**	-	**0%**

	Taxonomy non-eligible economic activities	(in millions of euros)	(in %)
1	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%
2	Amount and proportion of economic activity referred to in row 2 of Template 1 that is taxonomy-non-eligible in accordance with section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	5,327	23%
3	Amount and proportion of economic activity referred to in row 3 of Template 1 that is taxonomy-non-eligible in accordance with section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	445	2%
4	Amount and proportion of economic activity referred to in row 4 of Template 1 that is taxonomy-non-eligible in accordance with section 4.29 of annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%
5	Amount and proportion of economic activity referred to in row 5 of Template 1 that is taxonomy-non-eligible in accordance with section 4.30 of Annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%
6	Amount and proportion of economic activity referred to in row 6 of Template 1 that is taxonomy-non-eligible in accordance with section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of CAPEX	-	0%
7	**Amount and proportion of other taxonomy-non-eligible economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX**	**1,702**	**8%**
8	**Total amount and proportion of taxonomy-non-eligible economic activities in the denominator of $CAPEX_T$**	**7,474**	**33%**

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3.7.4.4.2 "Turnover$_T$" indicator

Definition of the indicator and calculation method

The turnover ratio referred to in Article 8.2.a of regulation (EU) 2020/852 is calculated as the proportion of net turnover generated by products or services associated with economic activities eligible for (or aligned with) the Taxonomy (numerator), divided by consolidated turnover excluding trading (denominator) (see section 6.1 "Consolidated financial statements", note 5.1.2 "Sales" to the consolidated financial statements for the financial year ended on 31 December 2023). It therefore does not include turnover generated by companies accounted for using the equity method.

In France, the EDF group manages its generation in an integrated manner and optimise its generating facilities based on the upstream-downstream balance. Consequently, turnover accounted for is allocated based on volumes generated by different generation channels, and taking account of market purchases/sales, based on the published electricity report (see section 5.1.3.1.1.1 "France – Generation and supply").

Breakdown of turnover$_T$ by activity according to the Taxonomy

Turnover$_T$ (excluding trading activities) remained stable from 2022 to 2023, and reached €136 billion. This level, which remains high, is mainly due to energy sales (electricity and gas) made in a context of high market prices. In addition, the recovery in nuclear generation in 2023 (+41.4TWh) after the sharp fall in 2022 (-81.7TWh), due notably to the phenomenon of stress corrosion, explains the increase in the proportion of aligned turnover$_T$ relating to nuclear power generation in France. However, a significant proportion of turnover is generated by marketing activities (non-eligible). These various factors are reflected in the Taxonomy ratios, where the proportion of turnover$_T$ generated by aligned activities increased significantly, from 38% in 2022 to 53% in 2023.

On 4 December 2023, the EDF group inaugurated the Port-Est bioenergy plant in La Réunion, France, whose engines, which were fuelled by fuel oil, now run on liquid biomass made from colza oil. EDF is thus making its electricity generation on the island totally renewable, and therefore aligned, with the Group's objective of making non-interconnected areas benchmarks in this field.

As indicated, the exclusion of the United Kingdom from the taxonomy on nuclear activities penalises the Group's ratios. Sales from nuclear power generation in the United Kingdom, which is not eligible, amounted to €3.9 billion in 2023, or 3% of the Group's sales.

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2023 Turnover					Substantial contribution criteria						Does Not Significantly Harm (DNSH) criteria									
Economic activities	Code(s) (2)	Turnover (3)	Proportion of turnover (4)		Climate change mitigation (5)	Climate change adaptation (6)	Water (7)	Pollution (8)	Circular economy (9)	Biodiversity (10)	Climate change mitigation (11)	Climate change adaptation (12)	Water (13)	Pollution (14)	Circular economy (15)	Biodiversity (16)	Minimum safeguards (17)	Proportion of Taxonomy-aligned turnover Year N-1 (18)	Category enabling activity (19)	Category transitional activity (20)
A. TAXONOMY-ELIGIBLE ACTIVITIES		In millions of euros	%		Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	H	T
A.1 Environmentally sustainable activities (Taxonomy-aligned)																				
Electricity generation from nuclear energy in existing installations	4.28	34,821	27%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	14%	-	T
Transmission and distribution of electricity	4.9	16,747	12%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	12%	H	-
Electricity generation from hydropower	4.5	5,812	4%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	2%	-	-
Electricity generation from wind power	4.3	5,641	4%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	4%	-	-
Electricity generation using solar photovoltaic technology	4.1	2,830	2%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	2%	-	-
Storage of electricity	4.10	462	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Installation, maintenance and repair of renewable energy technologies	7.6	898	1%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	H	-
Manufacturing technologies related to renewable energies	3.1	12	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Electricity generation from bioenergy	4.8	553	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	-	-
Transport networks, distribution of low-carbon renewable gases	4.15	720	1%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	-	-
Cogeneration of heat/cold and power from bioenergy	4.20	1,072	1%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	-	-
Installation, maintenance and repair of energy efficiency equipment	7.3	500	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Specialized services related to the energy performance of buildings	9.3	1,641	1%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	H	-
Heat/cold generation through bioenergy	4.24	5	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Electricity generation/non-fossil renewable gas fuels	4.7	414	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Valorization of materials from non-hazardous waste	5.9	7	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Infrastructure favouring low-CO_2 road and public transport	6.15	70	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Installation, maintenance, repair of electric vehicle charging stations	7.4	9	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Install., mainten., repair of instr. measur. and regulat. building energy perf	7.5	13	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Turnover of environmentally sustainable activities (Taxonomy-aligned) (A.1)		**72,227**	**53%**		**53%**						**53%**	**53%**	**53%**	**53%**	**53%**	**53%**	**53%**	**38%**		
of which enabling		**20,352**	**15%**		**28%**						**28%**	**28%**	**28%**	**28%**	**28%**	**28%**	**28%**	**16%**		
of which transitional		**34,821**	**26%**		**48%**						**48%**	**48%**	**48%**	**48%**	**48%**	**48%**	**48%**	**14%**		
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)					EL/NEL	EL/NEL	EL/NEL	EL/NEL	EL/NEL	EL/NEL										
Electricity generation from fossil gaseous fuels	4.29	5,893	5%		el	nel	nel	nel	nel	nel								5%		
Installation, maintenance and repair of energy efficiency equipment	7.3	1,311	1%		el	nel	nel	nel	nel	nel								1%		
Transport networks, distribution of low-carbon renewable gases	4.15	190	0%		el	nel	nel	nel	nel	nel								0%		
High-efficiency heat/cold cogeneration elec. gaseous fossil fuels	4.30	108	0%		el	nel	nel	nel	nel	nel								0%		
Electricity generation from a hydropower power plant	4.5	186	0%		el	nel	nel	nel	nel	nel								0%		
Anaerobic digestion of organic waste	5.7	8	0%		el	nel	nel	nel	nel	nel								0%		
Turnover of taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		**7,596**	**6%**		**6%**													**6%**		
Total (A.1 + A.2)		**79,823**	**59%**		**0%**													**44%**		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
Nuclear power generation activity	4.28	3,862	3%																	
Other non-eligible activities		52,364	38%																	
Turnover of taxonomy-non-eligible activities (B)		**56,226**	**41%**																	
TOTAL (A + B)		**136,049**	**100%**																	

(1) Yes, Taxonomy-eligible and Taxonomy-aligned activity with the relevant environmental objective.
N – No, Taxonomy-eligible but not Taxonomy-aligned activity with the relevant environmental objective.
NEL – Not eligible, Taxonomy non-eligible activity for the relevant environmental objective.
EL – Eligible, Taxonomy eligible activity for the relevant objective.

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Additional information on nuclear energy and fossil gas related activities regarding turnover$_T$

	Taxonomy-aligned economic activities (denominator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	34,821	27%	34,821	27%	-	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of turnover**	**37,406**	**27%**	**37,406**	**27%**	**-**	**0%**
8	**TOTAL TURNOVER$_T$**	**136,049**	**100%**	**136,049**	**100%**	**-**	**0%**

	Taxonomy-aligned economic activities (numerator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of turnover	34,821	48%	34,821	48%	-	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of turnover**	**37,406**	**52%**	**37,406**	**52%**	**-**	**0%**
8	**Total amount and proportion of taxonomy-aligned economic activities in the numerator of turnover**	**72,227**	**100%**	**72,227**	**100%**	**-**	**0%**

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	Taxonomy-eligible but not taxonomy-aligned economic activities	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	*(in %)*	*(in millions of euros)*	*(in %)*	*(in millions of euros)*	*(in %)*
1	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
4	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	5,893	5%	5,893	5%	-	0%
5	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	108	0%	108	0%	-	0%
6	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of turnover**	**1,595**	**1%**	**1,595**	**1%**	-	**0%**
8	**Total amount and proportion of taxonomy eligible but not taxonomy-aligned economic activities in the denominator of turnover$_T$**	**7,596**	**6%**	**7,596**	**6%**	-	**0%**

	Taxonomy non-eligible economic activities	(in millions of euros)	(in %)
1	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%
2	Amount and proportion of economic activity referred to in row 2 of Template 1 that is taxonomy-non-eligible in accordance with section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%
3	Amount and proportion of economic activity referred to in row 3 of Template 1 that is taxonomy-non-eligible in accordance with section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	3,862	3%
4	Amount and proportion of economic activity referred to in row 4 of Template 1 that is taxonomy-non-eligible in accordance with section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%
5	Amount and proportion of economic activity referred to in row 5 of Template 1 that is taxonomy-non-eligible in accordance with section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%
6	Amount and proportion of economic activity referred to in row 6 of Template 1 that is taxonomy-non-eligible in accordance with section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of turnover	-	0%
7	**Amount and proportion of other taxonomy-non-eligible economic activities not referred to in rows 1 to 6 above in the denominator of turnover**	**52,364**	**38%**
8	**Total amount and proportion of taxonomy-non-eligible economic activities in the denominator of turnover$_T$**	**56,226**	**41%**

3.7.4.4.3 "OPEX$_T$" indicator

Definition of the indicator and calculation method

The "OPEX$_T$" ratio referred to in Article 8.2.b of Regulation (EU) 2020/852 is calculated using:

- **the denominator:** the direct non-capitalised costs related to research and development, building renovation measures, short-term lease (not accounted for under IFRS 16), maintenance and repairs, as well as any other direct expenditure related to the day-to-day servicing of assets of property, plant and equipment that are necessary to ensure the continuous and efficient operation of these assets;
- **the numerator:** the operational expenditures included in the denominator which:
  - > are related to an eligible (or aligned) activity: OPEX related to assets or processes associated with Taxonomy-eligible (or aligned) activities, or
  - > are part of an OPEX plan whose objective is to create/expand an activity aligned to the Taxonomy, or
  - > are individually eligible (or aligned) OPEX$_T$ or purchases of goods or services related to activities eligible (or aligned) with the Taxonomy, but which are not part of the Company's core eligible (or aligned) activities.

All OPEX under the Taxonomy are included in the lines of the Group's consolidated income statement: "Other external expenses" and "Personnel expenses" (net of inventories and capitalised production). They also include expenses relating to repairs of circuit welds at the Flamanville 3 power plant presented in "Other operating income and expenses" (see section 6.1 "Consolidated financial statements", note 7 "Other income and expenses" of the consolidated financial statements at 31 December 2023). They therefore do not include OPEX incurred by companies accounted for using the equity method.

Under these costs, only the types of expenses specified above are taken into account in the ratios, based on general accounting or cost accounting where necessary.

Under "Other expenses relating to the day-to-day maintenance of property, plant and equipment", the Group includes personnel expenses and purchases relating to the maintenance and upkeep of generation assets, including, for the nuclear fleet in operation, expenses related to control operations, *i.e.* facility monitoring expenses, in the OPEX of the Taxonomy. This excludes operational expenditures related to production itself.

Expenditures for support functions directly related to maintenance and upkeep are included in Taxonomy OPEX.

In the case of the hydropower business and the electricity distribution business, expenses relating to concession fees are excluded from the calculation of operational expenditures.

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Non-financial performance
Appendices and Independent Third-Party report

Breakdown of $OPEX_T$ by activity according to the taxonomy regulation

$OPEX_T$ remained stable from 2022 to 2023 at €9.7 billion. The proportion of aligned $OPEX_T$ decreased slightly from 72% in 2022 to 70% in 2023 across all activities.

As indicated, the exclusion of the United Kingdom from the taxonomy on nuclear activities penalises the Group's ratios. $OPEX_T$ associated with the generation of nuclear electricity in the United Kingdom, not eligible, amounted to €170 million in 2023, or 2% of the Group's $OPEX_T$.

2023 OPEX					Substantial contribution criteria						Does Not Significantly Harm (DNSH) criteria									
Economic activities	Code(s) (2)	Opex (3)	Proportion of OPEX (4)		Climate change mitigation (5)	Climate change adaptation (6)	Water (7)	Pollution (8)	Circular economy (9)	Biodiversity (10)	Climate change mitigation (11)	Climate change adaptation (12)	Water (13)	Pollution (14)	Circular economy (15)	Biodiversity (16)	Minimum safeguards (17)	Proportion of Taxonomy aligned OPEX Year N-1 (18)	Category enabling activity (19)	Category transitional activity (20)
		In millions of euros	%		Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N/ NEL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	H	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																				
A.1 Environmentally sustainable activities (Taxonomy-aligned)																				
Electricity generation from nuclear energy in existing installations	4.28	3,097	32%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	32%	-	T
Construction and safe operation of new nuclear power plants	4.27	673	7%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	9%	-	T
Transmission and distribution of electricity	4.9	1,102	11%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	11%	H	-
Electricity generation from hydropower	4.5	444	5%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	5%	-	-
Electricity generation from wind power	4.3	178	2%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	2%	-	-
Electricity generation using solar photovoltaic technology	4.1	42	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Storage of electricity	4.10	28	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Installation, maintenance and repair of renewable energy technologies	7.6	286	3%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	3%	H	-
Electricity generation from bioenergy	4.8	8	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%		-
Transport networks, distribution of low-carbon renewable gases	4.15	180	2%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	2%	-	-
Cogeneration of heat/cold and power from bioenergy	4.20	39	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Installation, maintenance and repair of energy efficiency equipment	7.3	46	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	H	-
Specialized services related to the energy performance of buildings	9.3	466	5%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	5%	H	-
Valorization of materials from non-hazardous waste	5.9	11	0%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	0%	-	-
Infrastructure favouring low-CO_2 road and public transport	6.15	93	1%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	1%	H	-
Research, development and innovation	9.1	145	2%		yes	nel	nel	nel	nel	nel	yes	yes	yes	yes	yes	yes	yes	2%	H	-
OPEX of environmentally sustainable activities (Taxonomy-aligned) (A.1)		**6,838**	**70%**		**70%**						**70%**	**70%**	**70%**	**70%**	**70%**	**70%**	**70%**	**72%**		
of which enabling		**2,166**	**22%**		**32%**						**32%**	**32%**	**32%**	**32%**	**32%**	**32%**	**32%**	**23%**		
of which transitional		**3,770**	**38%**		**55%**						**55%**	**55%**	**55%**	**55%**	**55%**	**55%**	**32%**	**41%**		
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)					EL/NEL	EL/NEL	EL/NEL	EL/NEL	EL/NEL	EL/NEL										
Electricity generation from fossil gaseous fuels	4.29	180	3%		el	nel	nel	nel	nel	nel								2%		
Transport networks, distribution of low-carbon renewable gases	4.15	45	0%		el	nel	nel	nel	nel	nel								0%		
High-efficiency heat/cold cogeneration elec. gaseous fossil fuels	4.30	20	0%		el	nel	nel	nel	nel	nel								0%		
Electricity generation from a hydropower power plant	4.5	14	0%		el	nel	nel	nel	nel	nel								0%		
Anaerobic digestion of organic waste	5.7	3	0%		el	nel	nel	nel	nel	nel								0%		
Renovation of existing buildings	7.2	3	0%		el	nel	nel	nel	nel	nel								0%		
OPEX of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		**265**	**3%**		**3%**													**2%**		
Total (A.1 + A.2)		**7,103**	**73%**															**74%**		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
Nuclear power generation activity		170	2%																	
Other non-eligible activities		2,459	25%																	
OPEX of taxonomy-non-eligible activities (B)		**2,629**	**27%**																	
TOTAL (A + B)		**9,732**	**100%**																	

(1) Yes, Taxonomy-eligible and Taxonomy-aligned activity with the relevant environmental objective.
N – No, Taxonomy-eligible but not Taxonomy-aligned activity with the relevant environmental objective.
NEL – Not eligible, Taxonomy non-eligible activity for the relevant environmental objective.
EL – Eligible, Taxonomy eligible activity for the relevant objective.

Additional information on nuclear energy and fossil gas related activities regarding $OPEX_T$

	Taxonomy-aligned economic activities (denominator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	673	7%	673	7%	-	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	3,097	32%	3,097	32%	-	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of OPEX**	**3,068**	**32%**	**3,068**	**32%**	**-**	**0%**
8	**Total $OPEX_T$**	**9,732**	**100%**	**9,732**	**100%**	**-**	**0%**

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	Taxonomy-aligned economic activities (numerator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		(in millions of euros)	(in %)	(in millions of euros)	(in %)	(in millions of euros)	(in %)
1	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of OPEX	673	10%	673	10%	-	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of OPEX	3,097	45%	3,097	45%	-	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of OPEX**	**3,068**	**45%**	**3,068**	**45%**	**-**	**0%**
8	**Total amount and proportion of taxonomy-aligned economic activities in the numerator of $OPEX_T$**	**6,838**	**100%**	**6,838**	**100%**	**-**	**0%**

	Taxonomy-eligible but not taxonomy-aligned economic activities	CCM + CCA (in millions of euros)	CCM + CCA (in %)	Climate change mitigation (CCM) (in millions of euros)	Climate change mitigation (CCM) (in %)	Climate change adaptation (CCA) (in millions of euros)	Climate change adaptation (CCA) (in %)
1	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
4	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	180	3%	180	3%	-	0%
5	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	20	0%	20	0%	-	0%
6	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
7	**Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of OPEX**	**65**	**0%**	**65**	**0%**	**-**	**0%**
8	**Total amount and proportion of taxonomy eligible but not taxonomy-aligned economic activities in the denominator of $OPEX_T$**	**265**	**3%**	**265**	**3%**	**-**	**0%**

	Taxonomy non-eligible economic activities	(in millions of euros)	(in %)
1	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with section 4.26 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%
2	Amount and proportion of economic activity referred to in row 2 of Template 1 that is taxonomy-non-eligible in accordance with section 4.27 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%
3	Amount and proportion of economic activity referred to in row 3 of Template 1 that is taxonomy-non-eligible in accordance with section 4.28 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	170	2%
4	Amount and proportion of economic activity referred to in row 4 of Template 1 that is taxonomy-non-eligible in accordance with section 4.29 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%
5	Amount and proportion of economic activity referred to in row 5 of Template 1 that is taxonomy-non-eligible in accordance with section 4.30 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%
6	Amount and proportion of economic activity referred to in row 6 of Template 1 that is taxonomy-non-eligible in accordance with section 4.31 of annexes I and II to delegated regulation (EU) 2021/2139 in the denominator of OPEX	-	0%
7	**Amount and proportion of other taxonomy-non-eligible economic activities not referred to in rows 1 to 6 above in the denominator of OPEX**	**2,459**	**25%**
8	**Total amount and proportion of taxonomy-non-eligible economic activities in the denominator of $OPEX_T$**	**2,629**	**27%**

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3.7.5 Report by one of the Statutory Auditors, appointed as an independent third party, on the consolidated non-financial information statement

(For the year ended December 31st, 2023)

This is a translation into English of the limited assurance report from one of the Statutory Auditors on the Identified Sustainability Information in ELECTRICITE DE FRANCE's Compliance Certificate and it is provided solely for the convenience of English-speaking users.

To the Annual General Meeting,

In our capacity as Statutory Auditor of ELECTRICITE DE FRANCE (hereinafter the "Entity"), appointed as an independent third party ("third party") and accredited by Cofrac Inspection Accreditation, n°3-1862 (*scope available at www.cofrac.fr*), we have undertaken a limited assurance engagement on the historical information (observed and extrapolated) in the consolidated non-financial performance statement, prepared in accordance with the Entity's procedures (hereinafter the "Guidelines"), for the year ended December 31st, 2023 (hereinafter the "Information" and the "Statement", respectively), presented in the Group Annual Report pursuant to the legal and regulatory provisions of Articles L. 225-102-1, R. 225-105 and R. 225-105-1 of the French Commercial Code (*Code de commerce*).

Conclusion

Based on the procedures we have performed as described under the section "Nature and scope of procedures" and the evidence we have obtained, nothing has come to our attention that cause us to believe that the consolidated non-financial statement is not prepared in accordance with the applicable regulatory provisions and that the Information, taken as a whole, is not presented fairly in accordance with the Guidelines, in all material respects.

Preparation of the non-financial information statement

The absence of a commonly used generally accepted reporting framework or a significant body of established practice on which to draw to evaluate and measure the Information allows for different, but acceptable, measurement techniques that can affect comparability between entities and over time.

Consequently, the Information needs to be read and understood together with the Guidelines, summarized in the Statement and available on request from its headquarters.

Inherent limitations in preparing the Information

The Information may be subject to uncertainty inherent to the state of scientific and economic knowledge and the quality of the external data used. Some information is sensitive to the choice of methodology and the assumptions or estimates used for its preparation and presented in the Statement.

Responsibility of the Entity

Management is responsible for:

- selecting or establishing suitable criteria for preparing the Information;
- preparing a Statement pursuant to legal and regulatory provisions, including a presentation of the business model, a description of the main non-financial risks, a presentation of the policies implemented considering those risks and the outcomes of said policies, including sustainability indicators and, if applicable, the information set-out in Article 8 of Regulation (EU) 2020/852 (Green Taxonomy);
- preparing the Statement by applying the Entity's "Guidelines" as referred above and;
- implementing internal control over information relevant to the preparation of the Information that is free from material misstatement, whether due to fraud or error.

The Statement has been prepared by the Board of Directors.

Responsibility of the Statutory Auditor appointed as independent *third party*

Based on our work, our responsibility is to express a limited assurance conclusion on:

- the compliance of the Statement with the requirements of Article R. 225-105 of the French Commercial Code;
- the fairness of the information provided pursuant to part 3 of sections I and II of Article R. 225-105 of the French Commercial Code, i.e. the outcomes of policies, including sustainability indicators, and measures relating to the main risks, hereinafter the "Information."

As we are engaged to form an independent conclusion on the Information as prepared by management, we are not permitted to be involved in the preparation of the Information as doing so may compromise our independence.

It is not our responsibility to report on:

- the Entity's compliance with other applicable legal and regulatory provisions (particularly with regard to the information set-out in Article 8 of Regulation (EU) 2020/852 (Green taxonomy), the French duty of care law and against corruption and tax evasion);
- the fairness of information set-out in Article 8 of Regulation (EU) 2020/852 (Green taxonomy);
- the compliance of products and services with the applicable regulations.

Applicable regulatory provisions and professional guidance

We performed the work described below in accordance with Articles A. 225-1 *et seq.* of the French Commercial Code, the professional guidance issued by the French Institute of Statutory Auditors (*Compagnie Nationale des Commissaires aux Comptes*) applicable to such engagement, in particular the professional guidance issued by the Compagnie Nationale des Commissaires aux Comptes, *Intervention du commissaire aux comptes – Intervention de l'OTI – déclaration de performance extra-financière*, and acting as the verification programme and with the international standard ISAE 3000 (revised) – *Assurance engagements other than audits or reviews of historical Financial Information.*

Independence and quality control

Our independence is defined by the provisions of Article L. 821-28 of the French Commercial Code and the French Code of Ethics (*Code de déontologie*) of our profession. In addition, we have implemented a system of quality control including documented policies and procedures aimed at ensuring compliance with applicable legal and regulatory requirements, ethical requirements and the professional guidance issued by the French Institute of Statutory Auditors (*Compagnie Nationale des Commissaires aux Comptes*) relating to this engagement.

Means and resources

Our work engaged the skills of thirteen people between July 2023 and February 2024 and took a total of twenty-four weeks.

We were assisted in our work by our specialists in sustainable development and corporate social responsibility. We conducted about seventy interviews with the people responsible for preparing the Statement.

Nature and scope of procedures

We are required to plan and perform our work to address the areas where we have identified that a material misstatement of the Information is likely to arise.

The procedures we performed were based on our professional judgment. In carrying out our limited assurance engagement on the Information:

- we obtained an understanding of all the consolidated entities' activities, and the description of the main risks associated;
- we assessed the suitability of the criteria of the Guidelines with respect to their relevance, completeness, reliability, neutrality and understandability, taking into account, where appropriate, best practices within the sector;
- we verified that the Statement includes each category of social and environmental information set out in Article L. 225-102-1 III of the French Commercial Code, as well as information regarding compliance with human rights and anti-corruption and tax avoidance legislation and includes, where applicable, an explanation of the reasons for the absence of the information required under Article L. 225-102-1 III, paragraph 2 of the French Commercial Code;
- we verified that the Statement provides the information required under Article R. 225-105 II of the French Commercial Code where relevant with respect to the main risks;
- we verified that the Statement presents the business model and a description of the main risks associated with all the consolidated entities' activities, including where relevant and *proportionate, the risks associated with their business* relationships their products or services, as well as their policies, measures and the outcomes thereof, including sustainability indicators associated to the main risks; we referred to documentary sources and conducted interviews to:
  - > assess the process used to identify and confirm the main risks as well as the consistency of the outcomes, including the sustainability indicators used with respect to the main risks and the policies presented, and
  - > corroborate the qualitative information (measures and outcomes) that we considered to be the most important presented in the appendix. Concerning certain risks, our work was carried out on the consolidating Entity, for other risks, our work was carried out on the consolidating Entity and on a selection of entities: EDF SA, DPNT, EDF Hydro, EDF PEI, Dalkia, Enedis, EDF Renouvelables, EDF Energy, Edison. The risks for which work have only been carried out at the level of the consolidating Entity are the following: Carbon Offsetting Solutions, Adaptation to Climate Change, Biodiversity, Responsible Land Management, Ethics, Compliance and Human Rights, Energy Hardship and Social Innovation, Dialogue and Consultation with Stakeholders, Responsible Territorial Development, Development of *Industrial Sectors and Responsible Digital.*
- we verified that the Statement covers the consolidated scope, i.e., all the entities included in the scope of consolidation in accordance with Article L. 233-16 of the French Commercial Code within the limitations set out in the Statement;
- we obtained an understanding of internal control and risk management procedures the Entity has implemented and assessed the data collection process aimed at ensuring the completeness and fairness of the Information;
- for the sustainability sustainability indicators that we considered to be the most important presented in the appendix, we implemented:
  - > analytical procedures to verify the proper consolidation of the data collected and the consistency of any changes in those data,
  - > tests of detail, using sampling techniques, in order to verify the proper application of the definitions and procedures and reconcile the data with the supporting documents. *This work* was carried out on a selection of contributing entities: EDF SA, DPNT, EDF Hydro, EDF PEI, Dalkia, Enedis, EDF Renouvelables, EDF Energy, Edison, and covers between 20% and 100% of the consolidated data relating to the sustainability indicators selected for these tests;
- we assessed the overall consistency of the Statement in relation to our knowledge of all the consolidated entities.

The procedures performed in a limited assurance review are less in extent than for a reasonable opinion in accordance with the professional guidelines of the French National Institute of Statutory Auditors *(Compagnie Nationale des Commissaires aux Comptes);* a higher level of assurance would have required us to carry out more extensive procedures.

Neuilly-sur-Seine, February 15th, 2024

One of the Statutory Auditors

PricewaterhouseCoopers Audit

Cédric HAASER
Partner

Aurélie CASTELLINO-CORNETTO
Partner, Sustainability Development

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Appendix: List of the information we considered most important

Sustainability indicators:

- EDF Group direct greenhouse gas emissions (scope 1)
- EDF Group indirect greenhouse gas emissions (scope 2)
- EDF Group indirect greenhouse gas emissions (scope 3)
- Carbon intensity: specific CO_2 emissions from electricity and heat generation
- Emissions from electricity purchased and sold to end customers
- Emissions from gas sold to end customers
- Installed net renewable electricity generating capacities
- Deployment rate of the framework guidelines on carbon offset solutions within the entities concerned
- Deployment rate of new climate change adaptation plans
- Avoided CO2 emissions thanks to the sales of innovative goods and services
- EDF group's Electric Vehicles rate in the fleet of light vehicle
- Number of customer visits on digital consumption monitoring platforms
- Number of smart meters installed
- Achievement rate of "Act4nature international" Group commitments
- Implementation rate of innovative solutions encouraging multifunctional land use
- Water intensity: water consumed / electricity generation
- Annual rate of conventional waste directed towards a waste recovery industry
- Radioactive waste from operations – France: volume of long-lived high and intermediate level solid radioactive waste
- Radioactive waste from operations – United Kingdom: volume of solid low-level radioactive waste generated
- Very-Low Level Radioactive Waste (VLLW) from decommissioning and associated industrial activities - Group in France
- Low and Intermediate Level Radioactive Waste (LLW and ILW) from decommissioning and associated industrial activities - Group in France
- Very-Low Level Solid Radioactive Waste - EDF
- Short-lived Low and Intermediate Level solid radioactive Waste - EDF
- Global Lost Time Incident Rate (LTIR) – Employees and providers
- Number of fatal accidents connected to business-specific risks – Employees and providers
- Accident Severity rate (employees)
- Nuclear safety: number of significant events equal to level 2 on the INES scale
- Annual rate of feedback to whistleblowers within a maximum of one month, informing them to the admissibility and further processing of their alert
- Workforce as of December 31st, 2023, and breakdown by gender and age
- Gender balance index: percentage of women in the Management Committees of the Group's entities
- Percentage of employees who have taken part in a skills development initiative during the year
- Individual guidance provided every year to our client as part of the "Energy Support" framework (number of actions)
- Annual rate of projects for which a dialogue and consultation procedure is engaged (in line with Equator principles)
- Annual rate of procurement from SMEs in France
- Achievement rate of supporting actions backed by EDF, encouraging relocation and maintaining nuclear industry skills ("France Relance" Programme)
- Achievement rate of EDF commitments towards French Responsible Digitalization Institute (INR)

Qualitative information:

- Coal exit in 2030 and closure of 82% of coal units between September 2019 and March 2023
- Construction of a CO2 capture laboratory
- New network installations in 2023 through the Climate Change Adaptation plan
- Electric mobility plan: deployment of 340,000 charging points in 2023
- Renewal of agreement with the Conservatory of Natural Spaces
- Commissioning of France's first floating photovoltaic power plant on a hydroelectric reservoir
- Water reuse and cooling
- Optimization of materials and equipment through EDF Reutiliz
- Updating self-assessments of the health and safety management system regarding the BEST referefence framework
- 2023 results of EDF's alert procedure
- Creation of electrical network classes in vocational high schools
- Energy vouchers sent out
- Organization of a public debate on the Penly EPR
- EDF's procurement from the solidarity sector
- Inno4graph 2020-2023 project to design tools for dismantling UNGG reactors
- Implementation of a heat recovery project for datacenters

3.7.6 Reasonable assurance report from one of the Statutory Auditors on a selection of Electricité de France's non-financial performance indicators as for the year ended December 31st, 2023

This is a translation into English of the reasonable assurance report from one of the Statutory Auditors on the Identified Sustainability Information in Electricité de France's Compliance Certificate and it is provided solely for the convenience of English-speaking users.

To the Board of Directors of Electricité de France,

In our capacity as Statutory Auditors of Electricité de France (hereinafter the "Entity") and in accordance with your request, we have undertaken a reasonable assurance engagement on the selected sustainability indicators as of the year ended December 31st, 2023 (the "Identified Sustainability Information") and identified with a ✓ in the consolidated non-financial statement ("DPEF") included in the Group Annual Report and presented below:

- EDF Group direct greenhouse gas emissions (scope 1) (Indicator #1)
- Workforce as of December 31st, 2023, and breakdown by gender and age (Indicator #2)
- Carbon intensity: specific CO2 emissions from electricity and heat generation (KPI #1)
- Water intensity: water consumed / electricity generation (KPI #2)

Our assurance does not extend neither to information relating to earlier periods nor to any other information included in the Group Annual Report.

Our Reasonable Assurance Opinion

In our opinion, the Identified Sustainability Information set out in the 2023 DPEF is prepared, in all material respects, in accordance with the guidance prepared by the entity (Indicator # 1: *"Processus_Bilan Carbone 2023-2024"* and *"DDD_EDF_Fiche méthodo_ENV"*; Indicator #2: *"Glossaire des indicateurs RH bilan 2023"*; KPI #1: *"KPI N1 Intensité carbone"*; KPI #2: *"Fiche méthodo_ENV_CONSO_EAU_v2"*) and the basis of preparation set out in the section "3.6 Méthodologie" of the DPEF as for the year ended December 31st, 2023.

Preparation of the Identified Sustainability Information

The absence of a commonly used generally accepted reporting framework or a significant body of established practice on which to draw to evaluate and measure Identified Sustainability Information allows for different, but acceptable, measurement techniques that can affect comparability between entities and over time.

Consequently, the Identified Sustainability Information needs to be read and understood together with the reporting framework defined by the Entity and specific to each sustainability indicators available with the Impact Direction and the basis of preparation set out in the section "3.6 Méthodologie" of the DPEF as for the year ended December 31st, 2023 (together "the Reporting Criteria"), which Electricité de France has used to prepare the Identified Sustainability Information.

Inherent Limitations in preparing the Identified Sustainability Information

The Identified Sustainability Information may be subject to inherent uncertainty because of incomplete scientific and economic knowledge and the quality of external data used. Moreover, some information is sensitive to the choice of methodology and the assumptions and/or estimates used for its preparation and presented in the 2023 DPEF.

In addition, greenhouse gas quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.

Electricité de France's Responsibilities

Management of the Entity is responsible for:

- selecting or establishing suitable criteria for preparing the Identified Sustainability Information, taking into account, if any, applicable law and regulations related to reporting the Identified Sustainability Information;
- the preparation of the Identified Sustainability Information in accordance with the Reporting Criteria;
- designing, implementing and maintaining internal control over information relevant to the preparation of the Identified Sustainability Information that is free from material misstatement, whether due to fraud or error.

Our Responsibilities

We are responsible for:

- planning and performing the engagement to obtain reasonable assurance about whether the Identified Sustainability Information is free from material misstatement, whether due to fraud or error;
- forming an independent opinion, based on the evidence we have obtained; and
- reporting our opinion to the Board of Directors of the Entity.

As we are engaged to form an independent opinion on the Identified Sustainability Information as prepared by management, we are not permitted to be involved in the preparation of the Identified Sustainability Information as doing so may compromise our independence.

Professional Standards Applied

We performed our reasonable assurance engagement in accordance with the professional guidance issued by the French Institute of Statutory Auditors (Compagnie Nationale des Commissaires aux Comptes) applicable to such engagement and the International Standard on Assurance Engagements 3000 (Revised), *Assurance Engagements other than Audits or Reviews of Historical Financial Information* and, in respect of greenhouse gas emissions included in the Identified sustainability information, in accordance with the International Standard on Assurance Engagements 3410, *Assurance Engagements on Greenhouse Gas Statements*, issued by the International Auditing and Assurance Standards Board.

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Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the French Code of Ethics for Statutory Auditors (*Code de Déontologie*) as well as the provisions set forth in Article L.821-28 of the French Commercial Code (*Code de Commerce*) and the *International Code of Ethics for Professional Accountants (including International Independence Standards)* issued by the International Ethics Standards Board for Accountants (*IESBA Code*) which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

Our firm applies International Standard on Quality Management 1, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Our work was carried out by an independent and multidisciplinary team with experience in sustainability reporting and assurance.

Summary of the work we performed as the basis for our assurance opinion

A reasonable assurance engagement involves performing procedures to obtain evidence about the Identified Sustainability Information. The nature, timing and extent of procedures selected depend on professional judgment, including the assessment of risks of material misstatement, whether due to fraud or error, in the Identified Sustainability Information. In making those risk assessments, we considered internal control relevant to the Entity's preparation of the Identified Sustainability Information. A reasonable assurance engagement also includes:

- evaluating the suitability in the circumstances of the Entity's use of the Reporting Criteria;
- evaluating the appropriateness of measurement and evaluation methods, reporting policies used and the reasonableness of estimates made by the Entity; and
- evaluating the disclosures in, and overall presentation of, the Identified Sustainability Information.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Neuilly-sur-Seine, February 16th, 2024

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One of the Statutory Auditors
PricewaterhouseCoopers Audit

Cédric Haaser
Partner

Aurélie Castellino-Cornetto
Partner, Sustainability Development

3.8 Vigilance plan

3.8.1 The EDF group's CSR commitment and duty of vigilance framework

EDF has a long track record of running a responsible business, based on the values of respect, solidarity and responsibility, promoting sustainable solutions for individuals and the environment.

EDF's *raison d'être* has been modified to read "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development" and this statement was added to its articles of association at the General Shareholders' Meeting held on 7 May 2020. The Group's *raison d'être* is broken down into 16 CSR commitments[1], which are ranked and grouped into four key issues: carbon and climate neutrality, preserving the planet's resources, well-being and solidarity, and responsible development of the EDF group's activities (see chapter 3 "Corporate social responsibility issues and commitments").

Legal Framework

French law no. 2017-399 of 27 March 2017 on the duty of vigilance of parent companies and ordering companies introduced the obligation, in Article L. 225-102-4 of the French Commercial Code, to draw up and implement a vigilance plan.

This plan must include "reasonable vigilance measures to identify risks and prevent serious violations of human rights and fundamental freedoms, the health and safety of individuals, and the environment" that may result from the activities of the company and its controlled subsidiaries, as well as those of suppliers or subcontractors with whom it has an established business relationship, when these activities are tied to that relationship.

It must also include a description of five measures:

1. risk mapping to identify, analyse and prioritise risks;
2. procedures for regular evaluation of the situation of controlled subsidiaries, subcontractors and suppliers based on risk mapping;
3. appropriate risk mitigation or serious harm prevention actions;
4. a mechanism for reporting and collecting information on the existence or realisation of risks;
5. a system for monitoring the measures implemented and evaluating their effectiveness.

The Group's vigilance plan sets out these five measures as follows:

- 3.8.1 The EDF group's CSR commitment and duty of vigilance framework
- 3.8.2 Governance, steering and stakeholder involvement
- 3.8.3 Main characteristics of EDF as regards the duty of vigilance law
- 3.8.4 Methodology regarding Group risk mapping
- 3.8.5 Main improvements in the EDF group's vigilance plan in 2023
- 3.8.6 Salient risks and risk prevention and mitigation measures
  - 3.8.6.1 Human rights and fundamental freedoms
  - 3.8.6.2 Environment
  - 3.8.6.3 Health & Safety
  - 3.8.6.4 Suppliers and subcontractors
- 3.8.7 Group whistleblowing system
- 3.8.8 Monitoring procedure

The Group's framework relating to its commitments and requirements with respect to the environment, human rights, and health and safety

EDF's vigilance plan was determined in the framework of the UN Guiding Principles on Business and Human Rights (UNGP), the OECD Guiding Principles, the fundamental conventions of the International Labour Organization (ILO) and the UN Universal Declaration of Human Rights.

In this context, the Group has published on its website its duty of vigilance standards in a document entitled "Human rights and fundamental freedoms, Health and safety, Environment, and Business ethics: the EDF group's commitments and requirements"[2]. This framework brings together the EDF group's commitments and requirements (EDF and the companies it controls, see section 3.8.3 "Main characteristics of EDF as regards the duty of vigilance law") and the fundamental requirements with regard to its business relationships in terms of respecting human rights and fundamental freedoms, the protection of the environment, guaranteeing the health and safety of people, and business ethics.

This set of standards refers to all the Group's public documents and internal policies, including:

- mandatory Group procedures binding on all controlled entities: risk management and internal control, governance of subsidiaries and holdings, project management, ethics and compliance, CSR, health and safety, procurement;
- internal documents made public: ethics charter, ethics and compliance code of conduct, sustainable development charter for EDF and its suppliers, global framework agreement on the Group's social responsibility;
- external sources: UN Global Compact, UN Guiding Principles on Business and Human Rights, OECD Guidelines for Multinational Enterprises, WBCSD CEO Guide to Human Rights, Conventions of the International Labour Organization (ILO) guaranteeing fundamental principles and rights at work and combating for the elimination of discrimination, Declaration on the Rights of the Child, Declaration on the Elimination of All Forms of Discrimination against Women, Global Reporting Initiative (GRI), Supplier Relations and Responsible Purchasing Label (RF&AR).

(1) Corporate Social Responsibility.
(2) Published in French and English on the edf.fr website (www.edf.fr/sites/groupe/files/2023-02/edfgroup_rse_referentiel-ddv-2021_en.pdf).

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EDF's vigilance plan reports on the various steps taken for each of the Group's CSR issues and commitments throughout chapter 3 of this document as follows:

Salient risks related to the duty of vigilance			Stakes and commitments of the EDF group	
Area	Type of risk	Risk	Descriptions of the 2023 mitigations and actions in the different sections of the SNFP	
Human rights and fundamental freedoms	Cross-functional	Risks related to harassment and discrimination	Sections 3.3.3 "Equality, diversity and inclusion" and 3.3.2 "Ethics, compliance and human rights"	Sections 3.4.1 "Dialogue and consultation with stakeholders" and 3.3.2.4 "The EDF group whistleblowing procedure"
	Activities and projects	Risk of infringement of the rights of communities, indigenous peoples and vulnerable groups: these risks are linked in particular to land issues and population displacements or to consultations with indigenous populations that may prove insufficient given the complexity of the consultation process with indigenous populations (or ethnic minorities) or the management of this process in whole or in part carried out by an administration thus limiting EDF's control over this risk	Section 3.3.2.3 "Human Rights"	
	Activities and projects	Risk of infringement of workers' rights including risks related to decent working conditions at the Group's construction sites	Section 3.3.2.3 "Human Rights"	
	Activities and projects	Risks related to the use of security forces for projects near conflict zones or security regimes	Section 3.3.2.3 "Human Rights"	
Environment	Cross-functional	Impact on the climate: climate change and GHG emissions	Section 3.1 "Carbon neutrality and the climate"	
	Cross-functional	EDF impact on air, water, soils, biodiversity and waster production	Section 3.2 "Preserving the planet's resources"	
Health-Safety	Employees and subcontractors	Work-related accidents, work-related diseases (asbestos, chemicals, ionising radiation and noise)	Section 3.3.1 "Security, health and safety for all"	
	Employees and subcontractors	Musculoskeletal disorders, anxiety-depressive disorders, including stress	Section 3.3.1 "Security, health and safety for all"	
	Consumers and local residents	The safety of nuclear and hydraulic facilities	Sections 3.3.1.1 "Nuclear safety" and 3.3.1.2 "Hydropower safety"	
	Consumers and local residents	Air quality, noise and acoustic nuisance	Sections 3.3.1.6 "Air quality" and 3.3.1.4 "Consumer health and safety"	
Suppliers and subcontractors	Purchase category	Electricity Control Command	Sections 3.4.2.3 "Contribution to development through purchasing" and 3.3.2.3.4 "Implementation of human rights commitments"	
	Purchase category	Civil engineering, deconstruction and decontamination		
	Purchase category	Heavy lifting systems		
	Purchase category	Non-destructive controls/testing and maintenance in an industrial environment		
	Purchase category	Protective equipment and clothing		
	Purchase category	IT and telecom equipment		
	Purchase category	IT solutions, publishing, hosting and support		
	Purchase category	Production line for solar panels and batteries		

3.8.2 Governance, steering and stakeholder involvement

EDF strengthened its oversight of the vigilance plan with the appointment, in December 2020, of a Group Duty of Vigilance Compliance Manager by two members of the Executive Committee[1]. It is responsible for drawing up, rolling out and coordinating the vigilance plan and its implementation throughout the Group, in partnership with the Impact Department.

The vigilance plan and the resulting actions are validated by the CSR Strategy Committee chaired by the Group's Chairman, and submitted to the Corporate Responsibility Committee, a Committee of the Board of Directors dedicated to social and environmental responsibility issues.

The vigilance plan is designed and managed in collaboration with the Legal Department and the Impact Department within a Steering Committee and a Strategic Committee that also includes the Human Resources Department, the Purchasing Department, the Risk Department, the International Department, the Ethics and Compliance Department, the Export Control and International Sanctions Department, and representatives of subsidiaries with particularly exposed activities. The Strategic Committee defines the orientations and objectives of the vigilance plan in a collegial manner, based on proposals from the Steering Committee. It ensures that these objectives are achieved and may redefine them according to the operational progress reported by the Steering Committee that meet on a quarterly basis.

The implementation and coordination of the vigilance plan is supported by a network of Duty of Vigilance Managers appointed at each Group entity concerned in view of their missions in the fields of CSR, ethics and compliance, or internal control (see section 3.8.5 "Main improvements in the EDF group's vigilance plan in 2023").

Stakeholder association

Dialogue with stakeholders is a major part of EDF's culture. It forms the basis of EDF's cooperation with its stakeholders.

The global framework agreement on the Group's social responsibility[2] signed by EDF, the Group's trade union organisations and two international trade union federations (IndustriAll and PSI) stipulates that its vigilance plan is "drawn up and implemented in association with the company's stakeholders, including the organisations representing employees" (see section 3.5.3.1.1 "The Global Social Responsibility Agreement"). Since 2018, the Committee for Dialogue on Social Responsibility (CDRS), made up of representatives of all the signatories of the agreement, has been working on numerous topics related to the duty of vigilance (health and safety, exercise of the Group's responsibility in the context of international projects, etc.) and on the actions to be implemented to roll out and improve the Group's vigilance plan. Thus, in 2023, the meetings of the CDRS enabled its members to learn about the publication of the 2022 vigilance plan and to discuss the 2023 vigilance actions, including the reinforced implementation of EDF's Human Rights policy, the Group's 2022 health and safety assessment and 2023 outlook, as well as EDF Renewables' responsible sourcing policy. The comments and suggestions of the Group's Stakeholder Council (see section 3.4.1.1.1.1 "EDF: a pioneer in the implementation of stakeholder panels"), in relation to the vigilance plan, were also shared and discussed. In terms of the legislative framework, the changes to the draft European directive on the duty of vigilance of companies with regard to sustainability (CS3D) were also presented to its members, as well as an assessment of the implementation of the French law on the duty of vigilance. These meetings of the CDRS are an opportunity to debate issues with a view to answering questions from its members on subjects related to the Group's duty of vigilance or on local issues of which members may be aware.

Externally, EDF participated in discussions with other companies, lawyers, NGOs, and trade union federations within the framework of the "*Entreprises pour les droits de l'homme*" (Businesses for Human Rights) (EDH[3]) non-profit organisation, in order to openly exchange on the expectations of all stakeholders, practices and improve vigilance plan preparation processes.

In 2022 a specialist in businesses and human rights was appointed to the Group Stakeholder Council (see section 3.4.1.1.1.1 "EDF: a pioneer in the implementation of stakeholder panels") to boost the Council's expertise in this field.

At the same time, the Group continuously pursues open discussions with various civil society actors (associations, public figures) who wish to maintain this dialogue, in order to feed and advance its vigilance plan.

(1) The Group General Secretary and the Group Senior Executive Vice-President in charge of innovation, corporate responsibility and strategy.
(2) Agreement signed in 2018 and extended for two years on 29 November 2021, remaining in force until 13 July 2024.
(3) e-dh.org.

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3.8.3 Main characteristics of EDF as regards the duty of vigilance law

The EDF group is an integrated energy player, present in all areas of the electricity industry and some areas of the gas industry: power generation using nuclear, renewable and thermal energies; electricity transmission and distribution; sales; energy services; energy trading (see section 1.4 "Description of the Group's activities").

Main countries of activity

The Group's activities are mainly located in OECD countries (see section 1.4.5 "International activities"). Countries considered to be "higher-risk countries" receive special care, including in terms of relations with partners.

The EDF group is a major energy provider on four key European markets: France, the UK, Italy and Belgium. The Group is seeking to move into new geographical areas, developing low-carbon solutions in growing countries and strengthening its positions in Europe.

The Group develops projects abroad, most often as a minority partner, and primarily in the following countries: Brazil, the Andean Arc (Chile-Peru-Colombia), the Middle East (Saudi Arabia and the United Arab Emirates), West and Central Africa (Cameroon, Ivory Coast, Togo), Southern Africa (Mozambique, Malawi), Laos, India, the United States, Australia, Germany and Spain.

See also section 3.8.6.1.2 "Main prevention, mitigation and monitoring measures implemented – Conflict between Russia and Ukraine".

Group-wide, EDF Renewables develops projects on its own or with partners, operates and maintains renewable energies power generation facilities (mainly wind and solar) in more than 20 countries. The main regions where it has operated historically are North America (United States, Canada and Mexico) and Europe, starting with France and the United Kingdom. EDF Renewables has also undertaken a geographical rebalancing of its activities. It is strengthening its presence in other countries with high potential for the development of renewable energies, such as South Africa, Brazil, China, India, the United Arab Emirates, Saudi Arabia and Morocco.

EDF Renewables's net installed capacity in solar and wind power (in %):

North America	37%
Europe	29%
China, Vietnam and India	13%
South America	11%
Saudi Arabia, Egypt and United Arab Emirates	6%
Israel	3%
Egypt and Morocco	1%
South Africa	1%

Suppliers and subcontractors

The scope of suppliers and subcontractors managed by the Group's Purchasing Department represents approximately 18,000 tier-one suppliers. More than 94% of purchases are made in France and 97% are made in the European Union (99.6% in the European Free Trade Association[1]). Suppliers of certain subsidiaries or suppliers involved in international projects are subject to special vigilance measures. Because the Group's activities are mainly in the industrial field, EDF exercises upstream vigilance, with regard to any risk of violation of persons' rights or risk to their health (employees, service providers, local residents, local communities and customers) or risk to the environment prior to making investment decisions, particularly to build, operate, maintain or dismantle facilities.

Scope of the vigilance plan

The scope of the vigilance plan covers EDF's activities, the activities of subsidiaries it controls[2], as well as the activities of its suppliers and subcontractors with which the Group has established commercial relations to the extent their activities are related to those relations.

The Organisation of the Group is detailed in section 1.2.1 "Organisation of the Group".

Dalkia and Framatome subsidiaries with a headcount of over 5,000 employees are integrated in the plan, together with all French and foreign subsidiaries.

RTE and Enedis, respectively the French power transmission and distribution system operators, are independently managed subsidiaries, and therefore publish their own vigilance plans.

(1) European Union, Switzerland and the United Kingdom notably.
(2) *Subsidiaries integrated into the scope of consolidation using the full consolidation method pursuant to Article L. 233-16 II of the French Commercial Code* (in France and abroad) (see note 3.3 "Scope of consolidation at 31 December 2023" to the consolidated financial statements for the financial year ended on 31 December 2023).

3.8.4 Methodology regarding Group risk mapping

The process for identifying and prioritising risks used to develop the vigilance plan is based on two complementary approaches: Group risk mapping, which includes several risks related to the duty of vigilance, and additional risk mapping, specifically focused on the entities most exposed because of their activity and/or their location.

Pursuant to the Group's approach as indicated in section 2.1 "Risk management and control of activities", each Group entity carries out a risk mapping, under the responsibility of management, using a typology that looks to cover all risk categories, whether internal or external, or operational or strategic, weighing on the Group. The EDF group's methodological guide on risk describes the risks specifically related to the duty of vigilance. The Group asks entities to map risks affecting human rights and fundamental freedoms, health and safety at work, and the environment, which could be caused by its activities or those of its suppliers, service providers or partners. In 2023, all the risk managers of the Group's entities were made aware of risk mapping in relation to the duty of vigilance. Mapping feedback was shared among the Risk Department and the Impact Department with a view to a better approach to these risks.

This mapping involves five successive steps: risk identification, risk assessment, prioritisation, control through the definition of an action plan, managing the action plan which includes monitoring the action plan's deployment, and measuring its effectiveness.

Risk identification

In order to reasonably ensure that the main risks are being identified, a separate approach for each business process and each asset is combined with a separate approach for each major risk type. In addition, feedback, events, incidents, and near-misses are taken into consideration as a source of risk identification, as well as the results of audits. The identification of risks is the result of a discussion between the main actors: managers, experts and stakeholders.

Risk assessment and prioritisation

The identified risks are qualitatively prioritised according to:

- their impact, *i.e.* their potential criticality, assessed using multiple criteria, including the assessment of the impact on the physical or human environment;
- their probability of occurrence, *i.e.* their degree of likelihood evaluated over a relevant time horizon, estimated on the basis of the history of the activity, feedback, or internal or external expertise;
- their level of risk control, *i.e.* the efficiency of the actions implemented.

The main purpose of the general risk mapping exercise is to define and implement action plans (prevention, protection, mitigation, etc.) to reduce the impact of the risks and/or risk probability.

Group risk governance

The EDF group's risk map is based on the entities' risk maps, internal control self-assessments, and cross-analyses of feedback from operational and functional entities.

The Group Risk Management Department identifies and assesses Group-level risks and draws up a Group risk map, which is validated by the Risk Committee chaired by the Group's Chairman and then presented to the Board of Directors' Risk and Audit Committee.

How Group risk assessment shaped the vigilance plan in 2023

The implementation of this approach makes it possible to identify the main risks, at the level of the EDF group, presented in section 2.2 "Risks to which the Group is exposed". The latter are ranked according to a three-level criticality scale (high, intermediate or moderate) assessed on the basis of their potential severity, their probability of occurrence, and their impact, taking into account existing provisions.

Among them, several risks are structuring for the orientation of the vigilance plan, because they include at least one of the "human rights", "environment" or "health and safety" dimensions:

- ethics or compliance risk (see section 2.2 – 3D "Ethics or compliance violations"): since 2019, this risk has included a "duty of vigilance" component, implementing a Group action programme and requiring Group entities to report back on their own action in this area;
- adaptation to climate change – physical risks and transition risks (5B): this risk specifically includes a component focused on the impact of the Group's operations on the climate (see section 3.1.4.2.3 "Climate risk and opportunity scenario analysis");
- industrial safety violations and impact on environmental assets including biodiversity (1I), and risks specific to nuclear safety (2C) and hydropower safety (1F);
- the risk of managing complex major industrial projects, including EPR projects (1A): this risk includes a component regarding potential impacts of projects on human rights, the environment, health and safety;
- risk operational continuity of supply chains and contractual relationships (1E): this risk specifically includes vigilance-based measures during the contractualisation and contract monitoring stages;
- the risk of harm to health or safety at work (employees and service providers) (1D): this risk is related to the industrial nature and diversity of the Group's activities, which reinforces the fundamental importance of compliance with the rules, and of taking into account the various risks likely to harm people working at the Group's industrial facilities, in order to preserve health and safety at work.

The risks specific to the duty of vigilance are presented by area in section 3.8.6 "Salient risks and risk prevention and mitigation measures", as well as their relationship with the Group's main risks, mentioned above:

- salient risks related to human rights and fundamental freedoms: see section 3.8.6.1.1;
- salient risks relating to the environment: see section 3.8.6.2.1;
- salient risks relating to personal health and safety: see section 3.8.6.3.1;
- salient risks relating to suppliers and sub-contractors: see section 3.8.6.4.1.

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3.8.5 Main improvements to the EDF group's vigilance plan in 2023

In 2023, several projects and actions were initiated as part of a continuous improvement process of the Group vigilance plan:

Adaptation and roll-out of human rights commitments included in duty of vigilance standards

In March 2021, EDF drew up a set of guidelines listing the commitments of the Group (EDF and its controlled subsidiaries) and the fundamental requirements for its business relationships in terms of human rights and fundamental freedoms, environmental protection, protection of personal health and safety and business ethics. The Group has summarised its Duty of Vigilance commitments in these standards, and spells out its requirements for its partners, financiers, suppliers, and subcontractors. This document, submitted to the members of the CDRS[1] (see section 3.8.2 "Governance, steering and stakeholder involvement"), was signed by the Chairman of the EDF group. It is published in French and English on the edf.fr website (www.edf.fr/sites/groupe/files/2023-02/edfgroup_rse_referentiel-ddv-2021_en.pdf).

In 2023, EDF finalised the application of each of the human rights commitments in its duty of vigilance guidelines in order to clarify, contextualise and roll them out. Each commitment has its own human rights guide highlighting the international frames of reference and related definitions, and the main risk factors, main risk management actions and, where applicable, available tools. These guides are available in French, English, Italian, Spanish and Simplified Chinese.

In 2023, the Group developed a distance learning course dedicated to human rights as part of the "Environment & Society" internal training course. This module makes it possible to integrate the Group's fundamental concepts and commitments in this area, and to put them into practice through case studies.

The Group also published a page on its website explaining its commitments and actions to promote human rights (www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company).

Reinforced integration of the duty of vigilance in the purchasing process

The Group Purchasing Department carried out a dedicated review to assess the integration of the duty of vigilance in its contracting phases. In 2021, the compliance commitment for bidders (which is mandatory to participate in the tender), covering the themes of corruption, money laundering, financing of terrorism, conflicts of interest and international sanctions, was finalised. Bidders now undertake to comply with EDF requirements relating to the law on the duty of vigilance (see section 3.4.2.3.2.4 "Responsible purchasing process"). Published in 2023, the CSR charter for EDF and its suppliers, constituting a contractual document, was updated to include compliance with obligations relating to the duty of vigilance, as well as specifications on CSR commitments (human rights, environment, and health and safety), which the Group asks its suppliers and subcontractors to respect and in turn ensure they are respected by their own suppliers. In 2023, this charter was rolled out among EDF suppliers, as well as at the Framatome and Dalkia subsidiaries (see section 3.8.6.4 "Suppliers and subcontractors").

In 2023, the Group developed model clauses responding to the specificities of the international context, in order to integrate duty of vigilance clauses in international contracts, to facilitate the acceptance of CSR obligations by co-contractors, and to manage the Group's commitments relating to the duty of vigilance (notably by reference to the corpus of international rules).

Addition of the duty of vigilance to the methodological guide on ethics and compliance investigations to be conducted in connection with EDF external growth transactions

The EDF group is regularly required to carry out transactions to subscribe for or acquire securities in French or foreign entities as part of partnerships, major projects, or external growth or investment transactions. In 2023, EDF finalised a methodological guide providing a practical list and presentation of the different due diligence measures required in terms of ethics and compliance. These procedures are based on the Ethics and Compliance Policy, which lists the Group's compliance programmes, including the duty of vigilance. This guide sets out a series of due diligence measures to take or actions to implement chronologically and gradually at every phase of an acquisition project/partnership/project based on the level of risk identified at each stage of the project.

Group-wide awareness campaigns and roll-out of the vigilance plan

At each Group entity, Duty of Vigilance Managers are appointed on the basis of their duties in the fields of CSR, ethics and compliance, or internal control. In 2023, four sessions of the network of duty of vigilance managers were notably devoted to the following topics:

- the presentation of the Group's first 2022 autonomous vigilance plan;
- sharing the establishment of vigilance measures at certain Group subsidiaries;
- the presentation of the new Corporate Social Responsibility Charter for EDF and its suppliers and the reinforcement of the Human Rights policy;
- a presentation by Nayla Ajaltouni – General Delegate of the Collectif Éthique sur l'étiquette – "10 years after the Rana Plaza disaster, the long road towards duty of vigilance";
- regulatory monitoring: changes to the draft directive on the duty of vigilance of companies in terms of sustainability, the European regulation on the prohibition of products from forced labour, and the management of legal risk in companies in terms of criminal compliance.

In terms of training, in 2021 the Group developed an e-learning module dedicated to the duty of vigilance to raise awareness and help roll out the Group's vigilance plan. At the end of December 2023, around 2,500 employees had completed the e-learning module (compared with 1,500 at the end of 2022).

These actions in 2023 are part of a year-round improvement process based on a regularly reviewed action plan.

(1) Committee for Dialogue on Social Responsibility (CDRS).

3.8.6 Salient risks and risk prevention and mitigation measures

Global actions to prevent and mitigate risks related to the duty of vigilance

Risk prevention and mitigation measures are implemented by each relevant entity by way of applying cross-functional and sectorial policies and using ordinary Group methodology for risk control as a basis. This methodology provides a description of risk treatment action plans and an evaluation of their efficacy. Industrial projects are subject to a risk analysis within the scope of application of the duty of vigilance, taking into account their nature, size, technical features and location. In this context, the environmental and social impact studies of projects located in non-OECD countries are based on the most demanding international standards (mainly IFC, WB, ADB[1]).

In addition, issues relating to the environment, personal health and safety and human rights are systematically addressed as part of the assessment of projects submitted to the Group Executive Committee's Commitments Committee (CECEG), in the form of an identification of the risks associated with projects, to ensure that EDF's commitments in this area are not overlooked. Concretely, this takes the form of identifying the risks associated with the projects for the activities developed and for the supplier and subcontractor relationships envisaged in the framework of the project. This identification will be facilitated by the providing of a regularly updated grid screening, which will allow for an analysis of projects that are consistent with the Group's *raison d'être*, CSR commitments, and guidelines, as well as with international standards. This grid takes into account environmental, health and safety, human rights and ethics issues. In the milestones prior to the CECEG, these issues are examined by the project validation bodies specific to each entity (for example the International Department's Commitment Committee – CEDI).

3.8.6.1 Human Rights and Fundamental Freedoms

3.8.6.1.1 Identifying salient risks

In the area of human rights and fundamental freedoms, the Group's ethics and compliance policy, which includes the duty of vigilance, has led the EDF group to put in place an approach that concretely translates into the identification of salient risks and associated mitigation measures, assessed according to the Group's activities and the countries where the company and its subsidiaries operate. Since 2021, the Group has been using the Verisk Maplecroft® human rights indices to refine and specify the human rights risks that the Group could face in the countries where it operates, buys and develops.

The salient risks relating to human rights and fundamental freedoms identified are as follows:

Risk category	Salient risk	Geographic area	Risk criticality	Group risk[2]
Cross-functional	Risks related to harassment and discrimination	Global	■□	3D
International activities and projects	**Risks of infringing on the rights of local communities:**			
	Risks related to land issues due to fair compensation and the implementation of sustainable livelihood restoration programmes.	All regions excluding Europe, North America and Australia	■□□	1A
	Risks related to the displacement of populations or the consequences of inadequate consultation of local communities, in particular indigenous communities.	Latin America, South East Asia, India	■□□	1A
	Risks related to the use of security forces.	Close to conflict zones or security regimes	■□□	1A
	Construction site workers:			
	Risk of infringement of workers' rights and notably risks related to decent working conditions.	All regions excluding Europe, North America and Australia Europe, North America and Australia	■□□ ■□	1E, 1A
	Risk of forced labour by subcontractors.	Gulf countries, South East Asia	■□	1E, 1A

Criticality: ■■■ *high* ■□□ *intermediate* ■□ *moderate*

(1) IFC: International Finance Corporation. WB: World Bank. ADB: Asian Development Bank.
(2) See section 2.2 "Risks to which the Group is exposed".

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3.8.6.1.2 Main prevention, mitigation and monitoring measures implemented

The implementation of human rights commitments is part of the deployment of the EDF's group Global Social Responsibility Agreement and of the Group's reference framework (see section 3.3.2.3 "Human rights").

Preventing and dealing with any physical or psychological violence, intolerance or injustice in the workplace

See section 3.3.2.2.2 "Prevention of harassment and discrimination".

Combating sexism and all forms of discrimination:

See section 3.3.3 "Equality, diversity and inclusion".

Preventing risks related to the Group's international activities and projects concerning violations of the rights of communities and workers and the use of security forces

See section 3.3.2.3 "Human Rights".

Conflict between Russia and Ukraine

Before the outbreak of war in Ukraine, the EDF group was present in Russia in the field of energy services, through Dalkia's Russian subsidiary, Dalkia Rus. EDF's Moscow office was responsible for promoting the Group's businesses in Russia and developing new activities in relation to the energy transition. Since the start of the war in Ukraine, the EDF group has relied on the measures set out in its vigilance plan to make sure that neither its activities nor the activities of entities with which it is in business feature risks of serious violation of human rights, health and safety, or the environment. It has also relied on the provisions of the OECD Guide[1], which recommends that businesses assess any plans to terminate a business relationship based on the importance of this relationship, the legal consequences of the pursuance or termination of the relationship, changes that termination would cause in the field, as well as any credible information regarding potential negative economic and/or social impacts of the termination decision.

Thus EDF discontinued its presence on Russian soil, taking the decision in March 2022 to close its Moscow office, which was administratively closed in May 2023. In addition, after finalising local registration formalities on 20 May 2022, EDF announced, on 23 May 2022, the sale of Dalkia's Russian subsidiary, Dalkia Rus, which has been present in Russia since 2016 and specialises in providing energy services to mainly French companies. Finally, to ensure that no contractual relationship contravenes the international sanctions regimes legally applicable to the Group, the EDF group has relied on its organisation and its reference frameworks in terms of export control and international sanctions. More generally, the decision to pursue certain relationships was always taken in accordance with international sanctions and restrictions imposed on Russia, the absolute need not to violate human rights, fundamental liberties, personal health and safety, and the environment, or to jeopardise nuclear safety, as well as continuing to secure the electricity supply of France and European countries, which – given the current geopolitical and economic situation – is a key goal as electricity is an essential product.

Ongoing litigation in Mexico

In 2018, an NGO referred the planned Gunaa Sicaru wind farm, managed by a subsidiary of EDF Renewables in Mexico, to the OECD's French national contact point (NCP).

During the course of the OECD mediation process, the EDF group took part in two dialogue meetings with the plaintiffs and provided some responses to the concerns raised. The NCP closed the matter in spring 2020. On 12 July 2022, the French NCP published a press release noting the bolstering of EDF's corporate policy and the work done on human rights, as well as engagement with stakeholders. As these measures met its recommendations, the NCP accordingly ended its monitoring[2].

The indigenous consultation process conducted by the Mexican authorities was suspended following an earthquake in 2018, and then due to the Covid-19 pandemic. The process is now taking its course after the judge ordered the resumption of the consultation.

Likewise, in December 2019, EDF responded to a formal notice for the same project sent pursuant to the French duty of vigilance law by said NGO and four individuals. EDF was then summoned on 13 October 2020 to appear before the Paris Court of Justice (*Tribunal Judiciaire*) under the French duty of vigilance law. The applicants have asked the court to order changes to the vigilance plan produced by EDF to better address, in particular, the risks posed to the rights of indigenous communities and, on the other, to provide compensation for the alleged damage caused by its failure to fulfil its duty of vigilance. EDF has challenged these two applications. On 30 November 2021, the pre-trial judge dismissed the associations' request to suspend the project as a precautionary measure, as well as the request regarding the inadmissibility of the associations' injunction concerning the EDF vigilance plan due to the lack of prior formal notice. The Court proposed the use of mediation, which EDF responded to favourably. The plaintiffs then appealed the pre-trial judge's decision. Since then, proceedings have been under way before the Court of Appeal, which set the first quarter of 2024 as the date to present formal arguments before a new chamber specially tasked for cases relating to the law on the duty of vigilance. The progress of the case is also monitored by the members of the CDRS (see section 3.8.2 "Governance, steering and stakeholder involvement").

A website dedicated to the project is available in English and Spanish: https://www.gunaa-sicaru.com.

3.8.6.2 Environment

3.8.6.2.1 Identifying salient risks

Group mapping of risks is performed based on the Group's line of industrial activities. Environmental risks are identified, assessed, and prioritised through the environmental management system (EMS) and the internal control system linked to Group risk management (see section 3.5.4.2 "Environmental management system"). The identification of environmental risks is part of the Group's overall risk management system (see chapter 2 "Risk factors and control framework"). On the basis of its risk mapping, each entity defines action plans to reduce and control its risks.

The update of the 2023 risk mapping confirms the analysis of the 2022 risks and does not highlight any new environmental risks. The main change concerns the consideration of the impact of the acceleration of climate change and the systemic issue of this risk for EDF and all of its stakeholders.

(1) OECD due diligence guide for responsible business conduct, published on 20 March 2018 (https://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf).
(2) https://www.tresor.economie.gouv.fr/Articles/2022/07/26/pcn-francais-edf-et-edf-renouvelables-au-mexique.

The salient environmental risks are as follows:

Salient risk	Generation activities most exposed	Risk criticality	Group risk[1]
Greenhouse gas emissions with effects on the climate			
– **Direct emissions** (Scope 1)	– Electricity and heat generation activities from fossil fuel	■□□	5B
– **Indirect emissions** (Scope 3)	– Supply of gas and electricity, electricity generation by non-controlled assets	■□□	5B
Discharges with potential effects on:			
– **air quality**: mainly SO_2, NOX and dust emissions	– Electricity and heat generation activities from fossil fuel	□	1I
– **water quality**: mainly thermal emissions from thermal power plant cooling	– Electricity generation from thermal power plants (nuclear, fossil fuels)	□	1I
Consumption with potential effects on:			
– **material resources:** including construction materials for new facilities and waste generation	– Electricity generation activities (nuclear, thermal, hydropower, wind and solar power)	□ (existing generation) ■□□ (projects)	1I 1A, 1I
– **freshwater resources**: mainly evaporation related to closed-circuit cooling of thermal power plants	– Electricity generation from thermal power plants (nuclear, fossil fuels)	□	1I
Potential impacts on biodiversity			
– **Changing land and seas uses**: mainly influence of new projects	– Electricity generation activities (nuclear, thermal, hydropower, wind and solar power)	■□□	1A, 1I
– **Overexploitation of natural resources**: mainly forestry	– Electricity and heat generation activities from biomass	□	1I

Criticality: ■■■ *high* ■□□ *intermediate* □ *moderate*

3.8.6.2.2 Main prevention, mitigation and monitoring measures implemented

To prevent and mitigate risks of serious harm to the environment, EDF relies on its Environmental Management System (EMS) and its CSR policy to commit its entities to a precautionary approach and acting responsibly. The most significant risks are covered in risk control plans in conjunction with the Group's CSR policy.

In order to implement the environmental goals and related actions based on its CSR commitments and policy, the EDF group has set up a Group-wide environmental management mechanism using an EMS (see section 3.5.4.2 "Environmental management system").

This management system relies on EDF's governance bodies, which define the environmental guidelines and objectives to be achieved, in line with the expectations of external and internal stakeholders (see chapter 4 "Corporate governance" and section 3.5.2 "CSR Governance bodies").

In accordance with the requirements of the CSR policy, each of the Group's entities[2] and projects is implementing an environmental management approach adapted to its own issues.

The operation of the EMS is ensured by the Group, entity and business line processes, which make it possible to provide stakeholders with proof that it:

- controls environmental risks and ensures that the EDF group complies with regulations and its commitments: each entity draws up and implements an environmental programme or action plan that takes into account the Group's commitments concerning it, its significant environmental aspects, and its regulatory obligations, considering its risks and opportunities;
- improves the efficiency of its organisations in a way that is appropriate to the issues at stake: each entity is responsible for its own internal control, internal and external audits of its EMS, and interfaces with the Group EMS;
- conducts mandatory non-financial reporting of the environmental activities of the entities: each entity collects and communicates the required environmental information to the Sustainable Development Department.

The Group's EMS is certified by an external body, AFNOR, according to the international standard ISO 14001. All industrial sites are covered by an EMS, over 80% of which are certified.

3.8.6.2.2.1 Prevent impacts on the climate

See section 3.1 "Carbon neutrality and the climate".

3.8.6.2.2.2 Prevent the impacts of EDF's activities on the air, water, soil, biodiversity and the production of waste

See section 3.2 "Preserving the planet's resources" and section 3.3.1.6 "Air quality".

(1) See section 2.2 "Risks to which the Group is exposed".
(2) Companies with industrial, operational (installation, operation, maintenance), engineering, distribution and marketing activities relating to goods and services.

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3.8.6.3 Health & Safety

3.8.6.3.1 Identifying salient risks

The mapping of risks to the health and safety of employees and service providers is carried out by the Health and Safety Division, which is responsible for health and safety management, on the basis of risk analyses carried out by the Group's various entities and subsidiaries, in line with the Group's risk mapping system (see section 2.2 "Risks to which the Group is exposed"). Salient risks to the health and safety of employees and service providers are connected to the operation of industrial facilities (see section 2.2 – 1D "Occupational health or safety violations [employees and service providers]").

Risks concerning consumers and local residents relate to the operation of industrial facilities (see sections 2.2 – 1F "Hydropower safety violations", 2.2 – 1I "Industrial safety violations and impact on environmental assets, including biodiversity", and 2.2 – 2C "Nuclear safety violations during operation resulting in nuclear civil liability").

Health and safety risks are as follows:

Risk category	Salient risk	Risk criticality	Group risk[1]
Health and safety of employees and service providers	Risk of work-related accidents, occupational illnesses (asbestos, chemicals, ionising radiation and noise)	◫◫	1D
	Musculoskeletal diseases and anxiety-depressive disorders, including stress	◻	1D
Health and safety of consumers and local residents	Safety of nuclear and hydropower facilities	◫◫	1F, 2C
	Air quality	◻	1I
	Noise and light pollution	◻	1I

Criticality: ■■■ *high* ◫◫ *intermediate* ◻ *moderate*

3.8.6.3.2 Main mitigation, prevention and monitoring measures implemented

Deployment of the Health and Safety Policy

See sections 3.3.1.3.1 "Health and safety policy", 3.3.1.3.2 "Health and safety management" and 3.3.1.3.3 "Work-related accidents".

See section 3.8.6.4.2 "Main prevention, mitigation and monitoring measures implemented" for health and safety in the purchasing process.

The Health and Safety Policy also sets a framework for progress on the subject of health

See section 3.3.1.3.4 "Well-being and psychosocial risks" and 3.3.1.3.5 "Well-being, organisation of work and working hours".

Safety of nuclear and hydropower facilities

See section 3.3.1.1 "Nuclear safety".

See section 1.4.1.3.1.3 "Hydropower safety".

Air quality

See section 3.3.1.6 "Air quality".

Noise and light pollution

See section 3.3.1.4 "Consumer health and safety".

3.8.6.4 Suppliers and subcontractors

3.8.6.4.1 Identifying salient risks

The salient risks relating to the duty of vigilance concerning suppliers and subcontractors are identified on the basis of a risk mapping covering all EDF purchasing categories within the scope of purchases covered by the Group Purchasing Department. The Group Purchasing Department manages EDF's purchases, excluding fuel purchases, and a portion of tertiary, IT and telecommunications purchases for certain subsidiaries. The methodology takes into account all matters relating to the environment, health and safety, human rights, and ethics and compliance. Its ultimate aim is to determine the degree of residual risk and identify actions for the supplier.

This risk analysis covers 184 purchasing categories for approximately 18,000 suppliers with a contract with EDF. More than 94% of purchases are made in France thanks in particular to the allotment mechanism, which facilitates access to the Group's markets. 97% of purchases are made in the European Union (99.6% in the European Free Trade Association)[2].

Risks are assessed per purchasing categories. The evaluation and prioritisation of risks are based on the activities of suppliers, and their geographical location is also a major factor in the assessment of risk.

Major risks have been identified in the various purchasing areas, mainly relating to health and safety, waste, greenhouse gas emissions, the use of rare materials, and human rights. 15% of the purchasing categories analysed are classified as "major residual risk"; 50% are classified as "significant residual risk"; 35% are classified as "limited residual risk". Of the purchasing categories analysed and classified as having a major residual risk, the table below summarises the purchasing areas – by category groupings – with total invoicing of more than €50 million in 2023 (all the risks detailed below specify the main risk for Group 1E relating to supply chains in section 2.2 "Risks to which the Group is exposed"):

(1) See chapter 2.2 "Risks to which the Group is exposed".
(2) European Union, Switzerland and the United Kingdom notably.

Purchasing areas	Environment	Health & Safety	Human Rights	Salient risks
Electricity Control Command	■□□	■□□	■□□	• Environment: end-of-life management of equipment. • Health & safety: electrical and chemical exposure, machine work. • Human rights: legality of labour, forced labour and child labour, due to the international subcontracting chain of certain items of equipment.
Civil engineering, deconstruction and decontamination	■■□	■■□	■□□	• Environment: soil pollution risks and waste traceability. Noise and visual pollution. CO_2 emissions due to construction site equipment. • Health & safety: use of construction site equipment and explosives, handling and heavy loads. • Human rights: legality of work and working conditions on construction sites.
Heavy lifting systems	■■□	■□□	■□□	• Environment: management of end-of-life equipment, some of which may be radioactive. Energy consumption for the extraction and smelting of ores (metal, steel).
Non-destructive controls/testing and maintenance in an industrial environment	■■□	■■□	■■□	• Environment: electronic waste management. • Health & safety: exposure to radiation, risk of falls, heavy loads. Psycho-social risks related to roaming by specialised service providers, the pressure of deadlines and staggered working hours. • Human rights: mineral extraction conditions in certain countries for the supply of electronic components.
Protective equipment and clothing	■■□	■■□	■■□	• Environment: air, water and soil pollution during the manufacturing phase, notably of clothing. CO_2 emissions related to the routing of equipment. • Health & safety: risk of falls, handling of heavy objects and exposure to chemical products. • Human rights: forced labour, child labour in equipment manufacturing areas.
IT and telecom equipment	■■□	■□□	■■□	• Environment: electrical and electronic waste, extraction of rare metals. CO_2 emissions related to the place of manufacture of the equipment and its transport. • Human rights: child labour in manufacturing sites, notably for small equipment such as smartphones.
IT solutions, publishing, hosting and support	■□□	■□□	■■□	• Human rights: employment legality, risks of discrimination, harassment, due to the global and off-shore presence of suppliers.
Production line for solar panels and batteries(1)	■■■	■■□	■■□	• Environment: water consumption in water-stressed areas, pollution of water and soil during the manufacturing and extraction phase of certain minerals. • Health & safety: unsuitable working conditions, exposure to chemicals. • Human rights: working conditions, forced labour, risk of discrimination in certain mineral production and extraction areas.

Criticality: ■■■ *high* ■■□ *intermediate* ■□□ *moderate*

As regards the risks present in the supply chains of the Group's other entities, certain additional salient risks have been identified:

- In 2023, Dalkia's Purchasing Department finalised its mapping of the CSR risks related to its supplies around its 49 purchasing categories with approximately 17,000 suppliers. Risks were analysed with regard to the environment, working relations and conditions, human rights, as well as ethics and compliance. 10 purchasing categories are considered at risk: suppliers of work equipment, gas, heating and cooling equipment, multi-technical services, mechanical and hydropower equipment and materials, building products, industrial chemicals, measurement and metering, electrical equipment and exchangers and substations.

(1) Excluding the scope of the Group Purchasing Department.

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3.8.6.4.2 Main prevention, mitigation and monitoring measures implemented

See section 3.4.2.3 "Contribution to development through purchasing" and section 3.4.2.3.2.5 "Other practical procedures at the Group".

Climate and health & safety issues better taken into account in the purchasing process

See section 3.4.2.3.2.4 "Responsible purchasing process".

Supplier assessments

See section 3.4.2.3.3 "Supplier monitoring".

Awareness raising and training

See section 3.4.2.3.2.6 "Procurement stakeholder training" and section 3.3.3.6.5 "Skills development in the area of sustainable development".

Coal and uranium procurement

See section 3.4.2.3.4 "Responsibility in the fuel supply chain".

3.8.7 Group whistleblowing system

Scope

See section 3.3.2.4.1 "Scope".

Whistleblowing system

See section 3.3.2.4 "The EDF group whistleblowing procedure" for more details on the functioning of the whistleblowing system.

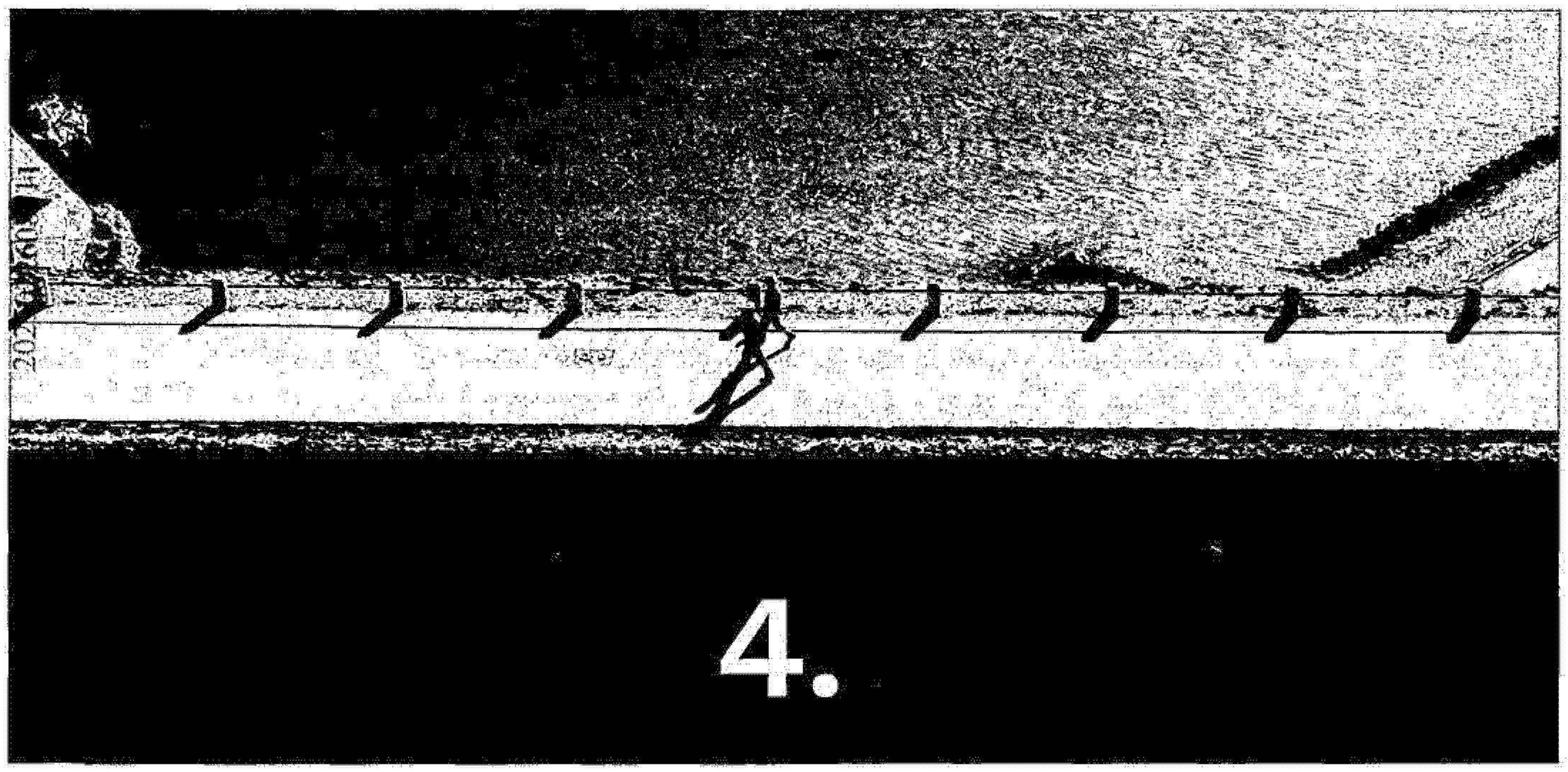
Whistleblowing alerts in 2023

See section 3.3.2.4.6 "2023 results".

3.8.8 Monitoring procedure

The Group's vigilance mission is committed to developing the vigilance plan's monitoring system as part of a continuous improvement process. This system is based on the operational action plan, which is monitored by the Steering Committee. This action plan is regularly presented to the CDRS (see section 3.8.2 "Governance, steering and stakeholder involvement").

The assessment of the system is included in the annual internal control plan, and a dedicated risk sheet on due diligence has been drawn up and implemented. It allows entities to self-assess whether or not they meet duty of vigilance requirements.



4.

Corporate governance

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4.1 Corporate Governance Code

EDF adheres to the AFEP-MEDEF Code, which is the Corporate Governance Code to which the Company refers, in accordance with Article L. 225-37 of the French Commercial Code, subject to the specific laws and regulations applicable to EDF.

These specific laws and regulations, in accordance with EDF's status as a French State-owned company and in particular the application to the Company of Order no. 2014-948 of 20 August 2014 and its implementing texts, and Decree no. 53-707 of 9 August 1953, are detailed in this Universal Registration Document and relate specifically to:

- the composition of the Board of Directors (see section 4.2.1 "Members of the Board of Directors");
- the terms and conditions for the appointment of the Chairman and Chief Executive Officer of EDF and the method of exercising Executive Management (see section 4.2.2.2 "Appointment and powers of the Chairman and Chief Executive Officer" and section 4.2.2.4 "Balance of powers"); and
- the terms and conditions for setting the remuneration of the Chairman and Chief Executive Officer (see section 4.6.1.1 "Remuneration of the Chairman and Chief Executive Officer").

In addition to the aforementioned specific laws and regulations, the table below sets out the AFEP-MEDEF Code recommendations that are not applied by the Company and the related explanations:

AFEP-MEDEF Code recommendation	Company's position	Explanation	Section of the Universal Registration Document
The Board of Directors and Corporate Social Responsibility Recommendation no. 5.1: *"On a proposal from Executive Management, the Board of Directors shall determine multi-year strategic policies with regard to social and environmental responsibility."* Recommendation no. 5.2: *"Executive Management shall present to the Board of Directors how this strategy is to be implemented with an action plan and the time horizons within which these actions are to be carried out. Executive Management shall notify the Board annually of the results achieved."*	As of the date of filing of this Universal Registration Document, the Board of Directors has not deliberated on the determination of the Company's multi-year strategic policies with regard to social and environmental responsibility.	As the EDF group's business plan had not been finalised in the course of the 2023 financial year, the Company was unable to implement these recommendations during the past financial year. The multi-year strategic guidelines in terms of social and environmental responsibility will be developed in the light of the Group's company project once it has been finalised. However, the Corporate Responsibility Committee (see section 4.2.3.5 "Corporate Responsibility Committee") and the Board of Directors regularly review the Group's CSR commitments and objectives, and the actions implemented, and examine the main progress and results achieved, in particular on the occasion of the closing of the annual and half-year financial statements.	See sections 1.3.2.2 "Group transformation" and 4.2.2.9 "Activity of the Board of Directors in 2023".
Holding of Company shares by Directors Recommendation no. 21: *"[...] the Director must personally be a shareholder and, by virtue of the provisions in the articles of association or the internal rules of procedure, hold a minimum number of shares that is significant in relation to the remuneration awarded to him or her. If he or she does not hold these shares when assuming office, he or she should use his or her remuneration to acquire them."*	The Company's articles of association and the Board's internal Rules of Procedure do not require Directors to hold a minimum number of shares significant in relation to the remuneration they receive for their term of office.	In accordance with the Act of 26 July 1983, the Directors representing the employees receive no remuneration for their term of office. Furthermore, the remuneration received for their term of office by Directors appointed on the recommendation of the French State, who are civil servants, is paid to the French State budget. Directors appointed on the recommendation of the French State who are not civil servants may only receive 85% of the remuneration due to them, the remainder being paid to the French State budget. Lastly, the Chairman and Chief Executive Officer does not receive any remuneration for his or her term of office as Director. Given the wide range of situations, the Board has not established a rule on the holding of the Company's shares. Furthermore, each Director must act in the corporate interest, regardless of the number of Company shares he or she holds personally. Lastly, all of EDF's share capital is currently held by the State.	See sections 4.6.1.2 "Remuneration of the Directors" and 4.5 "Shareholdings of the corporate officers in the Company's share capital".

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AFEP-MEDEF Code recommendation	Company's position	Explanation	Section of the Universal Registration Document
Requirement for corporate officers to hold shares Recommendation no. 24: *"The Board of Directors defines a minimum number of registered shares that the executive corporate officers must retain until the end of their term of office. [...] Until this objective regarding the holding of shares has been achieved, the executive corporate officers must allocate a portion of the exercised options or awarded performance shares to this end as determined by the Board."*	The Board of Directors has not prescribed regulations for the holding by the Chairman and Chief Executive Officer of a minimum number of the Company's shares.	The Chairman and Chief Executive Officer does not receive any remuneration for his or her term of office as Director. His or her remuneration is limited in accordance with Decree no. 53-707 of 9 August 1953 amended by Decree no. 2012-915 of 26 July 2012. Finally, the Company has not put in place a stock and/or performance stock option plan in favour of the Chairman and Chief Executive Officer. Accordingly, it was decided not to implement this recommendation. In addition, the executive corporate officer must act in the corporate interest, regardless of the number of Company shares that he or she holds personally. Lastly, all of EDF's share capital is currently held by the State.	See sections 4.6.1.1 "Remuneration of the Chairman and Chief Executive Officer", and 4.6.2 "Stock options – Bonus shares".
Rules for the distribution of remuneration paid to Directors for their term of office Recommendation no. 22.1: The method of distribution of this remuneration *"should take account, in such ways as it shall determine, of the Directors' actual attendance at meetings of the Board and committees, and the amount shall therefore consist primarily of a variable portion".*	A significant but not preponderant share of the remuneration paid to Directors for their term of office is dependent upon actual attendance by the Directors of the Board and Committee meetings.	Special distribution rules have been adopted, which take into account, in particular, the level of responsibilities and the time spent by the Directors on their duties. Although the variable share of remuneration paid for the term of office, which compensates the actual presence of Directors is not preponderant, the Company considers that it is nonetheless significant, insofar as it accounts for, to date, 50% of the total amount allocated and that, as is recommended by the AFEP-MEDEF Code, it is commensurate with the level of responsibilities assumed by the Directors and with the time they must devote to their duties.	See section 4.6.1.2 "Remuneration of the Directors".

4.2 Members and functioning of the Board of Directors

Board of Directors

41.7% independence*

57.8 years average age

14 meetings

91.7% attendance

Membership**

11 Directors appointed by the General Meeting including 5 on recommendation of the French State

18 members

6 Directors elected by the employees

1 Director representing the French State designated by the Minister of the Economy

Strategy Committee
8 members
41.7%*** independence
91.7% attendance
3 meetings

Risk and Audit Committee
8 members
75.0%* independence
91.1% attendance
7 meetings

Commitments Committee
4 members
66.7%* independence
90.0% attendance
5 meetings

Nuclear Commitments Monitoring Committee
6 members
25.0%* independence
91.7% attendance
4 meetings

Corporate Responsibility Committee
7 members
33.3%* independence
78.2% attendance
6 meetings

Appointments, Remuneration & Governance Committee
4 members
66.7%* independence
87.5% attendance
6 meetings

* Excluding Directors representing the employees
** Membership of the Board as of the filing date of this Universal Registration Document
*** All Directors attending meetings of the Committee, the attendance rate is calculated on the basis of the whole Board, excluding Directors representing the employees

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4.2.1 Members of the Board of Directors

In accordance with Order no. 2014-948 of 20 August 2014 on governance and the capital transactions of companies with public shareholding, EDF is administered by a Board of Directors consisting of three to 18 members, including members appointed by the General Shareholders' Meeting, others appointed upon recommendation of the French State in accordance with Article 6 of the Order, a French State Representative designated by the Minister for the Economy from the Civil Service in accordance with Article 4 of the Order, and one-third employee representatives elected in accordance with the provisions of Act no. 83-675 of 26 July 1983 on the democratisation of the public sector [1].

On the date of filing of this Universal Registration Document, the Board of Directors comprised 18 members:

- 11 Directors appointed by the General Meeting, including five on recommendation of the French State;
- six Directors elected by the employees;
- one Representative of the French State.

The Government Commissioner [2], Head of the French State General Economic & Financial Supervisory Mission to the Company [3] and the Secretary of the EDF Central Social and Economic Committee attend the meetings of the Board of Directors, in an advisory capacity only.

Between 1 January 2023 and the date of filing of this Universal Registration Document, the following amendments have intervened in the membership of the Board of Directors (see the table below disclosing personal information concerning the Directors):

First name, surname	Director/Category	Nature of the event	Date of Event
Claire Bordenave	Director elected by the employees (sponsored by the CGT trade union)	Resignation	16/02/2023
Fabrice Guyon	Director elected by the employees (sponsored by the CGT trade union)	Succeeding Claire Bordenave [1]	16/02/2023
Karine Granger	Director elected by the employees (sponsored by the CGT trade union)	End of the term of office	22/11/2023
Jean-Paul Rignac	Director elected by the employees (sponsored by the CGT trade union)	End of the term of office	22/11/2023
Vincent Rodet	Director elected by the employees (sponsored by the CFDT trade union)	End of the term of office	22/11/2023
Christian Taxil	Director elected by the employees (sponsored by the CFE-CGC trade union)	End of the term of office	22/11/2023
Christophe Béguinet	Director elected by the employees (sponsored by the CFDT trade union)	Effective date of office [2]	23/11/2023
Aurélie Frionnet	Director elected by the employees (sponsored by the CFE-CGC trade union)	Effective date of office [2]	23/11/2023
Gérald Lacoste	Director elected by the employees (sponsored by the CFE-CGC trade union)	Effective date of office [2]	23/11/2023
Cécile Pichot	Director elected by the employees (sponsored by the CGT trade union)	Effective date of office [2]	23/11/2023

(1) Article 16 of Act no. 83-675 of 26 July 1983 on the democratisation of the public sector provides that the candidates coming on a list immediately after the last elected candidate are called upon to replace the representatives elected on this list whose seat would become vacant for any reason whatsoever.

(2) The elections of the Directors representing employees on the Board of Directors took place from 5 to 12 October 2023, for a term of office effectively beginning on the 23 November 2023.

(1) The employee representatives mentioned in section I of Article 7 of the Order of 20 August 2014 are subject, for their election and their status, to the same provisions as those applicable to employee representatives of companies subject to the Act of 26 July 1983 (chapters II and III of section II of the act).
(2) Article 15 of the Order of 20 August 2014.
(3) This remit exercises the French State's economic and financial supervision of EDF, in accordance with Article 8 of Decree no. 55-733 of 26 May 1955. It can exercise extensive supervisory procedures.

The Annual General Meeting of 28 June 2023 renewed, for a period of four years, the terms of office of Claire Pedini, Bruno Crémel and Philippe Petitcolin, Independent Directors appointed by the General Meeting, and of Gilles Denoyel and Anne-Marie Descôtes, Directors appointed by the General Meeting on the proposal of the French State.

Following the elections of the Directors representing employees to the Board of Directors of EDF, which took place from 5 to 12 October 2023, the terms of office of Fabrice Guyon and Sandrine Lhenry were renewed for a period of four years.

Diversity policy

Gender diveristy of the Board of Directors and governing bodies

In accordance with Article L. 225-18-1 of the French Commercial Code and the Order of 20 August 2014, EDF is subject to the regulations relating to the balanced representation of women and men on Boards of Directors and Supervisory Boards and the Company must comply with a proportion of no less than 40% of Directors of each gender on the Board, excluding Directors representing employees.

On the date of filing of this Universal Registration Document, EDF's Board of Directors includes 10 women, including three of the Directors elected by employees. Women thus make up 58.33% of the Board members taken into consideration to calculate this percentage (*i.e.* excluding Directors representing employees), and 55.6% of the Board members as a whole.

Gender diversity policy for governing bodies applicable to the Company

In accordance with the recommendations of the AFEP-MEDEF Code, during its meeting held on 16 December 2020, the Board of Directors has furthemore defined a policy of gender balance for the governing bodies applicable to the Company, which implements within EDF the goals of the Group's diversity plan (*Ambition mixité*) adopted by the Executive Committee[1] and provides for several commitments aimed at removing the "glass ceiling" for women executives in terms of membership of Management Committees and senior management positions (see section 3.3.3.1 "Workplace equality"). Within the Company, the objectives set by the Board were as follows:

- 30% of women on Management Committees by 2023; this result was achieved by the end of 2023, with 31.8% female members of Management Committees, *i.e.* +1.6 point over the last three years;
- 30% of women among the Company's senior managers and future senior managers by 2025; this result was achieved by the end of 2023, with 32% female senior managers and future senior managers, *i.e.* +4 points over the last three years.

Every year, the Corporate Responsibility Committee and the Board of Directors review the results achieved within the framework of this policy, in connection with the presentation of the report on the gender equality policy (see section 4.2.3.5 "Corporate Responsibility Committee"). Accordingly, the Corporate Responsibility Committee and the Board of Directors reviewed, at their meetings of 5 October 2023 and 8 November 2023 respectively, the measures put in place by EDF and took note of the results obtained by the Company in implementing this policy.

Gender diversity policy for governing bodies applicable to the Group

The Appointments, Remuneration and Governance Committee also took note, at a meeting held on 8 February 2023, of the application of the Group's diversity plan (*Ambition mixité*) to the Group's executive population (see section 3.3.3.1.1 "Reinforcing the Group's commitment").

At 31 December 2023, the Group had a total of 24% women executives, 31.7% women on Management Committees and 29.3% women among senior management, for a proportion of 26.3% women among the workforce as a whole (see section 3.3.3.1.2 "Results in 2023").

Duties resulting from the Rixain Act

Act no. 2021-1774 of 24 December 2021 (known as the "Rixain" Act), supplemented by Decree No. 2022-680 of 26 April 2022, requires all companies with more than 1,000 employees to achieve a 30% quota for women among senior management and members of governing bodies[2] as of 1 March 2026, with this figure being raised to 40% as of 1 March 2029.

As the diversity of senior managers and future senior managers is an essential lever for the Group's transformation, in 2023 EDF boosted its action plan to meet this challenge and achieve the objectives set by the Rixain Act (see section 3.3.3.1.2 "Results in 2023").

Other diversity criteria

In accordance with the recommendations of the AFEP-MEDEF Code, the Board of Directors regularly examines the desirable balance of its composition and that of the Committees it establishes. It defines a diversity policy applied to the members of the Board with respect to criteria such as age, gender and professional qualifications and experience.

After consulting the Committee in charge of governance issues, the Board of Directors, at its meeting of 14 February 2019, defined a diversity policy and objectives taking into account the Group's strategy and considered that to achieve a good balance in its composition and promote the implementation of its strategic guidelines, priority was to be given to the search for the skills and experience adapted to its challenges and to a complementary nature of the profiles.

This policy was reviewed and updated by the Board of Directors at its meeting held on 17 February 2021, in the context of the expiry of the terms of office of several Directors at the end of the Annual General Meeting held in 2021, and taking into account the expectations expressed by the Directors during the 2020 independent review of the Board of Directors.

Since then, on the occasion of each renewal of a Director's term of office or on the occasion of departures involving the appointment or co-optation of Directors, the Appointments, Remuneration and Governance Committee examines the proposed candidates taking into account the desired objectives in terms of age, gender balance, professional experience, complementary profiles and maintaining a sufficient proportion of Independent Directors on the Board, defined as at least one-third of the Directors as recommended by the AFEP-MEDEF Code for companies with a controlling shareholder (see section 4.2.3.6 "Appointments, Remuneration and Governance Committee").

The members of the Board of Directors are questioned, during annual assessments of the functioning of the Board and its Committees and during external assessments, about their assessment of the membership of the Board of Directors and their expectations and suggestions concerning any changes to this composition. For example, in the last internal assessment, carried out in 2023, several Directors suggested reinforcing the Board with Directors presenting an industrial profile (see section 4.2.2.6 "Assessment of the functioning of the Board of Directors and its Committees").

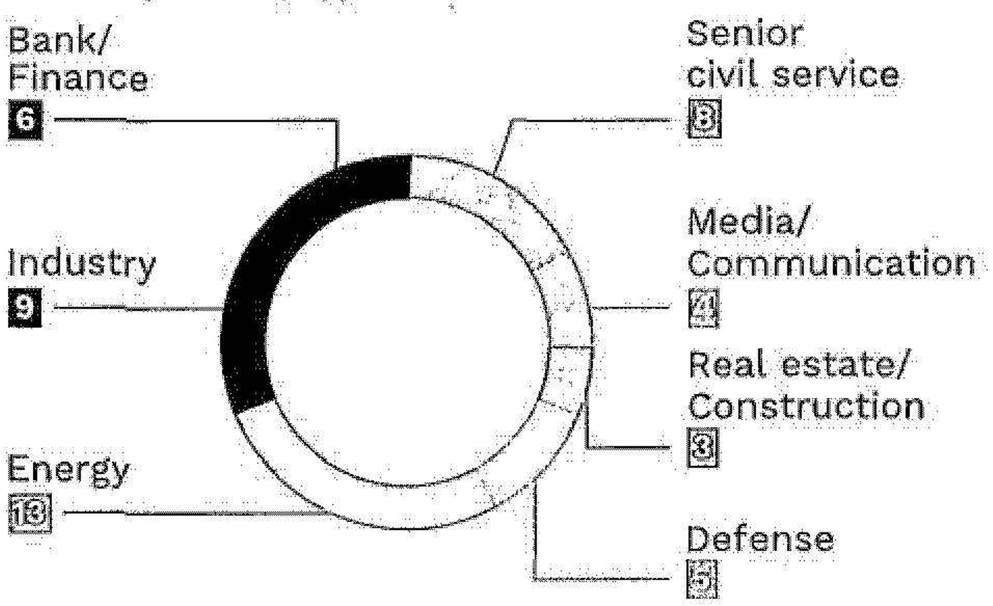
(1) See section 3.3.3.1.1 "Reinforcing the Group's commitment". In 2021, EDF's Executive Committee boosted the Group's objectives, setting a target of achieving 30% women by 2026, and 36-40% by 2030, at all levels of the Company (workforce, management and governing bodies).
(2) The Company's governing bodies are defined as EDF's Executive Committee.

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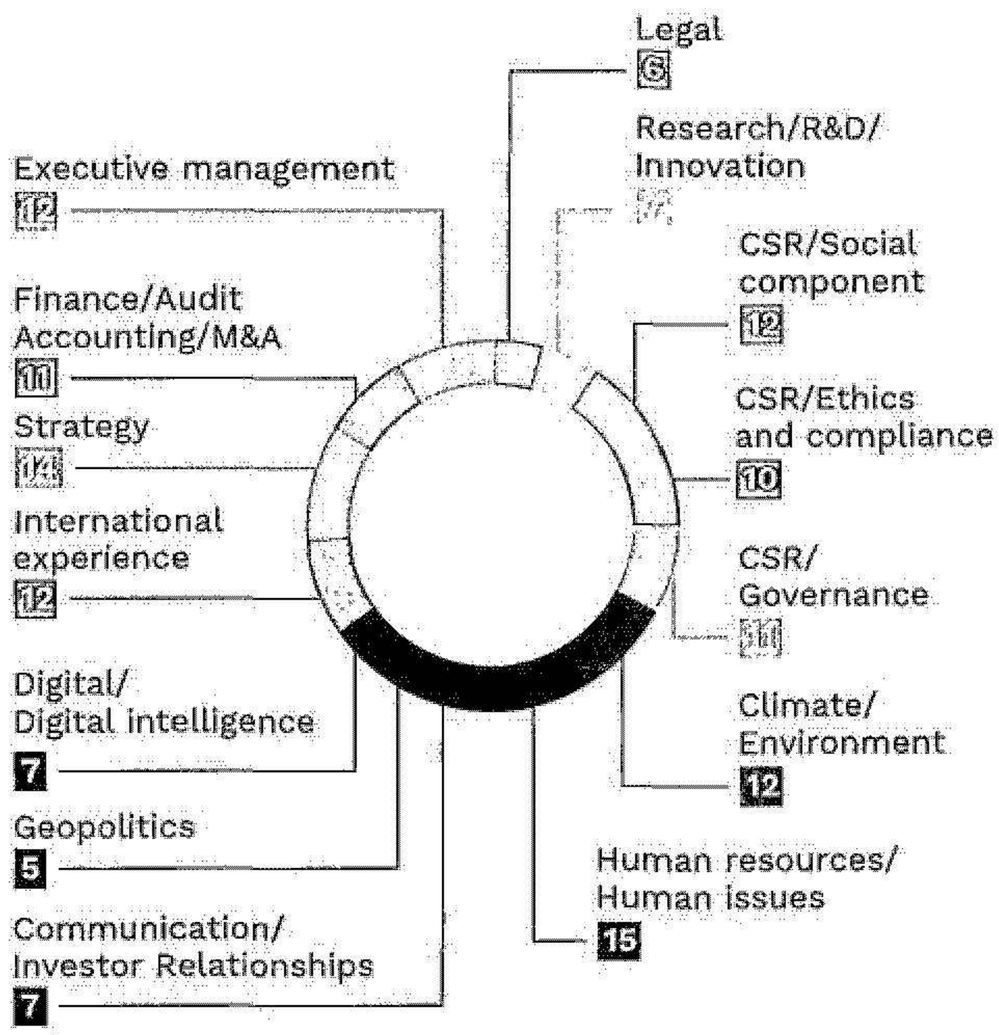
Business skills of the members of the Board of Directors

The graphs below present the mapping of the business skills in specific sectors or functions of all members of the Board of Directors as at 31 December 2023:

Sector expertise by type of skill



Functional expertise by type of skill



Information regarding the Directors

The table below summarises the main information concerning the members of the Board of Directors as at the date of filing of this Universal Registration Document.

SUMMARY PRESENTATION OF THE BOARD OF DIRECTORS

	PERSONAL INFORMATION			EXPERIENCE	ROLE WITHIN THE BOARD				ATTENDANCE TO COMMITTEES						
	Age	Gender	Nationality	Number of mandates in listed companies	Independance	Date of first appointment	Term of office shall expire on	Seniority in the Board (in years)	Strategy Committee	Risk and Audit Committee	Commitments Committee	Nuclear Commitments Monitoring Committee	Corporate responsibility Committee	Appointments, Remuneration and Governance Committee
Directors appointed by the Shareholders' Meeting														
Luc Rémont* Chairman and Chief Executive Officer	54	M	French	1		18/11/2022	GM 2025	1.33	C					
Nathalie Collin	59	F	French	0	▲	22/07/2021	GM 2025	2.5		□	□			
Bruno Crémel	58	M	French	0	▲	16/05/2019	GM 2027(1)	4.67		□				
Colette Lewiner	78	F	French	1	▲	11/04/2014	GM 2025(2)	9.76				■		■
Claire Pedini	58	F	French	0	▲	12/05/2016	GM 2027	7.68					C	■
Philippe Petitcolin	71	M	French	2	▲	16/05/2019	GM 2027	4.67	■	□	C			
Director appointed by the Shareholders' Meeting on recommendation of the French State														
Anne-Marie Descôtes	64	F	French	0		28/11/2022	GM 2027	1.25	■					
Gilles Denoyel	69	M	French	0		16/05/2019	GM 2027	4.67				C		
Marie-Christine Lepetit	62	F	French	0		07/05/2012	GM 2025	11.69		C	□	■		
Michèle Rousseau	66	F	French	0		30/09/2016	GM 2025	7.29				■	■	
Delphine Gény-Stephann	55	F	French	1		12/05/2022	GM 2025	1.83					■	
Director – Representative of the French State														
Alexis Zajdenweber	47	M	French	2		23/09/2022	20/11/2026	1.42	■					□
Directors elected by the employees														
Christophe Béguinet	58	M	French	0		23/11/2023	22/11/2027	<1	■	□			■	
Aurélie Frionnet	46	F	French	0		23/11/2023	22/11/2027	<1	■		□	■		
Fabrice Guyon	50	M	French	0		16/02/2023	22/11/2027	1.08	■	□		■		
Gérald Lacoste	47	M	French	0		23/11/2023	22/11/2027	<1		□			■	
Sandrine Lhenry	49	F	French	0		28/07/2021	22/11/2027	2.5	■	□			■	
Cécile Pichot	49	F	French	0		23/11/2023	22/11/2027	<1					■	□

** Mr Luc Rémont was appointed as the Company's Chairman and Chief Executive Officer by decree of the President of the French Republic on 23 November 2022.*

(1) GM 2027: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2026.

(2) GM 2025: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024.

■ *Member of the Committee*

C *Chairman of the Committee*

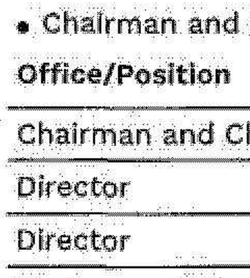
▲ *Independence within the meaning of the AFEP-MEDEF Code criteria*

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Personal information on the Directors, as well as information on their terms of office, are shown in the table below and are provided as at 15 January 2024, unless otherwise stated.

DIRECTORS APPOINTED BY THE SHAREHOLDERS' MEETING

Luc Rémont, 64 years old



Chairman and Chief Executive Officer[1]

Date of appointment to the Board: 18 November 2022
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024[2]
Other positionspo: Chairman of the Strategy Committee
Nationality: French

A graduate of École polytechnique and École nationale supérieure des techniques avancées (ENSTA Paris), Luc Rémont began his career in 1993 as an engineer at the French Directorate General of Armaments (Direction générale de l'armement). In 1996, he joined the French Ministry for the Economy, Finance and Industry where he held various positions. Firstly, at the French Treasury Department, he was tasked with relations with the European Bank for Reconstruction and Development (EBRD) and the World Bank, and then with the French State's holdings in companies in the transport sector. He then became a technical advisor in charge of the investments, and then Deputy Director in the cabinet of several French Ministers of Finance from 2002 to 2007. In 2007, he joined Merrill Lynch and in 2009 he became Managing Director of the Bank of America Merrill Lynch corporate and investment bank in France. He joined Schneider Electric in April 2014 and became President of Schneider Electric France, and was appointed Managing Director of Schneider Electric International Operations in charge of South America, Africa and the Middle East, India, East Asia and the Pacific in April 2017. In addition, between 2015 and 2018, Luc Rémont was President of GIMELEC, a group of 230 French companies designing and deploying electrical and digital technologies for the optimised and secure control of energy in buildings, industry and digital infrastructures. He was also a member of the Board of Directors of Naval Group, the European leader in naval defense from 2014 to 2020 and is a Director of Worldline, the European leader in secure digital payments and transactions. Luc Rémont has been EDF's Chairman and Chief Executive Officer since 23 November 2022.

Other offices and positions held

Position held within the Company

- Chairman and Chief Executive Officer of EDF

Office/Position	Title	Country	
Chairman and Chief Executive Officer	EDF	France	
Director	Edison	Italy	G/L
Director	EDF Energy Holdings	United Kingdom	G
Chairman of the Board of Directors	EDF group Foundation	France	G
Director	Dalkia	France	G
Chairman of the Supervisory Board	Framatome	France	G

Terms of office expired in the last five years

- Chairman of the Schneider Electric India Private Limited Board of Directors
- Director of Naval Group
- Director of Worldline
- Director of EDF Renewables

(1) Luc Rémont was appointed as EDF's Chairman and Chief Executive Officer by decree of the President of the French Republic of 23 November 2022.

(2) Luc Rémont was co-opted by the Board of Directors as a Director, replacing François Delattre, for the remainder of the latter's term of office, i.e. until the end of the Ordinary General Meeting called to approve the financial statements for the financial year ending on 31 December 2024.

G: EDF group company – L: listed company.

Nathalie Collin, 59 years old



Director appointed by the General Meeting

Date of appointment to the Board: 22 July 2021

Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024

Other positions: Member of the Risk and Audit Committee and the Commitments Committee

Nationality: French

Holding a master's degree in business and fiscal law from the Pantheon-Assas University and having graduated from École supérieure des sciences économiques et commerciales (ESSEC), Nathalie Collin was a consultant at Arthur Andersen from 1987 to 1990, then from 1992 to 1993. Deputy Chief Financial Officer at Cité Mondiale des Vins et Spiritueux from 1990 to 1992, she became Chief Financial Officer for France at Interleaf in 1993, before becoming Chief Financial Officer for Europe and Executive Vice-President Finance in 1995. From 1997 to 2009, she held several positions within EMI Music France, becoming Chairwoman of the Management Board in 2002. She was Co-Chairwoman of the Management Board of Libération from 2009 to 2011, and then Executive Vice-President of Le Nouvel Observateur press group from 2011 to 2014. In 2014, she joined La Poste Group as Deputy Chief Executive Officer in charge of Digital Technology and Communications, before becoming Chief Executive Officer of the General Public and Digital Technology Division in March 2021. Nathalie Collin was a member of the French Economic, Social and Environmental Council (Conseil économique social et environnemental) and the French National Digital Council (Conseil national du numérique) up to 2021. She is a Director of GeoPost as well as a member of the Steering Committee of Docaposte and LP11.

Other offices and positions held

Principal position held outside the Company

- Deputy CEO and CEO of the Consumer and Digital Division of La Poste Group

Office/Position	Title	Country
Deputy Chief Executive Officer	La Poste	France
Director	GeoPost	France
Member of the Steering Committee	Docaposte	France
Member of the Steering Committee	LP11	France

Expired offices held outside the Company over the past five years

France

- Chairwoman of LP11
- Director of La Banque Postale
- Director of the SNCF
- Member of the Mediapost Steering Committee

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Bruno Crémel, 58 years old



Director appointed by the General Meeting

Date of appointment to the Board: 16 May 2019
Last renewal: 28 June 2023
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2026
Other positions: Member of the Risk and Audit Committee
Nationality: French

A graduate from the École Centrale de Paris, the Paris Institute of Political Studies (IEP), and the National School of Administration (ENA), Bruno Crémel started his career as a Finance Inspector, before joining the French Ministry for the Economy, Finance, and Industry as head of the Public Banks and Insurance Office, State Participations Department, where in particular he coordinated the privatisation of several public banks and insurance companies. From 1998 to 2000, he was Strategic Planning Director at the Kering group as a member of the Executive Committee, then Chairman of the Management Board of PPR Interactive. From 2000 to 2002, he was Chief of Staff of Laurent Fabius, Minister for the Economy, Finance and Industry. From 2002 to 2006, Bruno Crémel was Chairman and Chief Executive Officer of FNAC. From 2006 to 2012, he was General Partner and member of the Executive Committee of the LBO France investment fund, where he oversaw in particular the acquisitions of Maisons du Monde and Promovacances. He was appointed Chairman and Chief Executive Officer of Darty France in 2012. He joined the Partech investment fund in May 2014 as a General Partner and has been Deputy Chief Executive Officer since May 2016.

Other offices and positions held

Principal position held outside the Company

- General Partner and Deputy Chief Executive Officer of Partech Partners

Office/Position	Title	Country
Deputy Chief Executive Officer	Partech Partners	France
Chairman	Partech Growth GP	France
Chairman	Partech Growth II Holding	France
Chairman of the Board of Directors	Artaris	France
Director	Evaneos	France
Member of the Strategy Committee	*Rouje*	France
Director	Weglot	France
Director	Fonds de Dotation Française du Louvre	France
Director	M-Files	Finland
Member of the Supervisory Board	Exporo	Germany
Director	Studocu	The Netherlands
Director	Channable	The Netherlands
Board observer	TransferRoom	United Kingdom

Expired offices held outside the Company over the past five years

France
- Director of EcoVadis
- Director of Sendinblue

Other countries
- Director of Made.com (UK)
- Director of NA-KD (Sweden)

Gilles Denoyel, 69 years old



Director appointed by the General Meeting on recommendation of the French State

Date of appointment to the Board: 16 May 2019
Last renewal: 28 June 2023
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2026
Other positions: Chairman of the Nuclear Commitments Monitoring Committee
Nationality: French

A graduate as a General Engineer from Mines ParisTech Engineering School, former student at the Paris Institute of Political Studies (IEP) and the National School of Administration (ENA), Gilles Denoyel was appointed Inspector of Public Finances at the French Ministry for the Economy & Finance in 1981 before joining the Treasury Department in 1985, where he was successively in charge of the CIRI (Interministerial Committee for Industrial Restructuring), the Financial Markets Bureau, the Insurance Sub-Directorate and, ultimately, the privatisation programme. In 1996, he joined the CCF group as Chief Financial Officer, then General Secretary in charge of Strategy and Operations, then Senior Executive Vice-President in charge of Finance: in this capacity, he played a significant part in the integration of CCF into the HSBC group. In 2004, he was appointed Deputy Chief Executive Officer, successively in charge of central functions, asset management and insurance, and then of all risk and control functions and relations with regulatory authorities. From 2015 to 2017, he was HSBC's International Institutional Relations President for Europe. He was also Chairman of the group of banks under foreign control in France from 2006 to 2016 and Treasurer of the Association française des banques (*i.e.* French banking association) from 2004 to 2016. Gilles Denoyel has been Chairman of the Board of Directors of Dexia and Dexia Crédit Local since May 2018, and a member of the Supervisory Board of Memo Bank since January 2018. He was a member of the Supervisory Board of Rothschild & Cie from May 2020 to its delisting in November 2023.

Other offices and positions held

Principal position held outside the Company

- Chairman of the Board of Directors of Dexia and Dexia Crédit Local

Office/Position	Title	Country
Chairman of the Board of Directors	Dexia	Belgium
Chairman of the Board of Directors	Dexia Crédit Local	France
Member of the Supervisory Board	Memo Bank	France

Expired offices held outside the Company over the past five years

- Member of the Supervisory Board of Rothschild & Cie

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Anne-Marie Descôtes, 64 years old



Director appointed by the General Meeting on recommendation of the French State

Date of appointment to the Board: 28 November 2022
Last renewal: 28 June 2023
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2026
Other positions: Member of the Strategy Committee
Nationality: *French*

A former student of École normale supérieure and École nationale d'administration, Anne-Marie Descôtes is a qualified German teacher and holds a postgraduate degree in German Studies and a degree in art history. After teaching German for two years, she was cultural attaché at the French Embassy in Bonn from 1987 to 1990. After graduating from ENA, she was appointed to the European Cooperation Directorate at the French Ministry of foreign affairs where she worked on issues such as extra-community relations and then intra-community affairs, in particular the creation of the JHA pillar (1994-1997), before becoming a technical advisor in the office of Pierre Moscovici, Minister Delegate for European Affairs (1997-2001). From 2001 to 2005, she held the positions of special advisor for Central and South-Eastern European enlargement at France's Permanent Representation to the European Union in Brussels. She was then appointed special advisor for Europe and the ex-USSR in Washington from 2005 to 2008, Director of the Agency for French Education Abroad (AEFE) from 2008 to 2013 and Director-General for Global Affairs, Culture, Education and International Development from 2013 to 2017. After having been Ambassador Extraordinary and Plenipotentiary of France to Germany from 2017 to 2022, Anne-Marie Descôtes was appointed Secretary General of the French Ministry of Europe and Foreign Affairs on 30 August 2022. She was elevated to the dignity of Ambassador of France on 25 November 2020. Anne-Marie Descôtes has been a Director of Orano since October 2022.

Other offices and positions held

Principal positions held outside the Company

- Secretary General of the French Ministry for Europe & Foreign Affairs

Office/Position	Title	Country
Director	Orano	France
Director	Agence nationale des titres sécurisés (*i.e.* French national agency of secure shares)	France
Director	Institut national du service public (INSP)	France
Director	Institut Français	France
Director	Sorbonne Abou Dhabi	France
Director	Institut des hautes études de défense nationale (*i.e.* French high national defense study institute)	France
Director	Institut du monde arabe	France
Director	France médias monde	France

Expired offices held outside the Company over the past five years

France

- Chairwoman of the Board of Directors of France Education International

Delphine Gény-Stephann, 55 years old



Director appointed by the General Meeting on recommendation of the French State

Date of appointment to the Board: 12 May 2022
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024
Other positions: Member of the Corporate Responsibility Committee
Nationality: French

Engineer from École polytechnique and École nationale des ponts et chaussées and an MBA graduate of Collège des ingénieurs, Delphine Gény-Stephann started her career in 1994 at the Treasury Department of the French Ministry for the Economy and Finance. In 1999, she joined the French State Shareholdings Agency and joined the Boards of Directors of several public companies. In 2005 Delphine Gény-Stephann joined the High Performance Materials Department of Saint-Gobain where she consecutively held the positions of Director of Development and Financial Director of the Ceramic Materials activity. In 2013, she was made Mergers & Acquisitions manager and was appointed External Venturing Director of the group. In 2014, she becomes Managing Director of Planning and Strategy for Compagnie de Saint-Gobain, member of the General Management Committee of the group, before becoming Chief Executive Officer of the Silicon Carbide and Quartz activity. In November 2017, she was appointed Secretary of State to the Minister of the Economy and Finance, position which she held until October 2018. Delphine Gény-Stephann has been a consultant since 2019 and has been advising the Advisory Council set up by Morgan Stanley in its Paris office since the end of 2022. She is also member of the Boards of Directors of Thales and Eagle Genomics, member of the Steering Committee of GENEO Capital Entrepreneur SAS and member of the Supervisory Committee of Holding d'infrastructures des métiers de l'environnement SAS (controlling the Saur Group).

Other offices and positions held

Principal positions held outside the Company

- Consultant

Office/Position	Title	Country	
Director	Thales	France	L
Director	Eagle Genomics	UK	
United Kingdom Member of the Supervisory Board	Holding d'infrastructures des métiers de l'environnement SAS	France	
Member of the Steering Committee and Chairwoman of the Mission Committee	GENEO Capital Entrepreneur SAS	France	

Expired offices held outside the Company over the past five years

- None

G: EDF group company – L: listed company.

Marie-Christine Lepetit, 62 years old



Director appointed by the General Meeting on recommendation of the French State

Date of appointment to the Board: 7 May 2012
Last renewal: 6 May 2021
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024
Other positions: Chairwoman of the Risk and Audit Committee, Member of the Nuclear Commitments Monitoring Committee and the Commitments Committee
Nationality: French

A former student of the École Polytechnique and the National School of Administration (ENA), Marie-Christine Lepetit joined the General Inspectorate of Finance in 1987, where she held auditing and advisory positions. In 1991, she was recruited by Jean Lemierre to the General Tax Department to implement management control. In January 1995, she was responsible for summary work in the tax legislation department before joining the office of Prime Minister Alain Juppé as Technical Advisor in Taxation and Macroeconomic Studies, then in Taxation and SMEs from 1995 to 1997. She continued her career at the General Directorate for Tax, working to improve service quality (pre-filled tax returns, remote procedures, certification). Appointed Director of Tax Legislation at the Ministry of the Economy and Finance in 2004, she supported the tax reforms from 2004 to 2012. At the same time, she co-chaired the working group on the reform of social welfare financing in 2006 and co-signed the report of the expert conference on the climate and energy contribution chaired by Michel Rocard. She also sat on the Local Authorities Reform Committee chaired by Édouard Balladur as Executive Director and was a member of the Public Life Renewal and Ethics Commission chaired by Lionel Jospin. She has been a member of the Risks and Internal Control Committee of Fondation des apprentis d'Auteuil since April 2019 and of Conseil des prélèvements obligatoires since December 2023.

Other offices and positions held

Principal position held outside the Company

- Inspector General of Finance

Office/Position	Title	Country
Member of the Risks and Internal Control Committee	Fondation des apprentis d'Auteuil	France
Member	Conseil des prélèvements obligatoires	France

Expired offices held outside the Company over the past five years

France

- Director of the Paris Institute of Political Studies (IEP)

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Colette Lewiner, 78 years old



Director appointed by the General Meeting

Date of appointment to the Board: 11 April 2014
Last renewal: 6 May 2021
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024
Other positions: Chairwoman of the Appointments, Remuneration and Governance Committee, Member of the Nuclear Commitments Monitoring Committee
Nationality: French

A former student of École normale supérieure, a qualified physics teacher and holder of a doctorate in science, Colette Lewiner joined Électricité de France in 1979. In 1989 she created the Development and Commercial Strategy Division, thus becoming the first woman appointed Executive Officer at EDF. From 1992 to 1998, she was Chairwoman and Chief Executive Officer of SGN, a nuclear engineering company and subsidiary of AREVA. In 1998, she joined Capgemini to create and manage the Global Energy and Utilities division until June 2012. Since July 2012, she has been, as Manager of Cowin, a consultant in the energy field. She was a Director of the Bouygues group from 2010 to 2022 and non-executive Chairwoman of TDF (SAS) from 2010 to 2015. She has been a member of Académie des technologies (since 2002) and a Director of CGG, Colas and Equans. She is a Grand Officer of the French Order of the Legion of Honour and the Order of Merit.

Other offices and positions held

Principal position held outside the Company

- Professional Director

Office/Position	Title	Country	
Director	CGG	France	L
Director	COLAS (*groupe Bouygues*)	France	
Director	Equans (*groupe Bouygues*)	France	

Expired offices held outside the Company over the past five years

France

- Director of Bouygues
- Director of Getlink
- Director of Nexans

G: EDF group company – L: listed company.

Claire Pedini, 58 years old



Director appointed by the General Meeting

Date of appointment to the Board: 12 May 2016
Last renewal: 28 June 2023
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2026
Other positions: Chairwoman of the Corporate Responsibility Committee, Member of the Appointments, Remuneration and Governance Committee
Nationality: French

A graduate of École des hautes études commerciales and holder of a master's degree in media management from École supérieure de commerce de Paris, Claire Pedini joined Total in 1988 as a Management Controller. She became Head of the Group's IPO and listing on the New York Stock Exchange in 1991, then Head of Financial Communications in 1992, Head of the Press Department in 1994 and Head of the New Information Technologies Department in 1997. In 1998, she joined Alcatel as Chief of Financial Information and Shareholder Relations, becoming successively Vice-President, Investor Relations and Public Affairs in 2001, Deputy Chief Financial Officer in 2004, Senior Vice-President, Human Resources and Corporate Communications and member of the Executive Committee in 2006, Senior Vice-President, Human Resources, Corporate Communications and Real Estate in 2007, and Executive Vice-President, Human Resources and Transformation, of Alcatel-Lucent in 2009. Claire Pedini was a Director of Arkema from 2010 to 2016. Appointed Deputy Managing Director in charge of Human Resources for the Saint-Gobain Group in June 2010, she was then Senior Vice-President Human Resources and Digital Transformation until January 2019. She is currently Senior Vice-President, Human Resources and Corporate Social Responsibility.

Other offices and positions held

Principal position held outside the Company

- Senior Vice-President, Human Resources and Corporate Social Responsibility for the Saint-Gobain Group – Member of the Executive Committee of Saint-Gobain.

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

Philippe Petitcolin, 71 years old



Director appointed by the General Meeting

Date of appointment to the Board: 16 May 2019
Last renewal: 28 June 2023

Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2026

Other positions: Chairman of the Commitments Committee, Member of the Strategy Committee and the Risk and Audit Committee

Nationality: French

A graduate in Mathematics and graduate of the CPA Paris business school, Philippe Petitcolin began his career as Export Manager for Europrim, and then became Export Zone Manager for the Alcatel-Alstom subsidiary, Filotex. In 1982, he was appointed Aeronautical Sales Manager for Chester Cable in the United States. He returned to Filotex as Export Manager in 1984. In 1988, he joined Labinal as Deputy Sales Manager before being appointed Sales and Marketing Manager of the Aeronautical Systems Division, where he became General Manager in 1995. From 1999 to 2001, he was head of Labinal's Filtrauto division and Head of the Friction Materials business following the takeover of Filtrauto by Valeo. In May 2001, he took on the position of Chief Executive Officer of Labinal (now Safran Electrical & Power) and became Chairman and Chief Executive Officer in November 2004. In 2006, he was appointed Chairman and Chief Executive Officer of Snecma (now Safran Aircraft Engines). From 2011 to 2013, he was appointed Chairman and Chief Executive Officer of Safran's defense and security activities as well as Chairman & Chief Executive Officer of Safran Electronics & Defense. From July 2013 to July 2015, he was Chairman and Chief Executive Officer of Safran Identity & Security. He was Director and Chief Executive Officer of Safran from April 2015 to 31 December 2020. On the same date, he became a member of the Board of the Aerospace and Defense Industries Association of Europe (ASD). He is now Chairman of the Board of Directors of KNDS, Chairman of the Supervisory Board of Diot-Siaci and Director of Pernod Ricard and Alstom.

Other offices and positions held

Principal position held outside the Company

- Corporate Director

Office/Position	Title	Country	
Chairman of the Board of Directors	KNDS	The Netherlands	
Chairman of the Supervisory Board	Diot Siaci	France	
Director	Pernod Ricard	France	L
Director	Alstom	France	L

Expired offices held outside the Company over the past five years

France

- Director and Chief Executive Officer of Safran
- Director of Suez

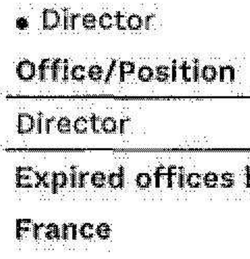
Other countries

Director of Belcan Corporation (United States)

G: EDF group company – L: listed company.

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Michèle Rousseau, 66 years old



Director appointed by the General Meeting on recommendation of the French State

Date of appointment to the Board: 30 September 2016
Last renewal: 6 May 2021
Expiry of current term of office: Ordinary General Meeting called to approve the financial statements for the financial year closing on 31 December 2024
Other positions: Member of the Nuclear Commitments Monitoring Committee and the Corporate Responsibility Committee
Nationality: French

Graduate of the École Nationale Supérieure des Mines de Paris and a General Engineer from Mines, Michèle Rousseau started her career at the Nord-Pas-de-Calais Regional Directory for Industry, Research and the Environment (DRIRE) as Head of the Environment Division. She joined the French Ministry of the Environment where she was responsible for waste issues, and later the French Ministry of Industry where she held the post of Deputy Director of the Nuclear Installation Safety Directorate with responsibility for oversight of EDF's nuclear fleet. She then moved to the French research and innovation agency, ANVAR, as Deputy Director General where she conducted policies supporting innovative SME projects, and later to the French Ministry for the Economy, Finance and Industry as Director with responsibility for energy demand and markets. Here, she was tasked in particular with developing a new legislative and regulatory framework in the wake of the opening up of European electricity and gas markets and the development of energy conservation and renewable energy. Secretary General of the French Ministry of Ecology and Sustainable Development, in 2008 she became Director, Deputy Commissioner General for Sustainable Development, with particular responsibility for implementing the Grenelle Environment initiative. In 2011, she was appointed Director General of the Seine-Normandy Water Agency, before joining the General Council for the Environment and Sustainable Development in 2016 where she was Chairwoman of the Regional Environmental Authority Mission (MRAe) Hauts-de-France. Chairwoman of the Geological and Mining Research Office until March 2023, Michèle Rousseau has been a Director of Agence nationale de la recherche (ANR) since 2019.

Other offices and positions held

Principal positions held outside the Company

- Director

Office/Position	Title	Country
Director	Agence nationale de la recherche (ANR)	France

Expired offices held outside the Company over the past five years

France

- Chairwoman of the Board of Directors of Bureau de recherches géologiques et minières (BRGM)
- Director of the Institut national de recherche en sciences et technologies pour l'environnement et l'agriculture (IRSTEA)

DIRECTOR – REPRESENTATIVE OF THE FRENCH STATE

Alexis Zajdenweber, 47 years old



Director – Representative of the French State

Date of appointment to the Board: 23 September 2022
Last renewal: 21 November 2022
Expiry of current term of office: 20 November 2026
Other positions: Member of the Strategy Committee and the Appointments, Remuneration and Governance Committee
Nationality: French

Graduate from the Institut d'études politiques (IEP) de Paris, and the École nationale d'administration, Alexis Zajdenweber began his career in 2003 as Deputy Head of the savings and financial markets office of the Treasury department at the French Ministry of the Economy, Finance and Industry. In 2006, he became Deputy Head of the financing and companies development office of the Treasury and economic policy department. In 2007, he was seconded as competition and state aid, company law and corporate governance Advisor to the economic, financial and monetary affairs Office at the permanent representation of France to the European Union in Brussels. He returned to the Directorate General of the Treasury department in 2009 as Head of banking services and payment means office and in 2011 as Head of the investments, fight against financial crime and sanctions office. In July 2012, he was appointed Advisor in charge of the financial sector at the office of the minister of Economy and Finance. In 2014, he joined the French Government Shareholding Agency (APE) as Deputy head of the office in charge of Energy shareholdings. In May 2017, he joined the Presidency of the French Republic as economic, finance and industry advisor. Alexis Zajdenweber was appointed Commissioner for the French Government Shareholding Agency and heads this agency since September 2022. He is a Director of BPI France, Renault, SNCF and Thales.

Other offices and positions held

Principal position held outside the Company

- Commissioner of the French State Shareholdings Agency

Office/Position	Title	Country	
Director	Renault	France	L
Director	SNCF	France	
Director	Thales	France	L
Director	Bpifrance	France	

Expired offices held outside the Company over the past five years

- None

G: EDF group company – L: listed company.

DIRECTORS ELECTED BY THE EMPLOYEES

Christophe Béguinet, 58 years old



Director elected by the employees

Date of appointment to the Board: 23 November 2023
Expiry of current term of office: 22 November 2027
Other positions: Member of the Strategy Committee, the Risk and Audit Committee and the Corporate Responsibility Committee
Nationality: French

A graduate of Institut national des sciences et techniques du nucléaire and École nationale supérieure de physique de Grenoble, Christophe Béguinet began his career in Research and Development in the nuclear industry in 1991. He then contributed to the taking into account of the first European energy policies with the separation of the producers' transmission networks. He then joined the EDF GDF Services Department before in 1999 taking part in the Company's adaptation to the development of the Internet in the Strategy Department. In 2001, he joined the Retail Department to prepare EDF for the opening of markets for companies and then for individuals. He was Sales Director SME-Pro for the Centre Val de Loire, Poitou-Charentes and Limousin regions in 2013 before joining Enedis, where he was a member of the Supervisory Board representing employees from 2017 to 2022. Christophe Béguinet is also a lecturer at the University of Montpellier for the energy economics master's degree programme. He is sponsored by the CFDT trade union.

Other offices and positions held

Position held within the Group

- *Project Manager in the Talents and Managerial Dynamics Department of Enedis*

Office/Position	Title	Country
Director	Board of Directors of Institut polytechnique de Grenoble	France

Expired offices held outside the Company over the past five years

En France

- Member representing employees on the Supervisory Board of Enedis

Aurélie Frionnet, 46 years old



Director elected by the employees

Date of appointment to the Board: 23 November 2023
Expiry of current term of office: 22 November 2027
Other positions: Member of the Strategy Committee, the Commitments Committee and the Nuclear Commitments Monitoring Committee
Nationality: French

An engineering graduate of Institut national des sciences appliquées (INSA) in Lyon, and holding a postgraduate degree in civil engineering, Aurélie Frionnet began her professional career in 2000 as a works engineer at OTV, a subsidiary of the Vivendi Group, in charge of the construction of drinking water and wastewater treatment plants. In 2001, she joined EDF's National Electricity Production Equipment Centre (Centre national d'équipements de production d'électricité – CNEPE) as a project engineer for the safety review carried out on the entire nuclear fleet following the 1999 storm. In 2005, she joined the National Nuclear Equipment Centre (Centre national d'équipement nucléaire – CNEN) where she successively held positions as a design and management engineer in the fields of civil engineering and then nuclear safety on EPR projects in France and in the United Kingdom. In 2015, she joined the Group's Strategy Department where she was in charge of strategic studies concerning nuclear, hydro and fossil-fired thermal power generation. Since 2021, she has been a project manager in the Nuclear and Thermal Fleet Department working on the resilience and adaptation of the generation fleet to long-term climate hazards. Aurélie Frionnet is sponsored by the CFE-CGC trade union.

Other offices and positions held

Position held within the Group

- Project Manager in the Nuclear and Thermal Fleet Department of EDF

Office/Position	Title	Country
Director	Groupe Immobilière 3F	France

Expired offices held outside the Company over the past five years

- None

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Fabrice Guyon, 50 years old



Director elected by the employees

Date of appointment to the Board: 16 February 2023
Last renewal: 23 November 2023
Expiry of current term of office: 22 November 2027
Other positions: Member of the Strategy Committee, the Risk and Audit Committee and the Nuclear Commitments Monitoring Committee
Nationality: French

Holder of an industrial control and automatic regulation HND (*BTS CIRA*), Fabrice Guyon started his career at EDF by joining the nuclear power plant of Chinon in 1992 as an apprentice in the plant operation division. From 1994 to 2012, he held various positions within the operation division of the Chinon nuclear power plant such as operator, nuclear unit steering operator, consignment officer, technical manager and chief deputy operating officer. Union representative since 2012, he was successively local Union representative, Vice Secretary of the European Works Council, coordinator for the French Committee Group and coordinator at the Nuclear and Thermal Generation Division of EDF between 2012 and 2023. He is a member of the EU Sectoral social dialogue of electricity. Fabrice Guyon is currently employed by the Chinon power plant operation division. He is sponsored by the CGT trade union.

Other offices and positions held

Position held within the Group

- Employee at the Chinon nuclear power plant (EDF)

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

Gérald Lacoste, 47 years old



Director elected by the employees

Date of appointment to the Board: 23 November 2023
Expiry of current term of office: 22 November 2027
Other positions: Member of the Risk and Audit Committee and the Corporate Responsibility Committee
Nationality: French

Gérald Lacoste began his professional career at EDF-GDF Services in the customer sector in 1998. In 2003, he graduated from École supérieure de gestion, specialising in auditing and accounting, and joined EDF's Group Purchasing Department where he held various positions in the finance and management field. He was elected as an employee representative in 2016. He continued his trade union career at EDF's head office in 2019 where he held the responsibilities of Secretary of the Social and Economic Committee, CFE-CGC Coordinator of the Group Works Council France and member of the European Works Council. Gérald Lacoste was part of the federal team of CFE-CGC Energies from 2019 to 2023. He is currently Steering and Support Officer in the Group's Communication Department. Gérald Lacoste is sponsored by the CFE-CGC trade union.

Other offices and positions held

Position held within the Group

- Steering and Support Officer in the Group Communication Department of EDF

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

Sandrine Lhenry, 49 years old



Director elected by the employees

Date of appointment to the Board: 28 July 2021
Last renewal: 23 November 2023
Expiry of current term of office: 22 November 2027
Other positions: Member of the Strategy Committee, the Risk and Audit Committee and the Corporate Responsibility Committee
Nationality: French

A graduate of Conservatoire national des arts et métiers (CNAM) and holding a master's degree in HR & CSR from Institut d'administration des entreprises (IAE) of Paris Sorbonne, Sandrine Lhenry began her career in the Electricity and Gas Industries (IEG – Industries Électriques et Gazières) in 1999 at EDF Gaz de France Distribution in the customer services sector. In charge of the social dialogue of the IEG segment, within the managing team of the national FO Énergies et mines federation between 2014 and 2017, she later was Deputy General Secretary of the FO federation from 2017 to 2020. Project manager in the Communication & CSR Department of Enedis until 2022, she is currently a project manager in the Nuclear and Thermal Fleet Department. Sandrine Lhenry is sponsored by the FO union.

Other offices and positions held

Position held within the Group

- Project Manager in the Nuclear and Thermal Fleet Department of EDF

Office/Position	Title	Country
Full member	Conseil Supérieur de l'Énergie (French High Energy Council)	France

Expired offices held outside the Company over the past five years

- None

Cécile Pichot, 49 years old



Director elected by the employees

Date of appointment to the Board: 23 November 2023
Expiry of current term of office: 22 November 2027
Other positions: Member of the Corporate Responsibility Committee and the Appointments, Remuneration and Governance Committee
Nationality: French

Cécile Pichot began her career in 1997 as a quality manager at Delattre Levivier SCTN, a logistics company in asbestos or radioactive environments, for which she implemented a quality organisation that made it possible to obtain "Asbestos" certification. In 1998, she joined the Retail division of EDF as a customer advisor in support of agencies in the Centre-West region. She then joined the Chinon nuclear power plant, where she performed several duties, including audit assignments within the Quality Assurance Department for the ISO 9001 and ISO 14001 projects. In 2005, she became a radioactive transport project manager in the Site Means Department, then quality coordinator in 2009. Having passed the Transport Safety Advisor exam for the transport of hazardous goods in 2013, she was responsible for managing this issue as a Transport and Radiation Protection Environment Engineer within the Quality Safety Department for the Chinon nuclear power plant, the Industrial Department and the Waste Deconstruction Projects Department. In 2020, she obtained a master's degree in health, safety and environment from the University of Nantes. At present, she is in charge of suppliers at the Technical Operating Unit of EDF's Nuclear Generation Division. She is in charge of qualifying a portfolio of suppliers for EDF's operating fleet and for new nuclear. Cécile Pichot is sponsored by the CGT trade union.

Other offices and positions held

Position held within the Group

- Supplier Manager in the Nuclear Generation Division of EDF

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

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4.2.2 Functioning of the Board of Directors

The internal rules of procedure of the Board of Directors determine the principles for its operation and the terms and conditions according to which the Board and its Committees fulfil their duties. It defines the role and powers of the Chairman and Chief Executive Officer. These Internal Rules of Procedure are regularly updated, particularly to take into account the changes in legislation and regulations and changes to the *AFEP-MEDEF Code* (see section 4.1 "Corporate Governance Code").

4.2.2.1 Term of office of Directors – Staggered re-election of the Board

EDF's articles of association set the term of office of Directors at four years.

In accordance with the provisions of Article 2 of Decree no. 2014-949 of 20 August 2014 implementing the Order of 20 August 2014, the Representative of the French State is appointed for a term equal to the term of office of the members of the Board of Directors, *i.e.* for a four-year term.

Pursuant to Article 13 of EDF's articles of association, the Board of Directors, excluding Directors elected by the employees and the Representative of the French State appointed by decree, shall be renewed by rotation periodically in such a way that half (rounded to the nearest whole number) of the Directors elected by the Shareholders' Meeting be renewed every two years and that the Board be completely renewed, with respect to the members concerned, at the end of each four-year period (see section 4.2.1 "Members of the Board of Directors").

The Directors are appointed and can be dismissed at any time by an Ordinary Shareholders' Meeting. In accordance with Articles 12 and 25 of the Law on the Democratisation of the Public Sector, the Directors elected by the employees can be individually dismissed for gross negligence in the exercise of their office by order of the President of the Judicial Tribunal delivered at summary proceedings upon application from the majority of the members of the Board. However, in the event that serious dissent disrupts the management of the Company, dismissal pronounced by the Shareholders' Meeting can be extended to the employee representatives. The Representative of the French State ceases his duties by resigning or if he loses the capacity by virtue of which he was appointed; he can be replaced at any time for the remainder of the term of office.

4.2.2.2 Appointment and powers of the Chairman and Chief Executive Officer

In accordance with the option provided for in Article 18 of the Order of 20 August 2014, EDF's articles of association state that the Chairman of the Board of Directors undertakes the Executive Management of the Company and holds the title of Chairman and Chief Executive Officer.

The Chairman and Chief Executive Officer of EDF is appointed by decree of the President of the French Republic, on the recommendation of the Board of Directors. He may be dismissed by decree in accordance with Article 20 of the Order of 20 August 2014. Pursuant to the provisions of Article 13 of the Constitution, he is appointed after consulting the competent committees of the National Assembly and the Senate. Luc Rémont was appointed Chairman and Chief Executive Officer of EDF, at the end of this process, by decree of the President of the French Republic on 23 November 2022.

In case of vacation of the office of Chairman and Chief Executive Officer, Article 21 of the Order of 20 August 2014 provides that the French State may appoint someone to the role temporarily until the appointment of the new Chairman and CEO.

Subject to the specific legal provisions governing public sector companies and the powers specifically reserved by law or by the articles of association to the Board of Directors or to General Meetings, and the limits on the powers of the Chairman and Chief Executive Officer provided for by the internal rules of procedure of the Board of Directors as internal rules (see section 4.2.2.3 "Powers and duties of the Board of Directors" below), the Chairman and Chief Executive Officer is vested with the most extensive powers to act on behalf of the Company under all circumstances, within the limits of the corporate purpose. The Chairman and Chief Executive Officer organises and supervises the work of the Board of Directors and reports to the Shareholders' Meeting. They oversee the proper running of the Company's bodies and, in particular, ensure that the Directors are capable of fulfilling their duties.

4.2.2.3 Powers and duties of the Board of Directors

The Board of Directors meets as often as required by the interest of the Company, in accordance with applicable statutory and regulatory provisions. In accordance with the Board's internal Rules of Procedure, the Directors meet once a year to discuss the strategy of the Company and of the Group as part of a strategic seminar held in the presence of EDF's Executive Committee. Lastly, the Board of Directors' internal rules of procedure provide that a meeting is to be held each year without the attendance of the Chairman and Chief Executive Officer (executive session), and that this meeting is to be chaired by the Chairman of the Appointments, Remuneration and Governance Committee (see section 4.2.2.6 "Assessment of the functioning of the Board of Directors and its Committees").

The Board of Directors determines the Company's business policies and ensures their implementation, in accordance with its corporate interest, also taking into consideration the corporate and environmental issues of its business and EDF's *raison d'être* (see section 1.3 "Group strategy and objectives" and section 1.3.2 "Priorities of the strategy"), whose roll-out throughout the Group is being closely monitored. It defines the major strategic, economic, financial and technological policies for the Company and the Group. Subject to powers expressly attributed to the Shareholders' Meetings and within the limit of the Company's corporate purpose, the Board may consider any question relating to the proper running of the Company and deliberate on any such issue.

The Board of Directors discusses, after study by the relevant Committee(s), if necessary, the annual budget and the medium-term plan, any significant transaction falling outside the announced strategy of the Company, and the public service contract (see section 7.1.6.2 "Public service in France"). It regularly reviews, in line with the strategy it has defined, opportunities and risks such as financial, legal, operational, social and environmental risks, in particular risks and opportunities related to climate change and their impact on the Group's strategy, its activities and assets, as well as the measures taken in consequence. It ensures that the Company implements a system for the prevention and detection of corruption and influence peddling and a non-discrimination and diversity policy (see section 4.2.1 "Members of the Board of Directors").

Under the terms of its internal rules of procedure, updated on 28 June 2023, the Board of Directors is competent, in accordance with the governance of the Group's listed subsidiaries, to approve or authorise the following transactions and matters:

Strategic business plan	The strategic business plan setting out the actions to be implemented to achieve the objectives of the multi-year energy programme (see section 7.1.6.2 "Public service in France").
Financial transactions	Long-term borrowings, debt management, securitisation or hedging transactions > €5 billion (or equivalent in foreign currencies).
Investments and divestments	External growth, divestment, organic growth and stock market transactions carried out by EDF or its subsidiaries > €350 million or > €150 million if outside the strategic guidelines.
Industrial programmes	Industrial investment or works programmes on existing assets of EDF and its subsidiaries > €350 million.
Real estate transactions	Transactions carried out by the Company or its subsidiaries > €200 million.
Contracts (excluding fuel)	Contracts for supplies, works or services entered into by EDF > €350 million, or > €200 million in the event of a new strategic direction or new business line.
Fuel strategy	Group strategy in terms of operations relating to the nuclear fuel cycle and the multi-year programme for the supply of reactors with fuel and downstream services.
Purchases or sales of energy, emission credits and CO_2 quotas	Long-term purchases or sales of energy, emission credits and CO_2 quotas by EDF or its subsidiaries for annual volumes or amounts > 10TWh for electricity, 20TWh for gas and €250 million for coal, fuel oil, biomass, emission credits and CO_2 quotas.
Strategic agreements	Strategic agreements constituting EDF cooperation or partnership commitments with foreign partners in the nuclear field, involving significant transfers of intellectual property or technologies.
Securing the financing of nuclear expenses	Policy for securing the financing of EDF's nuclear expenses (see section 4.2.3.4 "Nuclear Commitments Monitoring Committee") and approval of investment projects in unlisted assets for dedicated assets exceeding certain thresholds in the event of a negative opinion from the Nuclear Commitments Monitoring Committee.
Strategic guidelines submitted to EDF's Central Social and Economic Committee	EDF's strategic guidelines submitted to EDF's Central Social and Economic Committee in accordance with Articles L. 2312-17 and L. 2312-19 of the French Labour Code.
Policy on professional and salary equality	Company policy on professional and salary equality pursuant to Article L. 225-37-1 of the French Commercial Code.

In accordance with Article L. 311-5-7 of the French Energy Code, the Government Commissioner may oppose the investment decisions, the realisation of which would be inconsistent with the objectives of the strategic plan prepared by the Company or with those of the multi-year energy programme (see section 7.1.6.2 "Public service in France").

4.2.2.4 Balance of powers

EDF's articles of association state that the Chairman of the Board of Directors is the Executive Manager of the Company and holds the title of Chairman & Chief Executive Officer. The "non-separated" Executive Management structure is therefore set out in the Company's articles of association.

Each year, when evaluating the functioning of the Board of Directors and the Committees, the Board of Directors assesses the organisation and balance of powers as set out in the Board's Rules of Procedure, and in particular the limitations they place on the powers of the Chairman and Chief Executive Officer (see section 4.2.2.3 "Powers and duties of the Board of Directors" above). The Board considers that the current arrangement ensures a satisfactory balance, in the interest of the Company, between the executive corporate officer and the Board of Directors, while preserving the necessary flexibility, efficiency and responsiveness with regard to the administration and management of the Company (see section 4.2.2.6 "Assessment of the functioning of the Board of Directors and its Committees").

The issue of the balance in the distribution of powers between the Chairman and Chief Executive Officer and the Board of Directors is also regularly discussed at the executive sessions (see section 4.2.2.6 "Assessment of the functioning of the Board of Directors and its Committees").

Lastly, the Appointments, Remuneration and Governance Committee is responsible for reviewing and giving its opinion on potential situations of conflict of interest of which it is aware, or which might be reported to it, and for reporting on such conflicts to the Board of Directors (see section 4.2.3.6 "Appointments, Remuneration and Governance Committee").

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4.2.2.5 Evaluation of Director independence

Total number of Directors	18
Number of independent Directors	5
Percentage of Independent Directors*	41.7%

** Excluding Directors representing the employees.*

The AFEP-MEDEF Corporate Governance Code recommends that, in companies with a controlling shareholder, the proportion of independent directors should be at least one-third of the Board of Directors and specifies that Directors representing employees are not taken into account in making this calculation.

Evaluation of Director independence

The Board of Directors annually reviews the individual situation of the Directors with regard to the independence criteria provided in the AFEP-MEDEF Code. It may also be called upon to make a decision during the year in the event of a change in the membership of the Board or the status of a Director justifying a review of his or her independence.

At its meeting of 8 February 2023, the Appointments, Remuneration and Governance Committee examined the individual situations of the Directors with regards to the independence criteria provided for by the AFEP-MEDEF Code. The Board of Directors, at its meeting of 16 February 2023, performed its annual assessment of director independence and confirmed the classification of Nathalie Collin, Colette Lewiner, Claire Pedini, Bruno Crémel and Philippe Petitcolin as independent directors.

At its meeting of 6 February 2024, the Appointments, Remuneration and Governance Committee examined the situations of the Directors with regards to the independence criteria provided for by the AFEP-MEDEF Code.

The Committee noted that Luc Rémont, due to his capacity as Chairman and Chief Executive Officer, and therefore executive corporate officer, cannot be considered as independent (criterion no. 1 stipulated in Article 10 of the AFEP-MEDEF Code) (1).

The Directors appointed on the recommendation of the French State in accordance with Article 6 of order no. 2014-948 of 20 August 2014 on governance and the capital transactions of companies with public shareholding "represent", by virtue of this text, "the interests of the French State as shareholder". In view of the criteria set by the AFEP-MEDEF Code, these Directors cannot be considered as independent (criterion no. 8). The same holds true for the Representative of the French State appointed pursuant to the provisions of Article 2 of the Order of 20 August 2014, in his capacity as representative of EDF's shareholder (criterion no. 8).

Finally, directors representing employees are not subject to an assessment, in accordance with the recommendations of the AFEP-MEDEF Code.

With respect more particularly to business relationships, the Appointments, Remuneration and Governance Committee examined the situation of Nathalie Collin, Colette Lewiner, Claire Pedini, Bruno Crémel and Philippe Petitcolin with regard to criterion no. 3 provided for by the AFEP-MEDEF Code. In particular, the Committee examined any business ties that might exist between EDF and companies in which these Directors hold offices or senior management positions, as well as groups to which they belong, on a quantitative level (importance of any business relations existing between the Company and these companies, their groups, and sales between them recorded in the course of the 2023 financial year), and on a qualitative level (Director's position in the companies in question, nature of business relations, any economic dependence, exclusivity, etc.). It emerges that none of the companies in which Mmes Collin, Lewiner and Pedini or Messrs Crémel and Petitcolin hold offices or management functions, as well as the groups to which these companies belong, can be qualified as a significant customer, supplier, commercial banker, investment banker or advisor of the EDF group and that the Company cannot be considered as a significant customer or supplier of these companies or their groups. Following these analyses, the Committee therefore concluded that there were no significant business ties involving these Directors.

After consulting the Committee, the Board of Directors assessed the individual situation of Nathalie Collin, Colette Lewiner, Claire Pedini, Bruno Crémel and Philippe Petitcolin at its meeting of 15 February 2024, and confirmed their independence in accordance with the independence criteria set out in the AFEP-MEDEF Code. The Board deemed that none of these Directors had any relations with the Company, its Group or its management that might compromise the exercise of their freedom of judgement.

On the date of filing this Universal Registration Document, the Company's Board of Directors therefore features five Independent Directors out of the 12 taken into account to make the calculation in accordance with the AFEP-MEDEF Code, *i.e.* a proportion of 41.7%, higher than one-third of the Directors as recommended by the AFEP-MEDEF Code.

The table below presents the situation of the Independent Directors with regard to the criteria stipulated by the AFEP-MEDEF Code:

	Criterion no. 1	Criterion no. 2	Criterion no. 3	Criterion no. 4	Criterion no. 5	Criterion no. 6	Criterion no. 7	Criterion no. 8	Final classification
Nathalie Collin	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Bruno Crémel	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Colette Lewiner	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Claire Pedini	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Philippe Petitcolin	✓	✓	✓	✓	✓	✓	✓	✓	Independent

✓: means that the criterion is satisfied.

(1) https://afep.com/wp-content/uploads/2022/12/Code-AFEP-MEDEF-version-de-december-2022.pdf.

4.2.2.6 Evaluation of the functioning of the Board of Directors and its Committees

In accordance with the provisions of the AFEP-MEDEF Code, the Board's internal Rules of Procedure provide that the Appointments, Remuneration & Governance Committee shall supervise annually an evaluation of the functioning of the Board of Directors and propose areas for improvement. Once a year, therefore, the Board must organise a discussion on its functioning and on that of its Committees in order to improve its and the Committees' efficiency and ensure in particular that important issues are appropriately prepared and discussed.

Every three years, this evaluation is conducted by an independent external consultant under the supervision of the Appointments, Remuneration and Governance Committee.

Given the particular context of 2022 and in particular the significant changes that have occurred in the Company's governance, it was decided to postpone the annual assessment of the functioning of the Board until 2023.

Annual assessment for 2023

The 2023 annual assessment was carried out internally, according to the process described below. The objective of the assessment was not only to assess the functioning of the Board and its Committees and its developments, but also to take stock of the Directors' expectations for the 2024 financial year and beyond, particularly in view of the arrival on the Board of four new Directors elected by the employees in November 2023.

Launch of the assessment process	Sending of the questionnaire	Compilation and analysis of responses	Presentation of the results
Preparation of a questionnaire by the Secretariat of the Board of Directors, validated with the Chairwoman of the Appointments, Remuneration and Governance Committee	Sending to the Directors (excluding the Chairman and Chief Executive Officer) the questionnaire containing closed-ended questions, enabling a statistical follow-up of the responses, and open-ended questions, enabling the Directors to make qualitative observations, observations and suggestions	Analysis and compilation of the (anonymous) responses of the Directors and preparation of a summary document, reviewed with the Chairwoman of the Appointments, Remuneration and Governance Committee, including in the appendix the detailed results of the assessment as well as the observations (anonymous) submitted by the Directors	Presentation of the results by the Chairwoman of the Appointments, Remuneration and Governance Committee during an executive session organised on 5 December 2023 – Debate on the results of the assessment, on the assessment of the governance and performance of the Chairman and Chief Executive Officer, as well as on the expectations of the Directors

The findings of the internal assessment conducted in 2023 show that:

- the general functioning of the Board and its Committees (number of meetings, availability and quality of files, relevance of the topics addressed, general level of information) is deemed satisfactory;
- the Directors feel that the quality of the work carried out by the Board Committees and the reports made on it contribute effectively to the Board's decision-making;
- the strategic seminar organised on the Group's company project and its programme were praised;
- the Directors appreciate the Chairman's organisation of Board meetings, the quality of the discussions prior to the Board's decision-making, the dynamics of the discussions within the Board and its evolution;
- the changes and innovations in terms of governance are appreciated (creation of the Commitments Committee, organisation of meetings dedicated to the climate, creation of a working group on the EDF group's company project);
- the balance of powers between the Chairman and Chief Executive Officer and the Board, as set out in the internal rules of procedure, is considered to be balanced and appropriate to the functioning of the Company's governance;
- the Directors consider the size of the Board to be satisfactory overall and welcome the diversity of profiles; some suggest the appointment of more directors with an industrial profile.

Among the areas for improvement identified is the strengthening of the role of the Board in supporting Executive Management on forward-looking thinking. The Directors have also defined a list of topics that they consider to be priorities and which will be included in the work programme of the Board of Directors and its Committees for 2024.

4.2.2.7 Information and training of Directors

Information and training

The Chairman and Chief Executive Officer ensures that the Directors have the necessary information for them to carry out their remit. This information is provided to them as soon as possible to enable them to carry out their remit in the best conditions.

Under the Board's internal Rules of Procedure, it periodically receives information on the financial, cash management and off-balance sheet commitments position of the Company and the Group, and on the performance of the Company's principal subsidiaries at the time of presentation of the annual and half-yearly financial statements, in addition to the purchasing and human resources policy. The Board of Directors is also regularly informed of changes to the Company's markets, competitive environment and the main challenges facing the Company, including in the field of corporate social, societal and environmental responsibility.

A document reviewing the Group's current major business sectors, market trends, and the economic, financial and institutional context is regularly submitted to the Board of Directors. The Company also provides them with quarterly monitoring of key indicators concerning EDF and the Group, a quarterly reporting on the major industrial projects of the Group and more generally with any useful information between Board meetings, if the importance or the urgency of the matter so requires.

The Directors may supplement this information by means of meetings with the principal executives of the Company or Group, including without the Chairman being present, to discuss issues on the Board's agenda.

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The Company offers all Directors additional training on the specific characteristics of the Company and the Group, their business activities and their field of activity, on the Company's and Group's challenges in terms of social and environmental responsibility, as well as on specific themes falling within the remit of the Committees of which the Directors are members. Information meetings are also organised on complex matters or issues of major strategic importance, together with any training requested by the Directors.

The Board of Directors uses a digital platform that enables smooth, rapid and secure access to Board and Committee files as well as other information that may be useful for the performance of its duties.

Training of directors on climate and social and environmental responsibility (SER)

The Climate Point person of the Board of Directors (see section 4.2.3.5 "Corporate Responsibility Committee") establishes, with the Company's Management and before the beginning of the financial year, an annual work programme on climate and CSR issues for the Board and the Corporate Responsibility Committee.

A workshop specifically dedicated to climate was organised at the end of 2021, during which the Directors produced the "Climate Fresk" (see section 3.1.4.5.2 "Innovation and collective intelligence focused on the fight against climate change") and discussed the results of the COP 26 in Glasgow with two climate negotiations experts.

In May 2023, a new Board workshop dedicated to the climate was organised, in particular to examine the results of COP 15 held in Montreal on biodiversity and to discuss the planetary limits and challenges of the COP 28 in Dubai and the Summit for a new global financial pact. The Directors were able to discuss with the Director of the Plant and Algae Genomics Laboratory at the Biology Institute of École normale supérieure de Paris, who is also Director of Research at the CNRS, and with representatives of Institut du développement durable et des relations internationales (IDDRI) and the Ministry for Europe and Foreign Affairs.

In order to perpetuate, on an annual basis, this format of awareness-raising and discussion on the challenges of climate change, a new meeting of the Board of Directors will be organised in the same format in 2024, in particular to examine the Group's carbon trajectory.

This approach is part of EDF's governance of climate-related issues, which aims to raise climate issues to the highest level of the Company and to strengthen the Board's involvement in and commitment to all climate-related issues, in line with EDF's *raison d'être*, and to social and environmental responsibility issues.

4.2.2.8 Obligations and duties of Directors

The internal rules of procedure of the Board of Directors state that its members are subject to obligations such as: acting in all circumstances in the corporate interest of the Company, informing the Board of situations of conflict of interest (see also section 4.4.1 "Conflicts of interest"), and refraining from contributing to the discussions and voting on any decision in which there might be a conflict of interest, fulfilling the obligation of confidentiality, carrying out their term of office with diligence and commitment. The Directors are required to inform the Chairman and to obtain his or her approval prior to any communication or individual public statement concerning the Company or the Group.

The Directors and the Chairman and Chief Executive Officer are required to inform the Board immediately of any agreement entered into by the Company in which they hold a direct or indirect interest, or which might be entered into through an intermediary.

In addition to the right to obtain disclosure of the documents and information necessary to perform their work, the Directors also have a duty to request the information they deem essential to the proper exercise of their duties.

Under the internal Rules of Procedure, each Director undertakes to ensure that his or her status complies with the French Commercial Code and the AFEP-MEDEF Code recommendations on plurality of offices and to keep the Board informed of offices they hold in other companies. The Chairman and Chief Executive Officer is also required to inform the Board of Directors before accepting an appointment in a listed company.

4.2.2.9 Activity of the Board of Directors in 2023

	2023	2022
Number of meetings	14*	22
Average attendance rate	91.7%	95.4%
Average duration of the meetings	3 hours and 23 minutes	2 hours and 24 minutes

** In addition to this number of meetings, a one-day strategic seminar, a workshop dedicated to climate change and an executive session were held.*

The table below presents the individual attendance rates during the 2023 financial year by the members of the Board and the Committees whose terms of office were ongoing on 31 December 2023:

Individual attendance rate of the Directors in 2023	Board of Directors	Strategy Committee	Risk and Audit Committee	Commitments Committee	Nuclear Commitments Monitoring Committee	Corporate Responsibility Committee	Appointments, Remuneration & Governance Committee
Luc Rémont	100%	100%					
Christophe Béguinet (1)	100%	100%	100%			100%	
Nathalie Collin	100%		100%	80%			
Bruno Crémel	100%		100%				
Gilles Denoyel	100%				100%		
Anne-Marie Descôtes	93%	100%					
Aurélie Frionnet (1)	100%	100%		100%			
Delphine Gény-Stephann	100%					83%	
Fabrice Guyon (2)	83%	100%	100%		100%	67%	
Gérald Lacoste (1)	100%		100%			100%	
Marie-Christine Lepetit	100%		100%	80%	100%		
Colette Lewiner	93%				100%		100%
Sandrine Lhenry	86%	100%	86%			67%	
Claire Pedini	93%					100%	83%
Philippe Petitcolin	100%	33%	86%	100%			
Cécile Pichot(1)	100%					100%	100%
Michèle Rousseau	100%				100%	100%	
Alexis Zajdenweber	86%	100%					100%

(1) Directors whose terms of office began on 23 November 2023.

(2) Director, member of the Corporate Responsibility Committee until 22 November 2023 inclusive, member of the Nuclear Commitments Monitoring Committee since 28 June 2023 and member of the Strategy Committee and the Risk and Audit Committee since 23 November 2023.

Activity in 2023

The Board held a total of 14 meetings during the 2023 financial year. In addition to numerous issues related to the Company's day-to-day business, it examined or authorised subjects such as:

- news of the EPR2 construction programme in France and certain related contracts and decisions (see sections 1.3.2 "Strategic priorities", "Generating more low-carbon electricity with nuclear and renewables", and 1.4.1.1.3.2 "Other New Nuclear projects");
- the progress of the industrial stress corrosion cracking repair programme (see section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation", "Handling of the stress corrosion cracking [SCC] phenomenon detected on the auxiliary circuits of several nuclear reactors");
- monitoring of the Group's major projects: Hinkley Point C (see section 1.4.5.1.2.5 "Nuclear New Build"), Flamanville EPR (see section 1.4.1.1.3.1 "Flamanville 3 EPR project"), Sizewell C (see section 1.4.5.1.2.5 "Nuclear New Build"), Nuward (see section 1.4.1.1.3.2 "Other New Nuclear projects") and the *Grand Carénage* programme (see section 2.1.2 "*Grand Carénage*") of the notes to the parent company financial statements);
- regular updates on EDF's commercial policy and market design;
- the planned acquisition by EDF of General Electric's "nuclear steam power" activities (see section 2.1.4 "Signature of an exclusive agreement to acquire part of GE Steam Power's nuclear activities" of the notes to the parent company financial statements);
- the Group's financial trajectory;
- the creation of a working group of directors on the Group's business plan;
- the approval of the offer submitted by EDF as part of the call for tenders for Elektrárna Dukovany II in the Czech Republic (see section 1.4.1.1.3.2 "Other New Nuclear projects");
- the investment project concerning the Sardinia-Corsica-Italy electricity link (SACOI 3 project);
- EDF's strategy and outlook as regards renewable energies;
- the Group's adaptation to climate change;
- the 2022 reports of the Inspector General for nuclear safety and radiation protection and the Inspector for hydropower safety;
- the uranium cycle strategy;
- the Group's preparation for the winter of 2023-2024;

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- the report on internal control included in the three-yearly report on securing the financing of nuclear expenses and the updating of the reference memorandum on the policy for setting up, managing and controlling the financial risks of EDF's dedicated assets (see section 4.2.3.4 "Nuclear Commitments Monitoring Committee");
- EDF's hedging policy and the risk policy for the energy markets;
- EDF's policy on professional and salary equality;
- various governance issues such as the remuneration policy for corporate officers, the annual assessment of the independence of Directors and the update of the Board's internal rules of procedure.

During the past financial year, the Board also examined all the topics reviewed by the Board's Committees, on the basis of the Committee files communicated to the Board, and discussed them in the context of the reports given by the Committee Chairmen at the subsequent Board meeting.

Strategic seminar of the Board of Directors

The Directors also meet once a year to discuss the strategy of the Company and the Group within the framework of a strategic seminar. During the strategic seminar held in 2023, the Board discussed the company project under development and more specifically new business models, strategic guidelines and the financial trajectory, as well as the industrialisation of the nuclear cycle.

Executive session

The Board of Directors' internal rules of procedure provide that a meeting is to be held each year without the attendance of the Chairman and Chief Executive Officer (executive session), and that this meeting is to be chaired by the Chairwoman of the Appointments, Remuneration and Governance Committee. On this occasion, the Directors discussed the results of the internal assessment of the Board and the Committees, their assessment of the Chairman and Chief Executive Officer's chairmanship and management, points of satisfaction regarding the functioning of the Board and Committees and possible areas for improvement (see 4.2.2.6 "Assessment of the functioning of the Board of Directors and its Committees").

Working group of directors on the EDF group's company project

As part of the work undertaken to prepare the Group's corporate plan, the Board of Directors decided, on 23 May 2023, to set up a specific process to prepare, examine and deepen its work and decisions that it may have to take in this context and to set up a working group of directors dedicated to this subject.

The task of this Working Group is to monitor the conception of the Group's company project, in conjunction with EDF's management, to examine its characteristics with regard to EDF's corporate interest and its strategic, industrial, financial and social challenges, and to express all useful opinions and recommendations to the Board, so that the latter can discuss and decide in full knowledge of the facts.

Chaired by Bruno Crémel, the Working Group also includes Colette Lewiner, Claire Pedini and Aurélie Frionnet [(1)]. It is assisted in its work by legal and financial advisors. The Working Group held 11 meetings between May 2023 and December 2023.

4.2.3 Board of Directors' Committees [(2)]

To perform its duties, the Board of Directors has created six Committees to examine and prepare certain projects before they are presented to the Board. These specialised Committees are the Strategy Committee, the Risk and Audit Committee, the Commitments Committee, the Nuclear Commitments Monitoring Committee, the Corporate Responsibility Committee, and the Appointments, Remuneration and Governance Committee.

The membership, operation and duties of the Committees are governed by the internal Rules of Procedure of the Board of Directors.

On the occasion of an update of the internal rules of procedure decided on 28 June 2023, the Board of Directors created a new committee, the Commitments Committee (see section 4.2.3.3 "Commitments Committee"), and amended the name of the Audit Committee, now called the Risk and Audit Committee (see 4.2.3.2 "Risk and Audit Committee").

The Committees are composed of at least three Directors chosen by the Board, which appoints the Chairman of each Committee, with the exception of the Strategy Committee, which is chaired by the Chairman and Chief Executive Officer in accordance with the internal rules of procedure. The Company's articles of association provide that each Committee should include at least one Director representing the employees.

As at the date of this document, the Chairs of the Board Committees are as follows:

- Luc Rémont for the Strategy Committee;
- Marie-Christine Lepetit for the Risk and Audit Committee;
- Philippe Petitcolin for the Commitments Committee;
- Gilles Denoyel for the Nuclear Commitments Monitoring Committee;
- Claire Pedini for the Corporate Responsibility Committee;
- Colette Lewiner for the Appointments, Remuneration & Governance Committee.

The Government Commissioner and the Head of the French State General Economic and Financial Supervisory Mission to the Company may attend the meetings in these Committees. The Government Commissioner may be represented to these Committees.

The work of the Committees is organised within a programme prepared for the year. Meetings are recorded in the form of written minutes, and the Committee Chair gives an oral report at the following meeting of the Board of Directors.

The Board's internal Rules of Procedure provide that the Committees shall meet in sufficient time before the Board meeting, the agenda of which includes consideration of matters falling within their remit.

The Committees may invite Company executives, including the Chairman and Chief Executive Office, to attend their meetings. They may also invite other parties to attend, whether employed by the Company or not, having informed the Chairman and Chief Executive Officer in advance and on the condition that they report such attendance to the Board. The Committees may also, having informed the Chairman and Chief Executive Officer, have recourse to technical studies and external on issues falling within their remit, at the Company's expense, provided that they report this to the Board.

In 2023, the Committees held a total of 31 meetings. The average overall attendance rate of the Committees was 88.4%. The average attendance rates by Committee are presented in sections 4.2.3.1 to 4.2.3.6. The individual attendance rates of the Directors at Committee meetings are presented in section 4.2.2.9 ("Activity of the Board of Directors in 2023").

(1) Aurélie Frionnet replaced, within the Working Group, Christian Taxil, whose term of office as Director ended on 22 November 2023.
(2) Data relating to the 2023 financial year, except for data relating to the composition of the Committees, which is given as at the date of filing of this Universal Registration Document.

4.2.3.1 Strategy Committee

Membership

The table below outlines the membership of the Committee on the date of filing of this Universal Registration Document. The Directors who are not members of the Strategy Committee attend all of its meetings.

Membership of the Strategy Committee		
Luc Rémont	Chairman	Chairman and Chief Executive Officer
Christophe Béguinet (1)	Member	Director elected by the employees
Anne-Marie Descôtes (2)	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State
Aurélie Frionnet (1)	Member	Director elected by the employees
Fabrice Guyon (1)	Member	Director elected by the employees
Sandrine Lhenry	Member	Director elected by the employees
Philippe Petitcolin	Member	Independent Director appointed by the Shareholders' Meeting
Alexis Zajdenweber	Member	Director – Representative of the French State

(1) Members of the Committee since 23 November 2023.

(2) Member of the Committee since 31 January 2023.

Duties

The Strategy Committee reviews and/or advises the Board of Directors on the Company's major strategic policies, and in particular on:

- the strategic business plan setting out the actions to be implemented to achieve the objectives of the multi-year energy programme (see section 7.1.6.2 "Public service in France");
- the Company's strategic policies for consultation with the EDF Central Social and Economic Committee;
- the public service contract (see section 7.1.6.2 "Public service in France");
- strategic agreements, alliances and partnerships;
- research and development policy;
- the way in which the Company and the Group implements the "*raison d'être*" of EDF into their strategy and the operational management of their activities, as well as the Group's internal organisation designed to ensure its deployment and implementation.

	2023	2022
Number of meetings	3	2
Average attendance rate*	91.7%	86.6%
Average duration of the meetings	3 hours and 26 minutes	2 hours and 45 minutes

** Rate calculated on the basis of Committee members only (all Directors attending Committee meetings).*

In 2023, the Committee reviewed in particular:

- the strategic challenges and outlook of Enedis;
- the EDF group's hydropower strategy;
- an update on the work of the working group of Directors on the EDF group's company project;
- an update on the Nuward project;
- the main assumptions of the 2024-2026 medium-term plan.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2023 financial year.

4.2.3.2 Risk and Audit Committee

Membership

In accordance with the provisions of Article L. 821-67 of the French Commercial Code and the recommendations of the AFEP-MEDEF Code, the Risk and Audit Committee does not include any executive corporate officer and includes more than two thirds of Independent Directors.

The table below outlines the membership of the Committee on the date of filing of this Universal Registration Document.

Membership of the Risk and Audit Committee		
Marie-Christine Lepetit	Chairwoman	Director appointed by the Shareholders' Meeting on recommendation of the French State
Christophe Béguinet (1)	Member	Director elected by the employees
Nathalie Collin	Member	Independent Director appointed by the Shareholders' Meeting
Bruno Crémel	Member	Independent Director appointed by the Shareholders' Meeting
Fabrice Guyon (1)	Member	Director elected by the employees
Gérald Lacoste (1)	Member	Director elected by the employees
Sandrine Lhenry	Member	Director elected by the employees
Philippe Petitcolin	Member	Independent Director appointed by the Shareholders' Meeting

(1) Members of the Committee since 23 November 2023.

Number of members	8
Number of independent directors	3
Percentage of Independent Directors*	75%

** Excluding Directors representing the employees.*

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Article L. 821-67 of the French Commercial Code provides that at least one member of the Committee must have specific skills in financial or accounting matters and must be independent in accordance with the criteria defined and made public by the Board of Directors. Furthermore, Article 17.1 of the AFEP-MEDEF Code recommends that all members of the Risk and Audit Committee have financial or accounting skills, that the re-election of the Chairman of the Committee be specifically examined by the Board and, lastly, that the proportion of Independent Directors on the Board be at least two thirds, excluding the Directors representing employees.

At its meeting of 16 May 2019, the Board of Directors noted that Ms Lepetit, whose reappointment as Chairwoman of the Committee was proposed, and Mr Crémel, whose appointment to the Committee was proposed, have specific expertise in financial and accounting matters according to the criteria recommended by the French Financial Markets Authority (*Autorité des marchés financiers – AMF*).

After consulting the Appointments, Remuneration and Governance Committee, the Board of Directors, at its meeting of 17 February 2021, appointed Mr Petitcolin as a member of the Risk and Audit Committee and noted that he has expertise in financial and accounting matters.

Lastly, after receiving the opinion of the Appointments, Remuneration and Governance Committee, the Board of Directors, at its meeting of 15 June 2021, decided to appoint Ms Collin as a member of the Risk and Audit Committee and noted that she has expertise in financial and accounting matters.

Ms Collin, Mr Crémel and Mr Petitcolin meet both the criteria regarding skills and independence set out in Article L. 821-67 of the French Commercial Code (see section 4.2.2.5 "Evaluation of Director independence").

Duties

Under the supervision of the Board of Directors, the Risk and Audit Committee carries out the duties entrusted to it in accordance with Article L. 821-67 of the French Commercial Code. In accordance with this article, the Risk and Audit Committee is tasked with the following duties in particular:

- monitoring the process of preparing financial information and making any recommendations to guarantee its integrity;
- monitoring the effectiveness of the internal control, risk management and internal audit systems, regarding procedures relating to the preparation and processing of accounting and financial information;
- monitoring the performance of the duties of the Statutory Auditors, ensuring their independence, and approving the provision of the services referred to Article L. 821-30 of the French Commercial Code.

In fulfilling its duties, it examines and gives its opinion to the Board of Directors, in particular on:

- the Company's financial position, the medium-term plan and the budget;
- the preliminary and consolidated annual and half-yearly financial statements and related financial reports;
- the risk monitoring and internal control (mapping of Group risks and methods for detecting, anticipating and controlling risks in all areas, including social, environmental and climate change risks, organisation and assessment of the internal control systems);
- the internal audit (annual audit programme, main findings and corrective actions, action plans, monitoring of their implementation);
- the monitoring of the Statutory Auditors (coordination of the auditor selection procedure, monitoring of the fulfilment of their duties, taking account, where applicable, of the findings and conclusions of the Haut Conseil du Commissariat aux comptes (*i.e.* French High Council of Auditors), verification of compliance by the Statutory Auditors with the conditions of independence provided for in the applicable laws, opinion on the amount of fees, approval of the provision by the Statutory Auditors of services other than the certification of accounts in accordance with a procedure approved by the Board of Directors on 3 November 2016);
- the financial aspects of external growth or divestment activities, which are particularly significant (see section 4.2.2.3 "Powers and duties of the Board of Directors"), jointly with the Commitments Committee;
- the policies in terms of insurance, energy market risks and risk of bankruptcy of the Group's counterparties.

The Committee carries out, together with the Corporate Responsibility Committee (see section 4.2.3.5 "Corporate Responsibility Committee"), a review of the processes for preparing and processing non-financial information, and in particular the elements constituting the non-financial performance statement included in the management report, and makes any recommendations to ensure its integrity. It may invite the independent third-party body in charge of verifying the Company's non-financial performance statement. It reviews, with the Corporate Responsibility Committee, the mapping of social and environmental risks, in particular risks related to climate change, as well as ethics and compliance risks, and ensures, in conjunction with this Committee, the existence of internal control and management systems for these risks.

The Risk and Audit Committee's review of the financial statements is accompanied by a presentation by the Executive Management of the Group's environmental, social and governance objectives and main achievements (monitoring of key indicators and ESG milestones), a presentation on significant off-balance sheet commitments, as well as a presentation by the Statutory Auditors highlighting the basis for the preparation of the financial statements, the applicable accounting framework, the audit approach used and the conclusions of their work.

In addition to the meetings of the Risk and Audit Committee devoted to examining the annual and half-yearly financial statements, the Statutory Auditors also attend all meetings devoted to risk monitoring, internal control and auditing.

For the purposes of its work, the Committee regularly meets the Statutory Auditors, Executive Management, Corporate Finance, Group Risk Management and Internal Auditing.

Activity in 2023

The table below presents the statistical data relating to the 2022 and 2023 financial years:

	2023	2022
Number of meetings	7*	6
Average attendance rate	91.1%	97.9%
Average duration of the meetings	2 hours and 45 minutes	3 hours and 9 minutes

** Including a joint meeting with the Corporate Responsibility Committee.*

In 2023, the Risk and Audit Committee reviewed, among other matters:

- the half-yearly and annual financial statements and related financial reports;
- the presentation by the Statutory Auditors of their 2023 audit plan and the conclusions of their work;
- the 2024 budget and the 2024-2026 medium-term plan;
- the updating of the Group's risk mapping, risk monitoring and control methods and identified progress actions;
- the assessment of the internal control and the control of activities;
- the implementation of the 2023 audit programme and the draft 2024 audit programme, the summary of the internal audits, and the follow-up of the action plans;
- the annual summary of the Group's energy market risks and counterparty risks;
- the annual financial management and financial risk management remit;
- the 2022 reporting under the European taxonomy (3.7.4 "European taxonomy") and the EDF group's 2022 non-financial performance statement, at a joint meeting with the Corporate Responsibility Committee (see chapter 3 of this Universal Registration Document);
- the EDF group's anticipation of supply risks for rare or critical materials.

In 2023, in accordance with the procedure approved by the Board of Directors of EDF on 3 November 2016, the Committee authorised the Statutory Auditors and the members of their network to provide services other than the certification of the financial statements and it was informed on a half-yearly basis of the services provided as part of the pre-approval process under the terms of this procedure.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2023 financial year.

4.2.3.3 Commitments Committee

Membership

The table below outlines the membership of the Commitments Committee on the date of filing of this Universal Registration Document.

Membership of the Commitments Committee		
Philippe Petitcolin	Chairman	Independent Director appointed by the Shareholders' Meeting
Nathalie Collin	Member	Independent Director appointed by the Shareholders' Meeting
Aurélie Frionnet	Member	Director elected by the employees
Marie-Christine Lepetit	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State

Number of members	4
Number of independent directors	2
Percentage of Independent Directors*	66.67%

** Excluding Directors representing the employees.*

Duties

Created in 2023 by the Board of Directors, the Commitments Committee is tasked with issuing opinions to the Board on acquisitions, divestments, organic growth and stock market transactions carried out by EDF or any of its subsidiaries that exceed the thresholds provided for by the internal rules of procedure, where applicable jointly with the Risk and Audit Committee, prior to their submission to the Board for authorisation. It may also examine transactions and commitments of this nature, but not exceeding the thresholds provided for by the internal rules of procedure, or any other transaction at the request of the Chairman and Chief Executive Officer, in particular in view of their strategic interest.

Activity in 2023

	2023
Number of meetings	5
Average attendance rate	90%
Average duration of the meetings	1 hour and 45 minutes

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In 2023, the Commitments Committee reviewed:

- the Group's draft response to the New Jersey maritime wind power call for tender (Atlantic Shores Offshore Wind);
- an update of EDF's project to acquire General Electric's "nuclear steam power" activities;
- the EDF group's offer as part of the call for tenders for the Bretagne Sud floating wind power farm project (see section 1.4.1.3.3.2 "Segments and highlights", "Offshore wind power");
- the draft offer in response to the call for tenders of Elektrárna Dukovany II in the Czech Republic;
- the Group's final offers as part of the Sizewell C project;
- the investment project in the Sardinia Corsica-Italy electricity link (SACOI 3 project).

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2023 financial year.

4.2.3.4 Nuclear Commitments Monitoring Committee

Membership

The table below outlines the membership of the Nuclear Commitments Monitoring Committee on the date of filing of this Universal Registration Document:

Membership of the Nuclear Commitments Monitoring Committee		
Gilles Denoyel	Chairman	Director appointed by the Shareholders' Meeting on recommendation of the French State
Aurélie Frionnet (1)	Member	Director elected by the employees
Fabrice Guyon (2)	Member	Director elected by the employees
Marie-Christine Lepetit	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State
Colette Lewiner	Member	Independent Director appointed by the Shareholders' Meeting
Michèle Rousseau	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State

(1) Member of the Committee since 23 November 2023.

(2) Member of the Committee since 28 June 2023.

Number of members	6
Number of independent directors	1
Percentage of Independent Directors*	25%

** Excluding Directors representing the employees.*

Duties

The Nuclear Commitments Monitoring Committee, governed by Article D. 594-16 of the French Environmental Code, is tasked with monitoring issues relating to securing the financing of nuclear expenses referred to in Article L. 594-1 of the French Environmental Code, and in this context, to monitor the implementation of the policy for securing the financing of nuclear expenses approved by the Board of Directors, including the policy for assessing nuclear expenses and setting up provisions and the policy for setting up, managing and controlling the financial risks of the assets dedicated to hedging these provisions.

It takes note of the work and conclusions of EDF's Nuclear Expenses Assessment Control Function, tasked by Article D. 594-8, par. III, of the French Environmental Code, with monitoring the assessment of nuclear expenses and in particular to issue an opinion on the assessment of these expenses and their provisional schedule, on the consistency of the methods and data concerning the assessment of nuclear expenses and the policy for securing the financing of these expenses (see section 2.2.2 "Specific risks related to nuclear activities").

The Committee oversees the work to determine and periodically review the strategic allocation for investments in dedicated assets. It examines the three-yearly report provided for in Article L. 594-4 of the French Environment Code and its annual update Note, before they are sent to the administrative authority. It monitors the effectiveness of the internal control system put in place by the Company concerning the assessment of nuclear expenses and the management of the hedging assets and gives an opinion on the annual report on internal control before it is submitted to the Board for approval.

Finally, the Committee issues an opinion prior to any investment in unlisted dedicated assets for any project exceeding a unit amount of €400 million as well as for any project (excluding real estate) exceeding a unit amount of €200 million resulting in full consolidation of the target investment by the Company. In the event that the Committee issues a negative opinion on an investment plan, the Board of Directors has sole authority to authorise the aforementioned plan.

The Committee relies on the work of the Nuclear Commitments Financial Expertise Committee which comprises independent experts appointed by the Board of Directors(1), whose duty is to assist the Company and its corporate bodies with matters relating to asset-liability matching and the management of dedicated assets.

Activity in 2023

	2023	2022
Number of meetings	4	3
Average attendance rate	91.7%	94.4%
Average duration of the meetings	2 hours and 35 minutes	3 hours and 23 minutes

In 2023, the Committee reviewed in particular:

- the hedging status and discount rate of nuclear provisions, the performance of portfolios of listed and unlisted dedicated

(1) The current members of the Nuclear Commitments Financial Expertise Committee were re-elected or appointed on 16 December 2022 for three years by the Board of Directors after consultation with the Nuclear Commitments Monitoring Committee.

assets and the monitoring of associated risks;

- the implementation of the strategic allocation included in the reference memorandum on the policy for setting up, managing and controlling the financial risks of dedicated assets and the updating of the reference memorandum, before its submission to the Board of Directors for approval;
- the conclusions of the 2023 asset and liability management (ALM) study concerning dedicated assets and the study on the impact of climate risk on dedicated assets and the risk-return profile of these assets;
- the deployment of the Responsible Investor Charter for dedicated assets and the assessment of its application;
- the 2023 update letter of the three-yearly report on securing the financing of nuclear expenses and the attached report on internal control, before the report is submitted to the Board for approval;
- the opinion of the Nuclear Expenses Assessment Control Function;
- the progress of the deconstruction programme for first-generation nuclear power plants and the industrial geological storage facility (CIGEO) and the activated waste packaging and storage facility (ICEDA) projects (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity", "Back-end of the cycle");
- the follow-up of internal and external recommendations, in particular from the supervisory authorities (French Directorate-General for Energy and Climate), the French Court of Auditors or the French Nuclear Safety Authority;
- the review of an investment project in an unlisted infrastructure asset exceeding the €400 million threshold provided for by the Board's internal rules of procedure.

The Statutory Auditors attend all meetings of the Nuclear Commitments Monitoring Committee.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2023 financial year.

4.2.3.5 Corporate Responsibility Committee

Membership

The table below outlines the membership of the Corporate Responsibility Committee on the date of filing of this Universal Registration Document:

Members of the Corporate Responsibility Committee		
Claire Pedini	Chairwoman	Independent Director appointed by the Shareholders' Meeting
Christophe Béguinet (1)	Member	Director elected by the employees
Delphine Gény-Stephann	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State
Gérald Lacoste	Member	Director elected by the employees
Sandrine Lhenry	Member	Director elected by the employees
Cécile Pichot (1)	Member	Director elected by the employees
Michèle Rousseau	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State

(1) Members of the Committee since 23 November 2023.

Number of members	7
Number of independent directors	1
Percentage of Independent Directors*	33.33%

** Excluding Directors representing the employees.*

Duties

In connection with the Group's strategy, the Corporate Responsibility Committee examines the Group's commitments and policies, as well as their implementation, in terms of ethics, compliance, and Corporate Social Responsibility (CSR). It examines, in particular, the way in which the Company takes account of issues relating to climate change.

It conducts, jointly with the Risk and Audit Committee, a review of the processes for preparing and processing non-financial information, and in particular the elements constituting the non-financial performance statement included in the management report, and makes any recommendations to ensure its integrity. It may invite the independent third-party body in charge of verifying the Company's non-financial performance statement. It reviews, with the Risk and Audit Committee, the mapping of social and environmental risks, in particular those related to climate change, as well as ethics and compliance risks and ensures, in connection with this Committee, the existence of internal control and management systems for these risks.

As part of its duties, it notably reviews and gives its opinion to the Board of Directors on the Company's vigilance plan, the Company's and Group's carbon trajectory and climate transition plan, and the multi-year strategic policies of the Company in terms of CSR, in line with EDF's *"raison d'être"*, the methods for implementing this strategy, as well as the results obtained, the choice of agencies and the Company's non-financial ratings, the annual reporting on ethics and compliance, the way in which the Company and the Group implement a non-discrimination and diversity policy, the policy on professional and equal pay and the annual report of EDF's Ombudsman.

It incorporates into its considerations the issues and points of attention raised during the dialogue with stakeholders outside the Compan

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Board of Directors Climate Point person

The Company reinforced its climate governance in 2020 by appointing a Climate Point person to the EDF Board of Directors. The Board's internal rules of procedure provide that the function of Climate Point person on the Board is entrusted, unless the Board decides otherwise, to the Chairwoman of the Corporate Responsibility Committee. The Climate Point person, in line with EDF's "*raison d'être*", is responsible for:

- ensuring, in conjunction with the Chairman and Chief Executive Officer and the Executive Committee's Climate point person (see section 3.1.4 "EDF climate governance"), that the Board of Directors identifies all the impacts of climate change for the Group and that the Board's work and the strategy it defines incorporate such climate change issues;
- regularly informing the Board of the Company's climate strategy, after examination by the Corporate Responsibility Committee;
- ensuring, in conjunction with the Chairman and Chief Executive Officer, that the Corporate Responsibility Committee and the Board regularly review the implementation of the Group's carbon neutrality trajectory adopted by the Executive Committee;
- reviewing, in the context of the performance of the Corporate Responsibility Committee's assignments, how the Group applies the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD)[1] and/or international best practices in terms of climate governance and the communication of climate-related issues and opportunities, and how it reports on climate-related risks.

The Committee may submit any opinions, proposals and recommendations to the Board of Directors in fields falling within its remit.

Activity in 2023

	2023	2022
Number of meetings	6*	5
Average attendance rate	78.2%	93.3%
Average duration of the meetings	1 hour and 40 minutes	2 hours and 1 minute

** Including a joint meeting with the Risk and Audit Committee.*

In 2023, the Corporate Responsibility Committee examined in particular:

- the 2022 reporting under the European taxonomy (see section 3.7.4 "European taxonomy") and the EDF group's 2022 non-financial performance statement, at a joint meeting with the Risk and Audit Committee (see chapter 3 of this universal Registration Document);
- the Group's 2022 vigilance plan and its implementation (see section 3.8 "Vigilance Plan");
- the Group's organisation and actions in terms of European lobbying;
- an update on the Stakeholder Council;
- the results of the "My EDF group" 2022 survey;
- the 2022 report of the EDF group's Ombudsman;
- the 2022 overview and results of the Group's gender equality policy in terms of work and pay and the Group's health and safety policy;
- an update on EDF's responsible and sustainable purchasing;
- a presentation of the Group's Nature commitments;
- an update on the Group's organisation and the actions carried out as part of the HR project relating to the anticipation of the skills necessary for the energy transition.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2023 financial year.

4.2.3.6 Appointments, Remuneration & Governance Committee

Membership

The table below outlines the membership of the Appointments, Remuneration and Governance Committee on the date of filing of this Universal Registration Document.

Members of the Appointments, Remuneration & Governance Committee		
Colette Lewiner	Chairwoman	Independent Director appointed by the Shareholders' Meeting
Claire Pedini	Member	Independent Director appointed by the Shareholders' Meeting
Cécile Pichot [1]	Member	Director elected by the employees
Alexis Zajdenweber	Member	Director – Representative of the French State

(1) Member of the Committee since 23 November 2023.

Number of members	4
Number of independent directors	2
Percentage of Independent Directors*	66.67%

** Excluding Directors representing the employees.*

(1) See sections 3.1.4.2 "Implementation of Task Force on Climate-Related Financial Disclosures (TCFD) recommendations" and 3.1.4 "EDF climate governance".

Duties

In terms of appointments, the Committee submits its recommendations or proposals to the Board of Directors regarding the appointment of Directors by the Shareholders' Meeting. It oversees the selection process for potential candidates, may conduct its own research into candidates and may engage specialist consultants to assist in identifying potential candidates. It gives its opinion to the Board of Directors on proposed appointments to the Board Committees. It proposes to the Board the definition and updating of a diversity policy applied to Directors. It monitors the implementation of the policy and the results achieved. The Committee ensures the existence of succession plans in order to anticipate the succession, whether unforeseen or at the end of their term, of executive corporate officers and members of the Group's Executive Committee. The Chairman and Chief Executive Officer is involved in the Committee's work in the performance of this task, except with respect to work regarding his or her own succession.

The Committee submits an opinion to the Board on the Company's implementation of a non-discrimination and diversity policy, and ensures balanced representation of women and men within the Company's governing bodies[1] and among executive managers.

With regard to remuneration, the Committee examines and gives an opinion on the principles and criteria used to determine and allocate all the components comprising the Chairman and Chief Executive Officer's remuneration and benefits of all kinds. It submits this opinion to the Board for discussion. The Chairman of the Committee also submits this opinion for approval to the French Minister for the Economy. The Committee prepares its proposals within the limits specified by Decree no. 2012-915 of 26 July 2012, which amended the Decree of 9 August 1953, relating to French State control of the remuneration of the executives of public companies, in accordance with which the Chairman and Chief Executive's annual remuneration must not exceed the gross ceiling of €450,000. The Committee submits to the Board of Directors its opinion on the remuneration policy of the Group's Executive Committee and the main executives, as well as on the amount and terms and conditions for the distribution of the sum set by the General Meeting to be allocated to the Directors in return for their duties.

In terms of governance, the Committee oversees issues relating to corporate governance and ensures the implementation, within the Company's corporate bodies, of the principles and rules of the AFEP-MEDEF Code in particular. It may make proposals concerning any changes in the operation or powers of the Board or its internal Rules of Procedure. Every year, it conducts an assessment of the functioning of the Board and its Committees and every three years supervises the formal assessment conducted by an independent external consultant. Each year, the Committee examines the individual situations of the Directors in accordance with the independence criteria defined by the AFEP-MEDEF Code and reports its findings to the Board. In the event of appointment of new members of the Risk and Audit Committee, it examines these members' expertise in the field of finance, accounting and statutory audit. It examines and gives its opinion on situations of conflicts of interest of which it has become aware or which are reported to it and reports such situations to the Director Board.

Activity in 2023

	2023	2022
Number of meetings	6	5
Average attendance rate	87.5%	90%
Average duration of the meetings	43 minutes	42 minutes

In 2023, the Appointments, Remuneration and Governance Committee examined:

- the proposals concerning the setting of the remuneration of the Chairman and Chief Executive Officer and the Directors and the remuneration policy for corporate officers;
- the remuneration policy for EDF executives, its implementation and changes;
- the individual situation of the Directors with regard to the independence criteria provided in the AFEP-MEDEF Code;
- the draft corporate governance report included in the 2022 Universal Registration Document;
- proposals for reappointment of Directors by the Annual General Meeting;
- the implementation, within the Group, of the diversity ambition concerning executives (see section 3.3.3.1 "Workplace equality");
- the project to update the Board of Directors' internal rules of procedure and to create the Commitments Committee (see section 4.2.3.3 "Commitments Committee");
- a situation of potential conflict of interest declared by a Director;
- areas for discussion concerning changes in the rules governing the remuneration of the Directors.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2023 financial year.

(1) The Company's governing bodies are defined as EDF's Executive Committee.

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4.3 Executive Management

The Chairman and Chief Executive Officer is assisted by an Executive Committee which includes representatives of all the Group's lines of business.

This Committee is a decision-making body, a forum for discussion and a consultative body on the operational and strategic issues for the Group. It examines all the substantive and current files of significance to the Group, tracks the operating objectives and results and contributes to the management and forecasting of the major challenges for the EDF group. It reviews and authorises significant projects, specifically the Group's investment or divestment projects for amounts which exceed certain thresholds, in accordance, where appropriate, with the governance of the Group's listed subsidiaries. The Executive Committee meets each week.

In order to reinforce the examination and follow-up of projects, an Executive Committee Commitments Committee examines in-depth the most significant projects in terms of level of commitments or risks incurred before the Executive Committee makes its decision. No investment project may be submitted for review by the Board of Directors without having first been approved by this Committee.

On the date of filing of this Universal Registration Document, the Executive Committee comprises fourteen members and a Secretary. The list of members and their personal information appear below.

4.3.1 Members of the Executive Committee

On the filing date of this Universal Registration Document, the members of the Executive Committee were as follows:

Names	Duties
Luc Rémont	Chairman and Chief Executive Officer
Marc Benayoun	Group Senior Executive Vice-President in charge of Customers and Energy Services
Bruno Bensasson	Group Senior Executive Vice-President in charge of Renewable Energies, Chairman and Chief Executive Officer of EDF Renewables
Brice Bohuon	Group Senior Executive Vice-President in charge of the Group General Secretary
Béatrice Buffon	Group Senior Executive Vice-President in charge of the International Division
Caroline Chanavas	Group Senior Executive Vice-President in charge of Human Resources
Bernard Fontana	Group Senior Executive Vice President in charge of the Industry and Services Unit
Xavier Girre	Group Senior Executive Vice-President in charge of the Performance Impact, Investment and Finance Directorate
Véronique Lacour	Group Senior Executive Vice-President in charge of Transformation and Operational Effectiveness
Thierry Le Mouroux	Group Senior Executive Vice President with responsibility for the Projects and Construction Directorate
Cédric Lewandowski	Group Senior Executive Vice President with responsibility for the Nuclear and Thermal Generation Directorate
Simone Rossi	Group Senior Executive Vice-President, Chief Executive Officer of EDF Energy
Alain Tranzer	Group Senior Executive Vice President with responsibility for the Engineering and Supply chain Directorate
Xavier Ursat	Group Senior Executive Vice President with responsibility for the Strategy, Technologies, Innovation and Development Directorate

Chloé Pfeiffer, Group Executive Coordination Director, has served as Secretary of the Executive Committee since 1st July 2023.
Bruno Bensasson will cease to exercise his functions in the Group from 15 April 2024. Béatrice Buffon will be proposed as Chairman and Chief Executive Officer of EDF Renewables on 5 April 2024, at the EDF Renewables Board of Directors meeting in replacement of Bruno Bensasson (1).

4.3.2 Personal infobers of the Executive Committee

Marc Benayoun, a graduate of ESSEC Business School, started his career in the Paribas Group in 1989, before joining The Boston Consulting Group in 1993. He became Associate Director at the Paris office in 2001, then at the Moscow office in 2008. During this period, he took on various responsibilities, including the development of the company's natural gas expertise and activities. He also spearheaded the expansion of the Paris office into government consulting (with clients including the Ministry of Finance, the Ministry of Energy and Transportation, and the Ministry of Health). In 2009, he joined the EDF Group as Tariffs & Prices Director, at the Commerce Division. He was notably in charge of discussions related to changes in the French regulated electricity tariffs. In 2012, he became Director, Business Customers Market. In this role, he managed the project to end regulated electricity tariffs for companies and local communities, which resulted in EDF regaining its leadership position in a competitive environment. In 2016, Marc Benayoun was appointed Member of the Executive Committee of the EDF Group, Gas and Italy. As such, he served as Chief Executive Officer of Edison, the third-largest Italian energy company. He also oversaw gas procurement activities for the EDF Group, and managed its portfolio of long-term contracts for the transport of natural gas by pipeline and by sea, as well as the assets needed to transport the gas to the delivery points. In addition to his corporate responsibilities, Marc Benayoun also speaks regularly at colleges and universities (Mines ParisTech, Paris-Dauphine University, Bocconi University in Milan), where he discusses the structure of the electricity and gas industries, the regulations that govern them, as well as the topic of leadership in the energy transition. In 2018, he received the Economist of the Year award from the Italian Association of Energy Economists. In July 2019, Marc Benayoun was appointed Group Senior Executive Vice-President, Customers & Energy Services. In this capacity, he is heading the Commerce Division and supervises energy services related entities, including Dalkia. Marc Benayoun also serves as a member of the EDF Trading Board of Directors, Chairman of the Edison Board of Directors, and supervises the EDF Group's gas procurement platform in Italy.

(1) See Group press relaese dated 28 March 2024 "EDF Group appointments".

Bruno Bensasson is a graduate of the École Polytechnique and École des Mines of Paris. He started his career in 1998 at the Autorité de Sureté Nucléaire (French nuclear security authority) as head of a Regional Division (Lower and Upper Normandy) then as became the Chief of Staff of the CEO. From 2004 to 2006, he was the technical adviser responsible for the environment, new energies and nuclear energy at the office of the Minister of Industry, then adviser at the General Secretariat of the office of the President of the Republic in charge of industry, the environment and transport. He joined SUEZ in 2007 as Director of economic studies at the Department of development and strategy. In 2011, he became a member of GDF SUEZ's Executive Committee as Director for strategy and sustainable development. He was appointed CEO of GDF SUEZ Energie France in early 2013 and, in July 2014, became the Vice-President of GDF SUEZ Energie Europe in charge of development and renewable generation. In 2016, he became the CEO of Engie Afrique. In May 2018, Bruno Bensasson became the Group Senior Executive Vice-President responsible for Renewable Energies and the Chairman and Chief Executive Officer of EDF Renewables.

Brice Bohuon is a graduate of the Ecole des Mines of Paris and the Paris Institute of Political Studies, and an Ecole Nationale d'Administration alumnus. He began his professional career in 2007, working in the Conseil d'État (Council of State) as judge and Government adviser, taking up the post of Deputy General Secretary there in 2010. In 2013, he joined SNCF Transilien, serving successively as General Secretary and then Marketing and Services Director. In 2017, he was appointed General Director of the Energy Regulation Commission, before joining Transdev France in 2019 as Deputy General Director. In 2021, he was appointed Deputy General Director for the Île-de-France region. Brice Bohuon joined EDF in April 2023 as Group Senior Executive Vice-President, Group General Secretary.

Béatrice Buffon began her career in 2000 as project finance manager, first at COGETHERM, a company specialising in gas cogeneration projects, then at SIIF Énergies in wind power and biomass projects. She then moved into the development of renewable projects and joined the POWEO Group in 2007 as Deputy Director of POWEO Renewable Energies. From 2011 onwards, she led the development of the first offshore wind projects in France within EDF Renouvelables. Her team won four projects representing a total capacity of 2,000 MW. In 2014, she was appointed Deputy Managing Director of EDF Renewables in charge of marine renewable energies and a member of the Executive Committee. In 2020, she joined EDF as Group Senior Executive Vice-President in charge of the International Division, which is responsible for developing and implementing projects in some twenty countries in various fields related to low-carbon generation, storage, networks and distributed solutions. Chevalier de l'Ordre National Du Mérite, she is a graduate from both the École Polytechnique and the École Nationale des Ponts et Chaussées. Béatrice Buffon will be proposed as Chairman and Chief Executive Officer of EDF Renewables on 5 April 2024, at the EDF Renewables Board of Directors meeting [1].

Caroline Chanavas holds Master's level degrees in multilingual engineering from the Institut national des Langues et Civilisations Orientales (Inalco) and from the Ecole des Hautes Etudes en Sciences Sociales (EHESS), and a Master's degree in Chinese. She has also been a senior fellow of the Institut des Hautes Etudes de Défense Nationale (IHEDN). She began her career in China, in 1990, as Sales Manager at Imaje-Jingling. In 1995, she joined Sema Group (now SchlumbergerSema) and created the Chinese subsidiary of which she subsequently became General Manager. On her return to France, she became Alliances and Partnerships Director for SchlumbergerSema. In 2003, Caroline Chanavas was appointed Vice-President for Asia-Pacific Strategy at Bull, before joining the Air Operations Division of Thales in 2006, where she held in turn the positions of Vice-President for Sales, then for Commercial Operations, and then for Strategy and Marketing. In 2013, Caroline Chanavas joined Naval Group as Director of Procurement in the Services Division, responsible for the maintenance and modernization of warships and combat systems, then, in 2017, as Naval Group Executive Vice-President, Human Resources. Since July 1st 2023, she has been appointed as EDF Group Executive Vice-President, Human Resources.

Bernard Fontana holds a degree in engineering from the Ecole Polytechnique and the Ecole Nationale Supérieure des Techniques Avancées in Paris. During his career, Bernard Fontana worked at Groupe SNPE, ArcelorMittal, Aperam and Holcim Ltd. where he had different management positions of which Member of the Management Committee and CEO. Since 2015, he joined AREVA NP as Chief Operating Officer and became Chief Executive Officer of Framatome on July 1st, 2016. Bernard Fontana is also Board member of Thales, SSAB, GIFEN Services, after being 4 years its Chairman and CEO; and Governance member of GIFEN, since its creation in 2018. He is also member of the High Committee for Transparency and Information on Nuclear Safety in France.

Xavier Girre joined EDF in 2015 as Chief Financial Officer for France. From 2011 to 2015, he was Deputy CEO, Chief Financial Officer of La Poste Group and Chairman of XAnge Private Equity. From 1999 to 2011, within the Veolia Environnement Group, Xavier Girre was Group Risk and Audit Director as well as Deputy CEO, Chief Financial Officer of Veolia Transport and Veolia Propreté. Xavier Girre is also Director and Chairman of the Audit Committee of La Française des Jeux. He is a graduate of the HEC business school and an alumnus of École nationale d'administration, and began his career at the French Court of Auditors (Cour des comptes). With effect from 1st April 2024, Xavier Girre has been appointed Group Senior Executive Vice President in charge of the Performance Impact Investment and Finance Directorate.

Véronique Lacour holds a postgraduate diploma in Information Systems from the University of Paris I Panthéon Sorbonne. Véronique Lacour started her career at Thales in 1987, where she gained solid experience in Information Systems, before taking up the position of Chief Information Officer for a new Division of Thales in 2004. Between 2007 and 2009, she managed the HR information systems shared services of such Division. She moved to Safran in 2009 where she held the position, first, of Chief Information Officer for Safran Aircraft Engines (formerly Snecma), and later, in 2013, Vice-President Improvement Initiatives, where she managed continuous improvement and transformation initiatives. She went on to become Vice-President Programs for Safran Analytics, and was involved in the creation of this new Big Data-focused entity as part of the Group's digital transformation strategy. She joined EDF on 1 December 2016 as Group Senior Executive Vice-President, Transformation and Operational Effectiveness and is a member of the Executive Committee. She is tasked with directing the Group's activities in the areas of information systems, purchasing, property, consultancy and tertiary services and IT. She is Chairman of the Supervisory Board of Enedis since July 2023.

Thierry Le Mouroux is graduated in Mechanical and Electrical Engineering at the ESTP engineering school and holds an MBA in project management. He began his career in the United States in 1989, in charge of the development of a startup specialising in broadband technology. He joined the Eiffage Group in 1990, and then became the CEO of Forclum Littoral in 1995. Between 2000 and 2010, he occupied several management posts in the Suez Eau France company. In 2010, Thierry Le Mouroux was appointed CEO of Endel Engie, where he was closely involved in operations for the construction of the Flamanville 3 EPR and the Grand Carenage. In 2013, he became Chairman and CEO of Endel Engie, and drove the company's growth in the civil nuclear and energy sectors, as well as in the space industry and naval shipbuilding sector. From 2016 to 2020, he held several key positions at Framatome. And in 2020, Thierry Le Mouroux joined Areva as Deputy CEO in charge of the Olkiluoto 3 EPR project. He led in particular a functional reorganisation of the project that ensured its delivery on time and on budget. Thierry Le Mouroux has proven experience in industrial and nuclear sector projects. As of January 1st 2024, he joined the EDF Group as Executive Vice-President responsible for the advance planning of the future Nuclear Projects and Construction Division. Since April 1st, 2024, Thierry Le Mouroux is Group Senior Executive Vice President with responsibility for the Projects and Construction Directorate.

(1) See Group press release dated 28 March 2024 "EDF Group appointments".

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Cédric Lewandowski is a graduate of the Institut d'Etudes Politiques de Paris and graduate of Advanced Studies (DEA) of Geopolitics (Paris-VIII), Cédric Lewandowski began his career at EDF in 1998 as Chief of Staff of the President of EDF from 1998 to 2004, then Director of Transport and Electric Vehicles of Electricity of France from 2005 to 2008. He was Director of EDF Collectivités at the Trading Department of EDF from 2008 to 2012, Chairman of the Board of Directors of the Company H4 from 2009 to 2012, Director of the Safidi Company from 2009 to 2012, and Chairman of the Board of Directors of the Tiru Company from 2009 to 2012. He was then appointed Director of the Civil and Military Cabinet of the Minister of Defense in May 2012 to mid-2017. From July 2017 to mid-2019, he was Group Senior Executive Vice President in charge of Innovation, Corporate Social Responsibility and Strategy. From 2017 to 2019, Chairman of the Executive Committee of EDF Pulse Croissance Holding, and member of the Board of Directors of Enedis, as well as, Vice-President of the World Energy Council (2018-2019). In July 2019, he was appointed Group Senior Executive Vice President in charge of the Nuclear and Thermal business. He has been Chairman of the Club des Directeurs de Sécurité des Entreprises since January 2024. He is a "Chevalier de la Légion d'Honneur", a Knight of the Order of Agricultural Merit, and an Officer of the National Order of Mali. Since April 1st, 2024, he is Group Senior Executive Vice President with responsibility for the Nuclear and Thermal Generation Directorate.

Simone Rossi is a Business Administration graduate of the University of Bocconi (Milan). Simone Rossi began his career as a consultant, firstly at KPMG Consulting in corporate finance, and then from 1996 at McKinsey & Company, where he mainly specialised in the sectors of energy, financial institutions, and information and communication technologies. In 2004, he joined Edison SpA in Milan as Head of Strategy, before being promoted to become Director of Financial Control and Information Systems in 2007. At the end of 2009, he was appointed Chief Financial Officer of Constellation Energy Nuclear Group (CENG), a company based in Baltimore in the United States. He then became Chief Financial Officer of EDF Energy in April 2011. In March 2015, Simone Rossi was appointed EDF group Senior Executive Vice-President, International Division. Since 1 November 2017, he has been the Chief Executive Officer of EDF Energy and Group Senior Executive Vice-President of EDF.

Alain Tranzer has been graduated from Ecole Polytechnique and Ecole des Mines de Paris. He began his career in 1991 within the PSA Group. After 5 years in chassis engineering, he successively held the positions of sub-system technical manager, plant quality director, chief engineer for Peugeot 407, then head of Peugeot 208-2008 program. He has acquired strong skills in managing industrial projects, from initial design to industrial launch, and has been awarded Project Director of the Year in 2013 by Automotive News Europe. In 2013, Alain Tranzer was appointed Senior Vice President, head of platforms, modules and advanced projects, involving project management of complex features such as autonomous, connected, electric and hybrid cars. Since 2018, he has been Senior Vice President, in charge of energy transition and contracting of associated technological bricks such as new CO_2 efficient engines and architectures. In March 2020, he joined the EDF group to steer the implementation of the "excell" plan, which aims to strengthen the industrial quality, skills and governance of large nuclear projects, and was appointed General Representative for Industrial Quality and Nuclear Skills. Since April 1st, 2024, Alain Tranzer is Group Senior Executive Vice President with responsibility for the Engineering and Supply chain Directorate.

Xavier Ursat was appointed Group Senior Executive Vice-President, New Nuclear Projects and Engineering in March 2015 and Group Senior Executive Vice-President, Innovation, Corporate Social Responsibility and Strategy, in December 2023. Since April 1st, 2024, he's Group Senior Executive Vice President with responsibility for the Strategy, Technologies, Innovation and Development Directorate. He joined EDF in 1991, where he first held various positions in hydraulic engineering until 2002. Among his responsibilities, he was in charge of implementing EDF hydropower command centers and took part in international projects, mainly in South America. From 2002 to 2005, he was an advisor to the EDF's Executive Vice-President in charge of Generation and Engineering. From 2005 to 2007, he was Deputy Director of the Alpes generation entity in Grenoble and from 2007 to 2010, Director of the generation entity in Toulouse. Between 2010 and 2015, he was Deputy Director and subsequently Managing Director of the Hydro Generation and Engineering Division. Chairman of the Strategic Committee for the French Nuclear Sector (CSFN) and of the French Nuclear Energy Industry Organization (GIFEN), he is also the Chairman of the Edvance Supervisory and Orientation Committee and a member of the Framatome Supervisory Board. He is also the outgoing Chairman of the French Nuclear Energy Society (SFEN) and a Honorary Governor of the World Water Council. Xavier Ursat is a graduate of École Polytechnique and Telecom Paris.

4.4 Conflicts of interest and interests of corporate officers and executives

4.4.1 Conflict of interest

To the Company's knowledge, on the date of filing of this Universal Registration Document, there were no potential conflicts of interest involving EDF between the duties of the members of the Company's Board of Directors and Executive Management and their private interests or other duties (regarding the rules applicable to the members of the Board of Directors in terms of conflicts of interest, see section 4.2.2.8 "Obligations and duties of Directors").

Subject to the specific legal and regulatory provisions applicable to the membership of the Company's Board of Directors (see section 4.2.1 "Members of the Board of Directors"), to the Company's knowledge, no arrangements or agreements have been entered into with shareholders, clients, suppliers or others under which a member of the Board of Directors or Executive Management has been appointed in this capacity.

To EDF's knowledge, there are, moreover, no family ties between members of the administrative bodies or Executive Management.

4.4.2 Absence of convictions

To the best of EDF's knowledge, no member of the EDF Board of Directors or Executive Management has been subject to a criminal investigation, or to a conviction for fraud or corruption, or been involved in any bankruptcy, receivership, liquidation or receivership proceedings during the past five years.

With the exception of :

- On 19 November 2020, Anne-Marie Descôtes was ordered to pay a fine of €1,000 by the Court of Budgetary and Financial Discipline for disregarding the Public Procurement Code in her capacity as Chief Executive Officer of the Agency for French Education Abroad (Agence pour l'enseignement français à l'étranger – AEFE) from September 2008 to August 2013. To the best of EDF's knowledge, no other Director has been subject to any official public accusation or sanction issued by statutory or regulatory authorities during the last five years;
- Delphine Gény-Stephann is a non-executive Director of the UK company Eagle Genomics Ltd. At the request of its Board of Directors, Eagle Genomics Ltd was recently placed under the Insolvency Act 1986 by the appointment of two administrators, officially appointed by the High Court of Justice on 20 March 2024.

Moreover, to the best of EDF's knowledge, no member of the EDF Board of Directors or Executive Management has been prevented by a court from serving as a member of an administrative, management or supervisory body of a legal entity or from participating in the management or direction of a legal entity's affairs during the past five years.

4.4.3 Service contracts

EDF's corporate officers did not enter into any service contract with the Company or any of its subsidiaries pursuant to which they would be entitled to any kind of benefits.

4.5 Shareholdings of the corporate officers in the Company's share capital

As of 31 December 2023, no member of the Board of Directors of EDF held Company shares. Certain EDF Directors who held EDF shares tendered their shares under the simplified public tender offer initiated by the French State in 2022 and closed in 2023 (see section 1.2.3 "Significant events of the year - Completion of the simplified public tender offer"). Those who had not tendered their shares to the offer saw their shares transferred to the French State during the implementation of the squeeze-out on 8 June 2023.

4.6 Remuneration and benefits of the corporate officers

As indicated in section 4.1 ("Corporate Governance Code"), the Company adheres to the AFEP-MEDEF Code subject to the specific legislative and regulatory requirements applicable to it.

This section presents the details of the components of the total remuneration and benefits of any kind paid during the 2022 and 2023 financial years or allocated in respect of the same financial years to corporate officers by the Company and the companies included in the Company's scope of consolidation within the meaning of Article L. 233-16 of the French Commercial Code.

4.6.1 Management and corporate officers' compensation

4.6.1.1 Remuneration of the Chairman and CEO

Setting of the remuneration of the Chairman and Chief Executive Officer

The components of the remuneration of the Chairman and Chief Executive Officer are set by the Company's Board of Directors on the recommendation from the Appointments, Remuneration and Governance Committee and submitted for approval by the French Minister for the Economy after consultation with the relevant Ministers (see section 4.2.3.6 "Appointments, Remuneration and Governance Committee"). The remuneration of the Chairman and Chief Executive Officer must comply with the limits provided for by Decree no. 2012-915 of 26 July 2012 on State control over the remuneration of executives of public companies, which amended Decree no. 53-707 of 9 August 1953 and sets a ceiling on his gross yearly remuneration of €450,000. This regulatory cap has not been revised since 2012.

Remuneration for the 2023 financial year

The Appointments, Remuneration and Governance Committee, at its meeting of 8 February 2023, decided to recommend to the Board of Directors the maintenance of the principles and criteria for determining the components of the remuneration of the Chairman and Chief Executive Officer for the 2023 financial year and, consequently, to set his annual fixed remuneration at the ceiling provided for by the Decree of 9 August 1953. On the Committee's proposal, the Board, at its meeting of 16 February 2023, decided to maintain the fixed annual gross remuneration of the Chairman and Chief Executive Officer for the 2023 financial year at €450,000, while noting that the ceiling introduced in 2012 in the Decree of 9 August 1953 had not been raised since that date.

Remuneration for the 2024 financial year

The Appointments, Remuneration and Governance Committee, at its meeting of 6 February 2024, decided to recommend to the Board of Directors the maintenance of the principles and criteria for determining the components of the remuneration of the Chairman and Chief Executive Officer for the 2024 financial year and, consequently, to set his annual fixed remuneration at the ceiling provided for by the Decree of 9 August 1953. On the Committee's proposal, the Board, at its meeting of 15 February 2024, decided to maintain the fixed annual gross remuneration of the Chairman and Chief Executive Officer for the 2024 financial year at €450,000, while noting once again that the ceiling introduced in 2012 in the Decree of 9 August 1953 had not been raised since that date. As the Chairman has renounced the right to a company car, he does not currently receive any benefits in kind.

The tables below show the components of Luc Rémont's remuneration since his appointment as Chairman and Chief Executive Officer of EDF on 23 November 2022.

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Table no. 1 – Summary of the remuneration and options and shares allocated to the executive corporate officer

(in euros)	2023 financial year	2022 financial year
Luc Rémont, Chairman and Chief Executive Officer		
Remuneration allocated for the financial year (see details in table no. 2)	450,000	48,006[1]
Valuation of multi-year variable remuneration allocated during the financial year	none	none
Valuation of the options allocated during the financial year[2]	none	none
Valuation of the bonus shares allocated during the financial year[2]	none	none
TOTAL	**450,000**	**48,006**

n/a: not applicable

(1) Amount due prorata temporis from the appointment of Luc Rémont as Chairman and Chief Executive Officer on 23 November 2022. This amount included a benefit in kind of €279 which was not ultimately allocated as Luc Rémont waived to benefit of a company car.

(2) As shown in section 4.6.2, the Company has not implemented any stock options plans and the executive corporate officer receives no allocation of bonus shares.

The table below details the remuneration of all kinds paid to the Chairman and Chief Executive Officer during the 2022 and 2023 financial years or due in respect of the 2022 and 2023 financial years.

Table no. 2 – Summary of the remuneration of the executive corporate officer

	2023 financial year		2022 financial year	
(in euros)	Amounts due for the financial year	Amounts paid during the financial year	Amounts due for the financial year	Amounts paid during the financial year
Luc Rémont, Chairman and Chief Executive Officer				
Fixed remuneration	450,000	450,000	47,727[1]	47,727[2]
Variable remuneration	none	none	none	none
Multi-year variable remuneration	none	none	none	none
Exceptional remuneration	none	none	none	none
Remuneration of the office of Director	none	none	none	none
Benefits in kind	0	0	279[3]	0
TOTAL	**450,000**	**450,000**	**48,006**	**47,727**

n/a: not applicable

(1) Amount due prorata temporis from the appointment of Luc Rémont as Chairman and Chief Executive Officer on 23 November 2022.

(2) Amount paid calculated prorata temporis from the appointment of Luc Rémont as Chairman and Chief Executive Officer on 23 November 2022.

(3) This benefit in kind was ultimately not paid, Luc Rémont having waived the benefit of a company car.

Other components of remuneration

	2023 financial year		2022 financial year	
(in euros)	Amounts due for the financial year	Amounts paid during the financial year	Amounts due for the financial year	Amounts paid during the financial year
Luc Rémont, Chairman and Chief Executive Officer				
Remuneration of the office of Director	none	none	none	none
Employment contract	n/a	n/a	n/a	n/a
Signing allowance	n/a	n/a	n/a	n/a
Severance pay or end-of-service allowance	n/a	n/a	n/a	n/a
Non-competition clause	n/a	n/a	n/a	n/a
Supplementary pension scheme	n/a	n/a	n/a	n/a
Remuneration paid or allocated by a company included in the scope of consolidation (Article L. 233-16 of the French Commercial Code)	none	none	none	none
TOTAL	**0**	**0**	**0**	**0**

n/a: not applicable

Luc Rémont does not receive any compensation or benefits due or likely to be due from the Company as a result of the termination or change in his duties, nor any compensation relating to a non-competition clause. He has not entered into an employment contract with the Company and does not benefit from a supplementary pension scheme.

The Chairman and Chief Executive Officer is covered by the social protection schemes (health cover and provident cover) set up by EDF for the benefit of the Company's non-statutory executives and senior managers.

4.6.1.2 Remuneration of the Directors

Setting of the remuneration paid to the Directors for their term of office

After consulting the Appointments, Remuneration and Governance Committee, the Board of Directors submits to the General Meeting for approval a fixed annual sum, submitted for approval to the Minister of the Economy, to be allocated to the Directors according to the allocation rules defined by the Board (see "Remuneration of the Directors – 2023 financial year" below).

The Directors representing the employees hold office without remuneration in accordance with Law no. 83-675 of 26 July 1983 concerning the democratisation of the public sector, and the Chairman and Chief Executive Officer receives no remuneration for his or her term of office as a Director.

Pursuant to Order no. 2014-948 of 20 August 2014, the remuneration granted, in respect of their office, to Directors appointed by the General Meeting on a proposal from the French State in accordance with Article 6 of the Order, and who are civil servants of the State, shall be paid in full to the State budget.

As regards the other Directors appointed by the General Meeting on recommendation of the French State and who are not civil servants an Order of the French Minister for the Economy and Finance[1] states that the Company pays into the French State budget 15% of the remuneration allocated to them for their term of office, with the remaining 85% paid to the Director.

Regarding the Representative of the French State appointed in accordance with Article 4 of the Order of 20 August 2014, any remuneration that he/she is entitled to receive for the performance of his/her duties is paid to the State budget.

Remuneration of the Directors – 2023 financial year

The General Meeting convened on 28 June 2023 approved, on the proposal of the Board of Directors, a fixed annual sum to be allocated to the Directors as remuneration for their term of office, pursuant to Article L. 225-45 of the French Commercial Code, of €550,000 for the 2023 financial year. This amount comprises (i) €460,000 in respect of the annual remuneration budget, distributed among the Directors according to the allocation rules set out below, and (ii) a total additional remuneration of €90,000 allocated to certain Directors in respect of their participation in working groups or *ad hoc* Committees (see details below).

The methods for distributing the annual remuneration budget for the Directors, excluding any additional remuneration, are regularly reviewed by the Board of Directors and have remained unchanged since the 2011 financial year. The amount of the annual budget is divided between a fixed portion and a variable portion, each representing half of the budget, broken down as follows:

- the fixed portion is shared equally among the Directors in question; 50% of the fixed annual portion is paid during the financial year, in which it is allocated and the remaining 50% at the beginning of the following financial year;
- the distribution of the variable portion among the Directors is determined by applying a variable coefficient according to the type of meeting (Board or Committee) and according to the particular functions held by each Director (member or chairman of the Committee): a coefficient of 2 for the presence of a Director at a meeting of the Board of Directors, a coefficient of 1 for the presence of a Director as a member at a Committee meeting and a coefficient of 2 for the chairmanship of a Committee. The variable portion is divided by the total of the coefficients for the financial year in order to determine the unit value of the coefficient; the variable portion for a financial year is fully paid at the start of the following financial year.

At its meeting of 16 February 2023, the Board of Directors decided to allocate additional remuneration, in the total amount of €90,000, to the Independent Directors who took part in the Working Group set up by the Board as part of EDF's project to acquire General Electric's nuclear steam power activities (see section 2.1.4 "Signature of an exclusive agreement to acquire part of GE Steam Power's nuclear activities" of the notes to the financial statements) and to the Independent Directors who took part in the *Ad Hoc* Committee set up by the Board as part of the simplified tender offer initiated by the French State in 2022 and closed in 2023 (see section 1.2.3 "Significant events of the year - Completion of the simplified public tender offer"). This additional remuneration was allocated in the amount of €30,000 for the Chairmen of the Working Group and the *Ad Hoc* Committee and €10,000 for the Independent Directors who are members of the Working Group and the *Ad Hoc* Committee.

At its meeting of 12 June 2023, after consulting the Appointments, Remuneration and Governance Committee, the Board of Directors also decided to increase the annual remuneration budget for the Directors, excluding additional remuneration, from €440,000 to €460,000 to take into account the creation of the Commitments Committee.

No exceptional remuneration or other remuneration was paid to the Directors during the 2023 financial year by the Company or by a company included in the Company's scope of consolidation within the meaning of Article L. 233-16 of the French Commercial Code.

Remuneration of the Directors – 2024 financial year

Discussions are underway, under the direction of the Appointments, Remuneration and Governance Committee, which may lead to a change of the methods for allocating the annual remuneration package for the Directors during the 2024 financial year.

It is not planned to pay any exceptional remuneration or other remuneration to the Directors during the 2024 financial year by the Company or by a company included in the Company's scope of consolidation within the meaning of Article L. 233-16 of the French Commercial Code.

Summary tables of the remuneration paid and allocated to the Directors – 2022 and 2023 financial years

The tables below show the gross amounts of the remuneration allocated for the 2022 and 2023 financial years and paid during the said years to the Directors for their terms of office, in accordance with Article L. 225-45 of the French Commercial Code.

No exceptional remuneration or other remuneration was paid to the Directors during the 2022 and 2023 financial years, nor was allocated to them for the said years, by the Company or by a company included in the Company's scope of consolidation.

(1) Order of 5 January 2018, amending the Order of 18 December 2014 issued pursuant to Article 6-V of the Order of 20 August 2014.

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Directors whose terms of office are ongoing as at 31 December 2023	2023 financial year		2022 financial year	
	Remuneration allocated in 2023[1]	Remuneration paid in 2023[2]	Remuneration allocated in 2022[1]	Remuneration paid in 2022[2]
Nathalie Collin	42,579	41,562	41,107	29,205
Bruno Crémel	40,609	70,344	39,889	40,149
of which additional remuneration paid for participation in the Ad Hoc Committee[3]		*30,000*		
Gilles Denoyel	41,102	40,750	40,295	41,238
Anne-Marie Descôtes[4]	36,177	13,926	3,471	n/a
Delphine Gény-Stephann[4]	39,624	33,443	25,724	2,735
Marie-Christine Lepetit	47,997	44,403	43,948	46,139
Colette Lewiner	44,057	61,156	40,701	46,139
of which additional remuneration paid for participation in the Working Group and the Ad Hoc Committee[3]		*20,000*		
Claire Pédini	43,564	42,373	41,919	43,960
Philippe Petitcolin	44,057	81,562	41,107	39,059
of which additional remuneration paid for participation in the Working Group and the Ad Hoc Committee[3]		*40,000*		
Luc Rémont[4]	n/a	n/a	n/a	n/a
Michèle Rousseau	42,087	41,562	41,107	39,604
Alexis Zajdenweber[4]	38,147	22,790	12,335	n/a
TOTAL (IN EUROS)	**460,000**	**493,871**	**371,603**	**328,228**

n/a: not applicable

(1) The remuneration allocated for a financial year includes the entirety of the fixed portion and the variable portion due for the financial year.

(2) The remunerations paid during a financial year include 50% of the fixed portion and the entirety of the variable portion for the preceding financial year and 50% of the fixed portion for the current financial year.

(3) As regards the remuneration for participation in the Ad Hoc Committee and the Working Group, see the section "Remuneration of the Directors – 2023 financial year".

(4) Directors whose term of office began during the 2022 financial year.

Director whose term of office ended during the 2022 financial year	2023 financial year		2022 financial year	
	Remuneration allocated in 2023	Remuneration paid in 2023[1]	Remuneration allocated in 2022[2]	Remuneration paid in 2022[3]
Véronique Bédague-Hamilius	n/a	4,871	12,136	28,701
François Delattre	n/a	13,869	23,869	35,792
Céline Fornaro	n/a	9,030	9,196	166
Jean-Bernard Lévy	n/a	n/a	n/a	n/a
Martin Vial	n/a	8,524	16,867	38,491
TOTAL (IN EUROS)	**N/A**	**36,294**	**62,068**	**103,150**

(1) The payments made in 2023 include 50% of the fixed portion and the entirety of the variable portion for the 2022 financial year paid in early 2023.

(2) The remuneration allocated in 2022 includes the fixed portion due for 2022, determined pro rata to the term of office in the financial year, as well as the variable portion for the 2022 financial year.

(3) The payments made in 2022 include 50% of the fixed portion and the entirety of the variable portion for the 2021 financial year, as well as the fixed portion due in respect of 2022 determined pro rata to the term of office in the financial year.

4.6.2 Stock options – Bonus shares

The Company has not implemented any stock options plans and the corporate officers receive no allocation of bonus shares (performance shares).

4.6.3 Equity ratios[1] and evolution in remuneration 2019-2023

The table below shows the evolution over the past five years in the ratio between the level of remuneration of the Chairman and Chief Executive Officer and the average remuneration on a full-time equivalent basis of EDF employees (excluding the remuneration of the Chairman and Chief Executive Officer), and the ratio between the level of total remuneration of the Chairman and Chief Executive Officer and the median remuneration on a full-time equivalent basis of EDF employees (excluding the remuneration of the Chairman and Chief Executive Officer), as well as the organic changes in Group EBITDA over the same period.

	2023	2022	2021	2020	2019
Remuneration of the Chairman and Chief Executive Officer	450,000	455,059	453,660	453,660	453,660
Changes in the remuneration of the Chairman and Chief Executive Officer[1]	0.0%[2]	0.0%	0.0%	0.0%	0.2%
Equity ratio/Average remuneration[3]	5.8	6.3	6.6	6.6	6.8
Equity ratio/Median remuneration[3]	6.2	6.8	7.2	7.2	7.4
Changes in average salary[1][4]	+7.3%	+5.8%	-0.2%	+2.87%	+3.66%
Changes in median salary[1][4]	+9.0%	+6.2%	-0.1%	+3.54%	+4.16%
Organic changes in the Group EBITDA[1]	+903.4%	-128.2%	+11.3%	-2.70%	+8.40%

(1) Change observed in year N compared to year N-1.

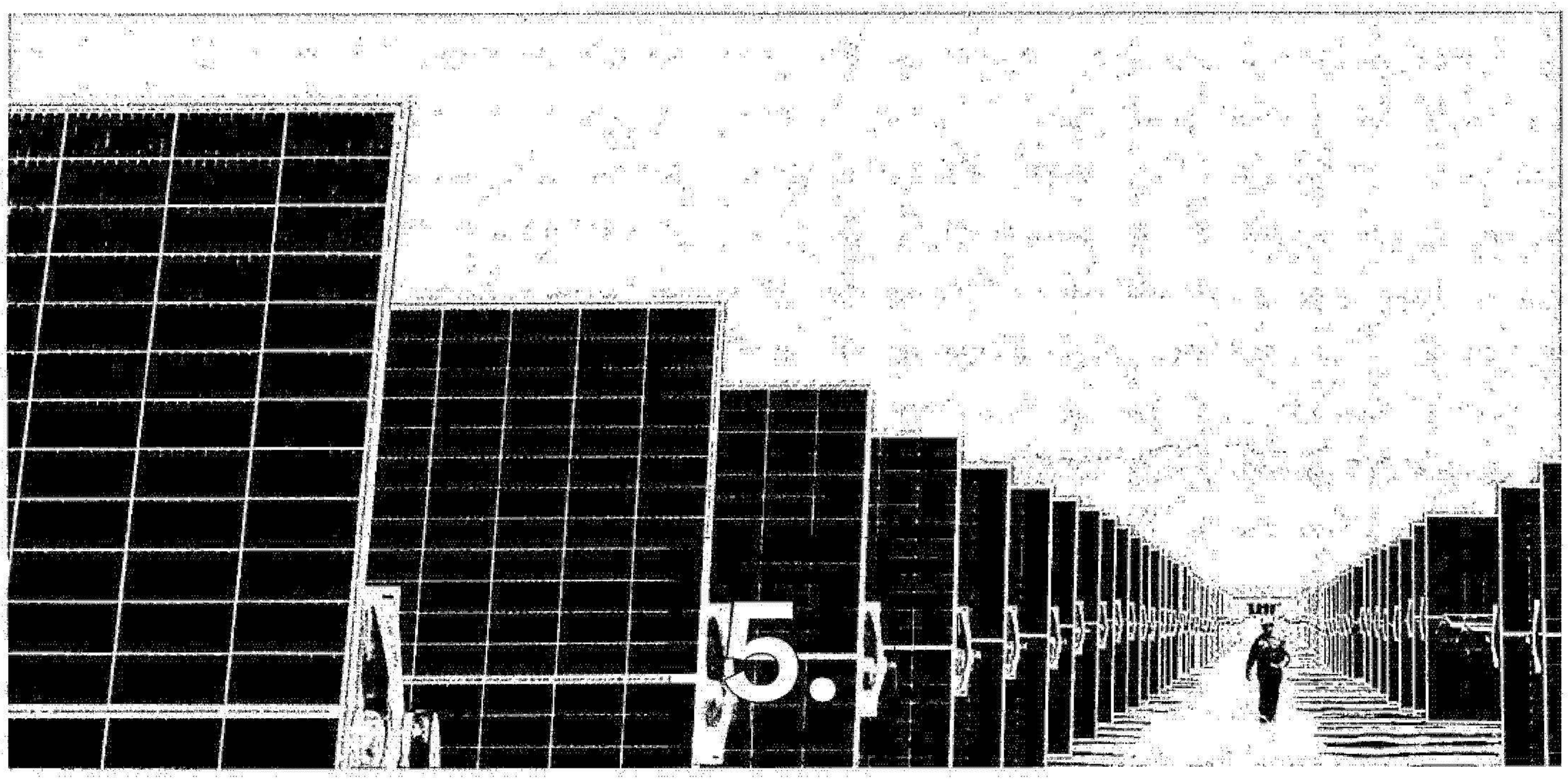
(2) Change calculated on the basis of the annual fixed remuneration only, i.e. €450,000, as Luc Rémont does not receive any benefits in kind, unlike his predecessor.

(3) The salaries of EDF's employees taken into account include the fixed salary, the variable portion and all bonuses, including those related to the status of EGI employees, as well as any benefits in kind.

(4) The significant change in the average salary and the median salary observed between the 2022 and 2023 financial years is due to the implementation by EDF in 2023 of exceptional salary measures in a context marked by the European energy crisis and historically high inflation.

The employees taken into account for the calculation of the ratios above are all the full-time equivalent employees of EDF in France, continuously present over the year, *i.e.* approximately 60,000 employees in the 2023 financial year, which represents all of EDF's employees in France and nearly 50% of the Group's employees in France.

(1) Ratios were established in accordance with guidelines published by the AFEP.



5. Financial performance and outlook

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5.1 Review of the financial situation and results 2023

5.1.1 Key figures

The financial information presented in this document is prepared from the EDF group's consolidated financial statements at 31 December 2023.

The exceptional results of the Group were driven by a very good operational performance, achieving a significant 41.4TWh increase in nuclear generation in France in a context of historically high prices. Coming after the sudden drop in nuclear power output in France in 2022 due to the stress corrosion phenomenon and exceptional regulatory measures to limit price rises for consumers, these results have reduced net financial debt.

(in millions of euros)	2023	2022	Variation	Variation (%)	Organic variation (%)
Sales	139,715	143,476	(3,761)	-2.6	-2.1
EBITDA	39,927	(4,986)	44,913	n.a.	n.a.
Operating profit (EBIT)	13,174	(19,363)	32,537	n.a.	n.a.
Income before taxes of consolidated companies	9,825	(22,916)	32,741	n.a.	n.a.
EDF net income	10,016	(17,940)	27,956	n.a.	n.a.
Net income excluding non-recurring items [1]	18,481	(12,662)	31,143	n.a.	n.a.
Net income excluding non-recurring items, adjusted for the remuneration of hybrid notes	17,851	(13,268)	31,119	n.a.	n.a.
Group cash flow [2]	9,288	(24,603)	33,891	n.a.	n.a.
Net financial debt [3]	54,381	64,500	(10,119)	-15.7	n.a.

n.a.: not applicable

(1) Net income excluding non-recurring items is not defined by IFRS and is not directly visible in the Group's consolidated income statement. It corresponds to net income excluding non-recurring items, net changes in the fair value of energy and commodity derivatives (excluding trading activities), and net changes in the fair value of debt and equity instruments, net of tax (see the section 5.1.3.6 "Net income excluding non-recurring items").

(2) Group cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not comparable with indicators of the same name reported by other companies. It is equal to the operating cash flow less asset disposals, income taxes paid, net financial expenses disbursed, net allocations to dedicated assets, and dividends paid in cash (see section 5.1.4).

(3) Net financial debt is not defined in the accounting standards and is not directly visible in the Group's consolidated balance sheet (see section 5.1.4).

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5.1.2 Economic environment

5.1.2.1 Market prices for electricity and the principal energy sources

5.1.2.1.1 Spot electricity prices in Europe[1]

	France	United Kingdom	Italy	Belgium
Average baseload price for 2023 *(in €/MWh)*	96.9	108.0	127.8	97.3
Variation in average baseload prices, 2023/2022	(179.0)	(132.1)	(180.0)	(147.3)
Average peakload price for 2023 *(in €/MWh)*	109.6	N/A	138.7	109.3
Variation in average peakload prices, 2023/2022	(207.4)	N/A	(205.0)	(163.0)

N/A: figures in euros not available from the stock market website

In France, spot electricity prices were significantly lower than in 2022 (-65%), ranging between -€134.9/MWh and €276.1/MWh in 2023. The general easing of spot prices resulted from the following factors in the supply-demand balance[2]:

- consumption decreased by 3.3% in 2023 compared to 2022;
- French electricity output rose by 11%, principally due to higher generation of nuclear power (+15% vs 2022), wind power (+33% vs 2022), and solar power (+20% vs 2022), meaning that less use was made of more costly thermal power plants (-35% vs 2022)[3]. Wind power output reached 5.5GW this year, with total installed capacity of 23GW at the year-end[4]. Nuclear power accounted for 67% of the electricity generated in France;
- as a result of this electricity output and restrained consumption, France was a net exporter in every month of 2023, as opposed to just two months in 2022. The country's net export balance was higher in 2023 due to the lower level of imports (-40% vs 2022) and an increase in exports (+66% vs 2022). French spot prices were thus lower on average than in neighbouring European counties in several months of the year (June, August, September, October and December). The French net export balance for 2023 was 50.3TWh, and exports were principally to Italy, Switzerland and the United Kingdom.

2023 saw several episodes of negative or zero prices when renewable energy output was high: there were 147 hours of negative spot prices during the year, compared to 4 in 2022. These episodes affected several European countries and prices reached the lowest permitted EPEX price (-€500/MWh), notably in Germany and the Netherlands. Other European countries also benefited from a decrease in commodity prices which drove spot prices down all over Europe in 2023.

(1) **France:** average day-ahead EPEXSPOT price;
Belgium: average day-ahead Belpex price;
United Kingdom: average day-ahead Nordpool price;
Italy: average day-ahead GME price.
(2) Source: ENTSO-E Transparency Platform.
(3) Gas, coal and oil-fired plants.
(4) Source: RTE.

5.1.2.1.2 Forward electricity prices in Europe [1]

	France	United Kingdom	Italy	Belgium
Average forward baseload price under the 2024 annual contract for 2023 *(in €/MWh)*	162.7	125.5	148.2	128.9
Variation in average forward baseload price under the annual contracts, 2023/2022	(205.9)	(140.6)	(123.2)	(126.1)
Forward baseload price under the 2024 annual contract at 27 December 2023 *(in €/MWh)*	94.9	87.7	114.2	94.9
Average forward peakload price under the 2024 annual contract for 2023 *(in €/MWh)*	237.7	148.0	167.1	n.a.
Variation in average forward peakload price under the annual contracts, 2023/2022	(363.0)	(202.1)	(139.9)	n.a.
Forward peakload price under the 2024 annual contract at 27 December 2023 *(in €/MWh)*	109.7	98.1	123.9	n.a.

n.a.: not applicable.

The annual contract forward prices for baseload and peakload electricity were generally lower than in 2022 in all European countries.

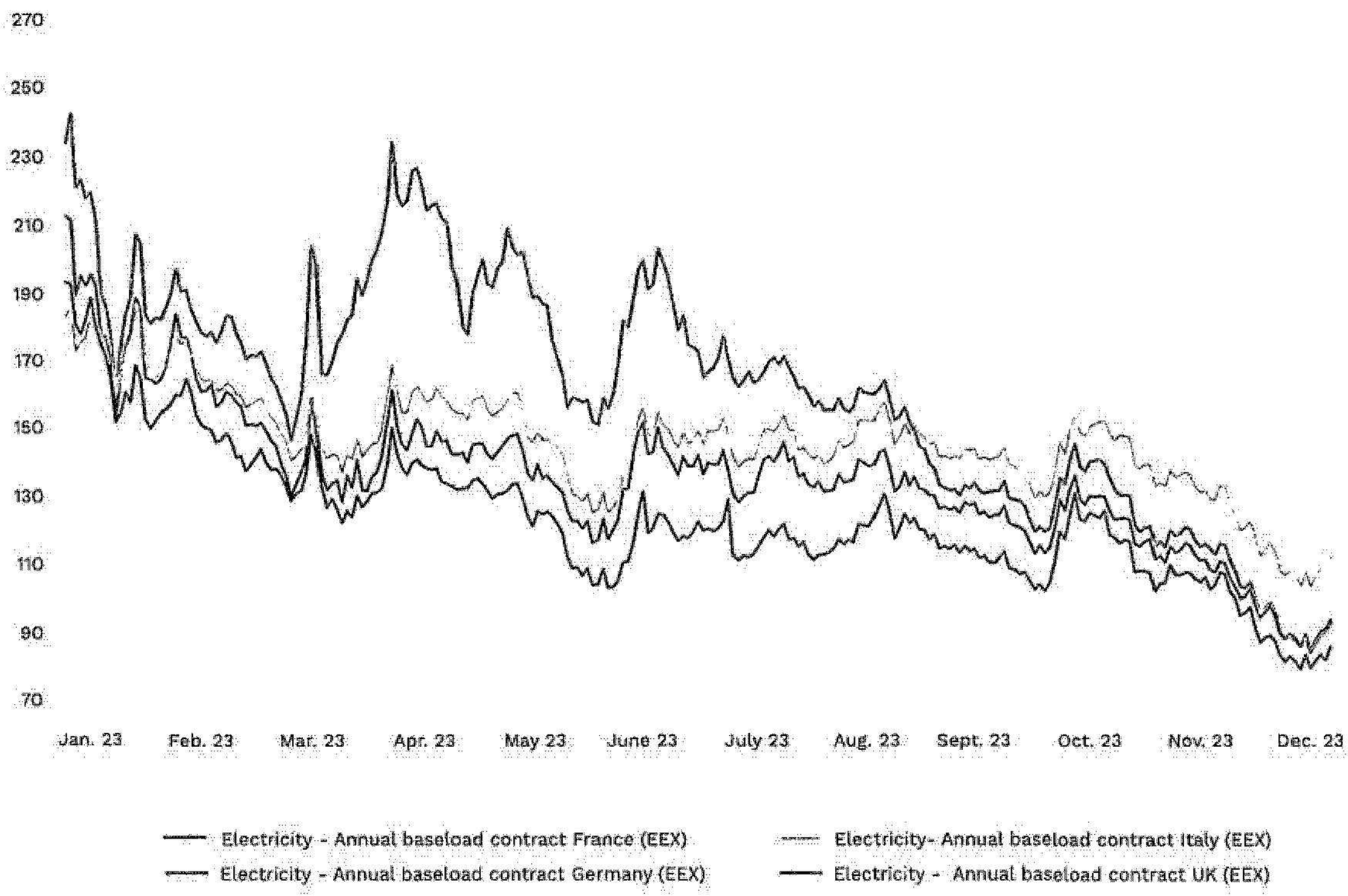
In **France**, the average annual contract baseload price for next-year delivery was €162.7/MWh for 2023, down by 56% compared to 2022. This price fluctuated between €86.0/MWh and €243.7/MWh and ended the year at €94.9/MWh (for comparison, the 2023 forward price at the end of 2022 was €271.7/MWh).

The forward price for 2024 deliveries mainly echoed the downturn in gas and coal prices and was also influenced by the lasting decrease in demand and the progressive recoupling of several nuclear reactors. However, this easing of forward electricity prices compared to 2022 involved contrasting developments throughout the year, depending on the delivery horizon. In the first half of the year, several announcements about the French nuclear fleet elicited strong price reactions, especially for winter supplies. Prices for Q1 2024 deliveries varied widely, between €82.6/MWh and €453.0/MWh, with an average differential of €174.4/MWh from summer supplies. The upsurge in prices subsided progressively over the second half of the year as the winter risk premium diminished. From the summer onwards, the market took account of the year's actual events: an increase in nuclear output throughout the year (+15% vs 2022), record-high European gas stocks, generally lower French spot prices than in neighbouring European countries in several months of the year, occasional record export levels (+66% in 2023 vs 2022), and a durable decline in demand compared to the reference years 2017-2019 (-9.8% in 2023) [2].

Additionally, at the end of the year water flow coefficients were high and above their 2022 levels, and early winter weather conditions were mild (with temperatures +2.3°C above seasonal norms in December).

The differential with the annual contract prices in Germany, Europe's most liquid market, fluctuated widely, ranging from -€1.1/MWh to €77.6/MWh. The French price had been constantly below the German price in 2022, but this situation reversed in December 2023, indicating greater confidence in the French electricity system.

Principal forward electricity prices in Europe (baseload year ahead), in €/MWh



(1) **France, Italy, Belgium, United Kingdom**: year-ahead EEX price.
(2) Source: ENTSO-E Transparency Platform; consumption figures unadjusted for weather effects.

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5.1.2.1.3 CO_2 emission certificate prices

The price of CO_2 emission certificates for delivery in December Y stood at an average €85.5/t for 2023 (+6% or +€4.5/t vs 2022).

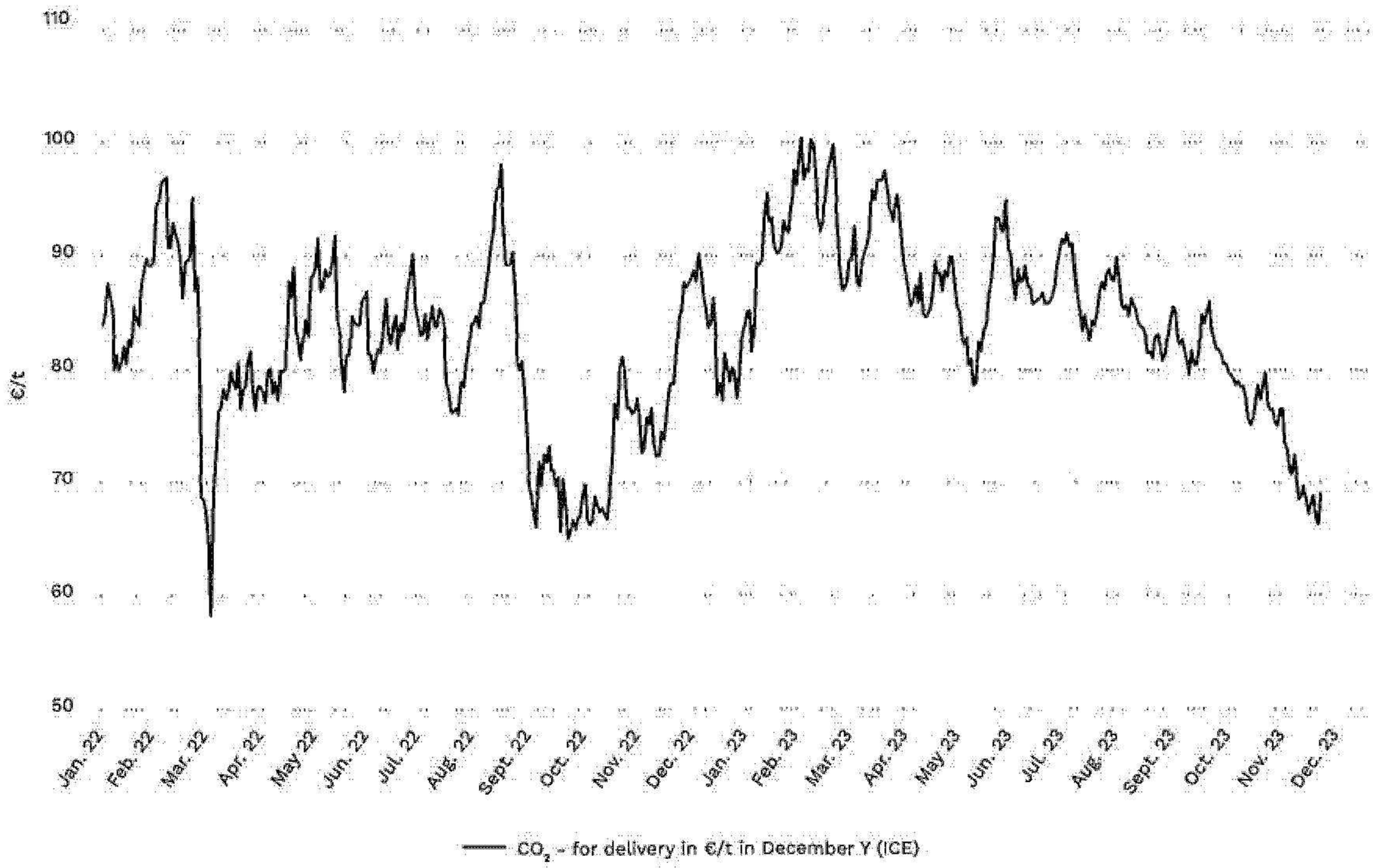
This price showed considerable volatility and was relatively high in the first half-year, with certificates trading within a range of €77.4/t and €100.3/t (a record high, on 27 February). It then collapsed in the second half-year, ending the year at €69/t, €15/t below the December 2022 certificate at 31 December 2022.

On several occasions, the high volatility on the CO_2 certificates market was decorrelated from commodity price trends, indicating its sometimes speculative nature.

During the first half of the year, CO_2 emission certificate prices remained high, partly due to the action of the MSR (Market Stability Reserve) which provides a legislative framework and long-term visibility for the volumes of certificates traded. In March the European Parliament announced that it was maintaining the intake rate for surplus CO_2 emission certificates transferred to the MSR at 24% instead of the 12% initially decided for the period 2024-2030. This legislative support is intended to make the system more resilient to major shocks by adjusting the supply of certificates available at auction. The markets also rose in response to the European Commission's announcement in May that auctions of certain REPOwerEU project Innovation Fund certificates would be deferred to 2024.

During the second half of the year, CO_2 emission certificate prices were influenced by commodity prices, which were following a downward trend. That trend was partly driven by falling demand for electricity and gas from large high-emission industrial customers, such that demand for CO_2 emission certificates was limited.

CO_2 emission certificate prices in €/t for deliveries in December(1)



5.1.2.1.4 Fossil fuel prices(2)

	Coal *(US$/t)*	Oil *(US$/bbl)*	Natural gas *(€/MWh)*
Average price for 2023	126.3	82.2	50.6
Average price variation, 2023/2022	(95.3)	(16.9)	(56.7)
Highest price in 2023	178.0	96.6	69.5
Lowest price in 2023	92.1	71.8	32.6
Price at 29 December 2023	97.6	77.0	35.0 (27/12)
Price at 29 December 2022	185.5	85.9	77.3 (28/12)

The **annual gas contract price** for next-year delivery at the French PEG hub stood at an average €50.6/MWh for 2023, substantially lower than in 2022 (-53% or -€56.7/MWh vs 2022). It ended the year at €35.0/MWh, down by €42.3/MWh from end-2022.

The observed loosening on the gas markets is primarily explained by the gradual accumulation of gas stocks, which were then maintained at record highs during the second half of the year. European stocks were almost at maximum capacity as winter began (99.6% in Europe, and 100% in France in early November). Stock levels remained high thanks to robust deliveries, particularly from Norway, and limited withdrawals due to mild weather and low industrial demand. Market actors were also reassured by the arrival of large-scale LNG deliveries, reflecting a diversification of gas imports in response to measures decided against Russia.

(1) Average ICE prices for the annual contract, Phase IV (2021-2030).
(2) **Coal**: average ICE prices for delivery in Europe (CIF ARA) for the next calendar year (US$/t) ;**Oil**: ICE price for Brent crude oil (front month) (US$/bbl); **Natural gas**: average Powernext price (PEG Nord – €/MWh).

France benefited from four gas terminals in 2023, principally served by cargo ships from the USA, Qatar, Algeria and Nigeria. Despite strikes in March at the French gas terminals, the ships were able to unload at other European ports. This situation also illustrated the European network's flexibility: deliveries were diverted to seven LNG import terminals based at FSRUs (Floating Storage and Regasification Units) which have been operational since 2022. Finally, the competition from Asia which had raised fears of supply risks turned out to be less significant than expected for Europe, and did not lead to any marked rise in prices.

Gas prices, although lower than in 2022, remained volatile in 2023, reflecting some nervousness about European supplies. A spread between winter and summer prices persisted throughout the year, in line with uncertainties about temperatures and wind power output. In the second half of the year, prices were also affected by geopolitical tensions with potential consequences for worldwide gas supplies. The start of strikes in September at the Australian companies Chevron and Woodside, which produce 10% of the world's LNG supplies, triggered an upturn in prices. Finally, the end of the year was marked by the Middle East crisis that began with Hamas' attack on Israel on 7 October, stoking fears that the conflict would spread to the whole region and block the principal maritime routes used by the world gas industry.

Coal prices for next-year delivery in Europe's principal ports, "ARA" (Amsterdam, Rotterdam and Antwerp), stood at an average $126.3/t in 2023, a substantial decrease (-43% or $(95.3)/t *vs.* 2022). The year-end coal price was $97.6/t, down by $87.8/t compared to 2022.

The 2024 annual contract price declined greatly over the first half of the year: at the end of May it reached its lowest level since January 2022, before the Russia-Ukraine conflict, at $92.1/t. This downward trend was sustained by the lower use made of coal-fired plants in mild temperatures, as robust supplies kept stocks high at the European ports. Coal prices moved in the wake of prices for gas, a competing source of electricity generation. Fears over gas supplies retreated over the first half of the year, easing tensions on the coal market. Stocks remained high in the three ARA ports over the whole of 2023 (+0.8mt on average vs 2022). In the final quarter, robust wind power output helped to limit the use of coal-fired facilities which weighs prices down.

Oil prices stood at an average $82.2/bbl for 2023 (-17% or -$16.9/bbl *vs.* 2022). Brent prices were volatile in 2023, following no clear trend and rising and falling in response to several announcements.

2023 Brent prices fluctuated within a wide range of $71/bbl to $88/bbl during the first half of the year. The lifting of Covid restrictions in China triggered a leap in oil prices as travel resumed. Conversely, the collapse of three American banks (Silvergate Bank, Silicon Valley Bank and Signature Bank) and the troubles of Crédit Suisse in March brought prices crashing down, and they hit their lowest level in nearly 15 months on 17 March. Being indexed on the US dollar, oil prices are highly sensitive to worldwide macro-economic conditions, and these events in the banking system hinted at a risk of recession, with falling demand and therefore falling prices. In response, OPEC+ members announced several cuts to their oil production over the year.

In the second half of the year, oil prices moved upwards, boosted by fears about world production levels, and attained their highest level since November 2022 in September at $96.6/bbl, before falling back at the end of the year. A series of events contributed to this rise: the Ukrainian drone attack on Russia's Black Sea naval base Novorossibisk in August, followed by the announcement in early September by Saudi Arabia and Russia that they were again cutting their oil production by 1 million and 0.3 million barrels a day respectively until the end of December, and finally Russia's announcement in late September of a ban on its diesel and petrol exports (which respectively account for 16% and 3% of the world's maritime fuel trade). The oil price downturn observed from October took place in a context of uncertainty over worldwide economic prospects, particularly changes in the FED's base rates. American crude oil stocks rose at the end of the year, while growth forecasts for China remained moderate and this affected demand.

Natural gas and oil prices



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5.1.2.2 Consumption of electricity and natural gas

5.1.2.2.1 Consumption of electricity and gas in France

The lower level of **electricity consumption** in France ((16.3) TWh or -3.6%) is explained by energy-sufficient behaviour by consumers, high retail prices, and a weather effect.

Gas consumption in France during 2023 was down by 11.8% compared to 2022. The decrease concerned all sectors, both in industry and public distribution. It resulted from milder weather in 2023 combined with consumers' efforts to moderate their energy consumption.

5.1.2.2.2 Consumption of electricity and gas in the United Kingdom

Electricity and **gas** consumption in the United Kingdom[1] declined by -2.1% and -6.3% respectively between 2022 and 2023.

5.1.2.2.3 Consumption of electricity and gas in Italy

Electricity consumption in Italy[2] totalled 308.4TWh in 2023, down by 2.7% from 2022 as a result of consumers' efforts to restrain their consumption.

Demand for natural gas in Italy saw a significant decrease (-8.6% vs 2022) to 63.1bcm. All segments were concerned, with observed downturns of -4.2% in industrial consumption, -7.4% in residential consumption and -16.1% in consumption by power plants.

5.1.2.3 Sales tariffs for electricity and natural gas

In **France**, the regulated sales tariffs for electricity were raised on 1 February 2022 by an average +4% including taxes for all consumers in both the residential and business segments. This increase resulted from the French government's introduction of a tariff cap (*bouclier tarifaire*) to protect consumers against the exceptional rises in energy prices. Regulated electricity sales tariffs (excluding taxes) were frozen until the end of 2022 under this measure, and consequently the tariff increase from 1 August 2022 proposed by the French energy regulator *Commission de régulation de l'énergie* (4.10% excluding taxes for residential customers, and 3.73% excluding taxes for business customers) was not applied.

In 2023 the French government decided to extend the tariff cap, limiting the increase in regulated sales tariffs compared to prices at 31 December 2022 for all categories of eligible consumers. As a result, the "blue" tariffs for residential and business customers were raised by 15% including taxes (respectively 20% and 19.9% excluding taxes) from 1 February 2023, and 10% from 1 August 2023.

In the **United Kingdom**, an Energy Price Cap on the variable electricity and gas tariffs (Standard Variable Tariff – SVT) for residential consumers was first introduced on 1 January 2019. Following a significant increase in supply costs caused by the rise in energy prices from September 2021, the British energy market regulator Ofgem decided in 2022 that this price cap, which was initially revised every 6 months, would be revised every 3 months from January 2023 to better reflect the costs, risks and uncertainties faced by power suppliers.

After the fall in market prices from the beginning of 2023, the Energy Price Cap was reduced by 23% on 1 April 2023 following a 21% increase on 1 January. The downward revision continued in July and October, with further reductions of 37% and 7% respectively, bringing the cap to £1,834 a year in the final quarter for a residential electricity and gas customer (with standard consumption).

Given the particularly high level of the Energy Price Cap at 1 January 2023 (£4,279 a year), the British government also introduced an Energy Price Guarantee for households' electricity and gas bills, under which the excess difference between the SVT and the Energy Price Cap is borne by the government. The maximum amount payable by a standard residental customer in the United Kingdom was thus £2,500 a year between 1 October 2022 and 31 March 2023, raised to £3,000 a year for the period 1 April 2023 to 31 March 2024. Given the current level of the SVT, the Energy Price Guarantee has not been activated since 1 July 2023 (although technically it remains available until 31 March 2024 in the event of another price rise taking the Energy Price Cap above £3,000 a year).

In parallel, the British government also introduced a one-off £400 rebate on energy bills (the Energy Bill Support Scheme), which was given to all households between 1 October 2022 and 31 March 2023.

A similar mechanism to the Energy Price Guarantee, the Energy Bill Relief Scheme, was also introduced for business customers from 1 October 2022. It was later replaced by the Energy Bills Discount Scheme running from 1 April 2023 until 31 March 2024.

In **Italy**, the average PUN TWA (Time Weighted Average Single National Price) electricity tariff for 2023 was €127.2/MWh, down by -58.2% from 2022 (when the average tariff was €304.0/MWh). This decrease is explained by the recovery from the energy crisis that had marked the previous year. Over the first six months of the year, the PUN was noticeably lower than in 2022, and remained stable over the second half of the year. The spot price for gas fell by 65.3% compared to 2022 to €0.448/smc[3][3] as a result of the more secure gas supplies at European level.

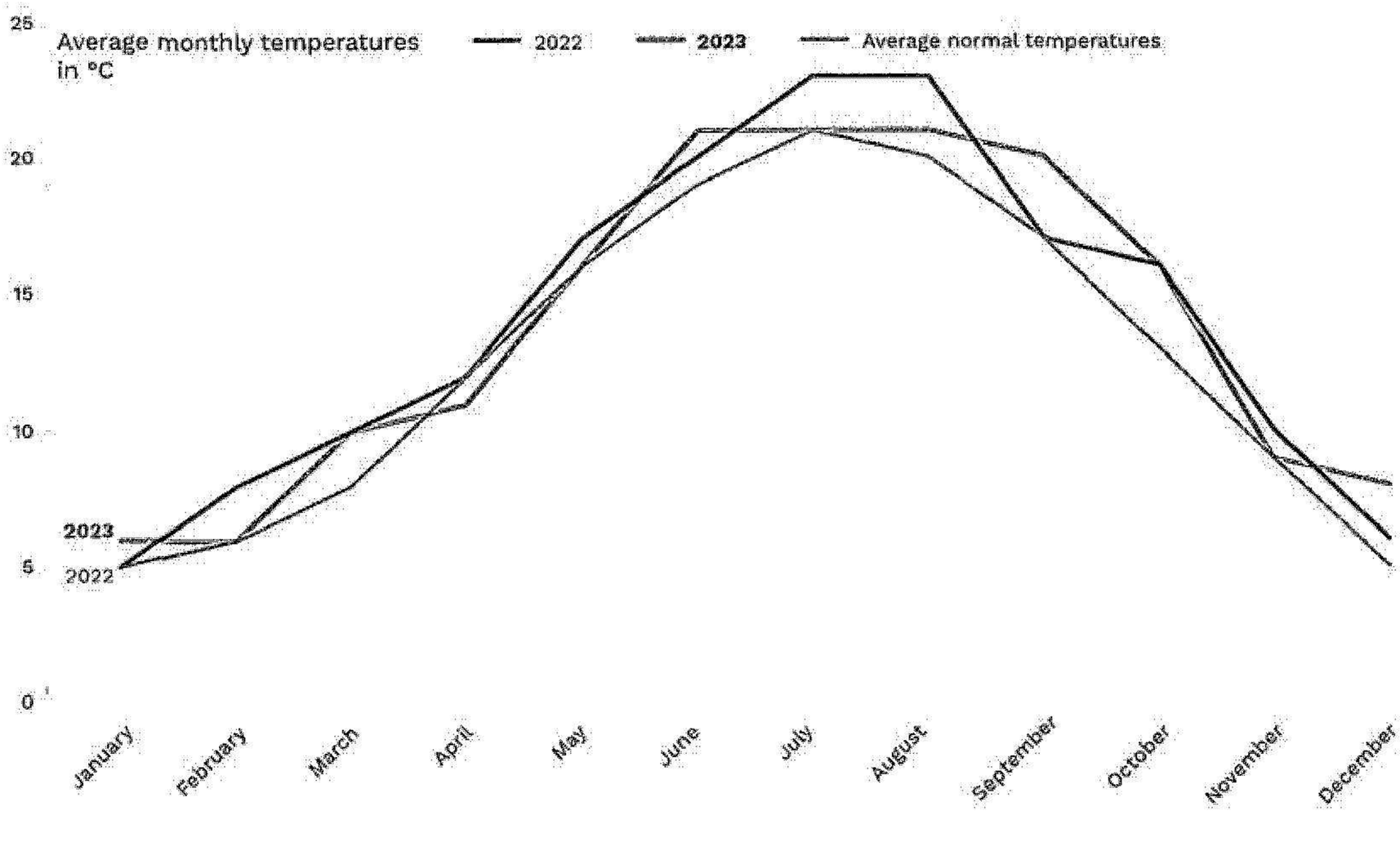
(1) *Source: EDF Energy estimates.*
(2) Source of data for Italy: raw data provided by Terna, the Italian national grid operator, and adjusted by Edison.
(3) €0.01/smc³ = 1 €/MWh.

5.1.2.4 Weather conditions: temperatures and hydrological conditions in France

5.1.2.4.1 Temperatures in France

2023 and 2022 were France's warmest years since 1980, with temperatures above the normal average estimated at just 12.6°C. As in 2022, 2023's average temperatures for spring, summer, autumn and winter were no more than 0.7°C apart, and the average temperature for the year was 13.8°C in 2023 (vs 14°C in 2022).

Average monthly temperatures (1) (2) in France



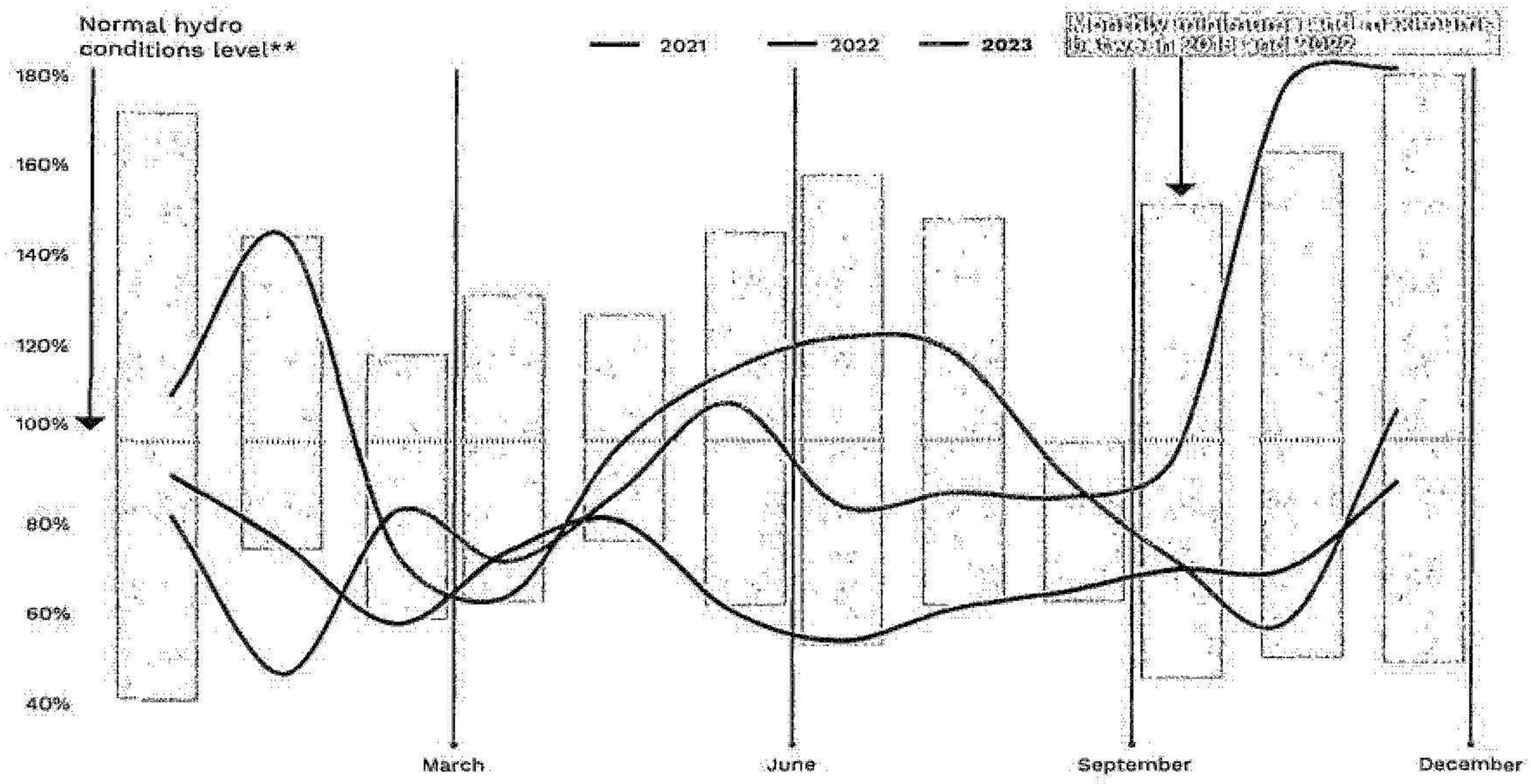
(1) Average temperatures observed in 32 French cities, weighted for their electricity consumption.
(2) Source: Météo France.

5.1.2.4.2 EDF's hydrological conditions in France

2023 was a year of very variable hydrological conditions. Shortfalls in water flow coefficients during the first 10 months of the year except June were followed by well above normal coefficients in the last two months, which saw considerable rainfall that led to very high water levels in many reservoirs. The accumulated producible hydropower observed in November and December was the highest since 1986, at 10.2TWh.

Overall, above-normal water levels in the last 2 months made up for the earlier shortfalls, and the annual average water level index was close to normal (0.98).

EDF's hydrological conditions in France*



** Weekly monitoring of French reservoir levels by the EDF group's statistical observatory (Miréor project) as far as the coast.*
*** Reference period 1960-2020.*

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5.1.3 Analysis of the business and the consolidated income statement for 2023

Sales and EBITDA are analysed by business segment (France – Generation and supply, France – Regulated activities, EDF Renewables, Dalkia, Framatome, United Kingdom, Italy, Other international and Other activities). EBIT and net income are analysed without any breakdown.

(in millions of euros)	2023	2022
Sales	**139,715**	**143,476**
Fuel and energy purchases	(80,989)	(121,010)
Other external purchases*	(10,493)	(9,420)
Personnel expenses	(15,470)	(15,236)
Taxes other than income taxes	(4,064)	(3,163)
Other operating income and expenses	11,228	367
EBITDA	**39,927**	**(4,986)**
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	363	(849)
Net depreciation and amortisation	(11,161)	(11,079)
(Impairment)/reversals	(13,011)	(1,762)
Other income and expenses	(2,944)	(687)
EBIT	**13,174**	**(19,363)**
Cost of gross financial indebtedness	(3,830)	(1,730)
Discount effect	(3,988)	174
Other financial income and expenses	4,469	(1,997)
Financial result	**(3,349)**	**(3,553)**
Income before taxes of consolidated companies	**9,825**	**(22,916)**
Income taxes	(2,470)	3,926
Share in net income of associates and joint ventures	257	759
Net income of discontinued operations	-	6
CONSOLIDATED NET INCOME	**7,612**	**(18,225)**
EDF net income	**10,016**	**(17,940)**
EDF net income – continuing operations	10,016	(17,946)
EDF net income – discontinued operations	0	6
Net income attributable to non-controlling interests	**(2,404)**	**(285)**
Net income attributable to non-controlling interests – continuing operations	(2,404)	(285)
Net income attributable to non-controlling interests – discontinued operations	-	-

** Other external expenses are reported net of capitalised production.*

5.1.3.1 Sales

Sales amounted to €139,715 million in 2023, down by €3,761 million (-2.6%) compared to 2022. Excluding the effect of movements in exchange rates (-€435 million) and changes in the scope of consolidation (-€243 million), sales registered an organic decrease (-2.1%).

5.1.3.1.1 Change in Group sales and breakdown by segment

The following table shows sales by segment, excluding inter-segment eliminations.

(in millions of euros)	2023	2022	Variation	Variation (%)	Organic variation (%)
France – Generation and supply[1]	64,244	48,686	15,558	32.0	31.9
France – Regulated activities[2]	19,413	18,082	1,331	7.4	7.4
EDF Renewables	2,031	2,158	(127)	-5.9	2.6
Dalkia	6,395	6,663	(268)	-4.0	-3.6
Framatome	4,066	4,122	(56)	-1.4	-2.0
United Kingdom	21,132	16,098	5,034	31.3	33.3
Italy	17,787	29,302	(11,515)	-39.3	-39.5
Other international	5,583	5,659	(76)	-1.3	-1.7
Other activities	7,677	19,724	(12,047)	-61.1	-59.7
Inter-segment eliminations	(8,613)	(7,018)	(1,595)	22.7	22.7
GROUP SALES	**139,715**	**143,476**	**(3,761)**	**-2.6**	**-2.1**

(1) Generation, supply and optimisation in mainland France, and sales of engineering and consulting services.

(2) Regulated activities comprise distribution in mainland France, which is carried out by Enedis, EDF's island activities and the activities of Électricité de Strasbourg. In mainland France, distribution network activities are regulated via the network access tariff TURPE (Tarifs d'Utilisation des Réseaux Publics d'Électricité).

5.1.3.1.1.1 France – Generation and supply

Sales by the **France – Generation and supply** segment amounted to €64,244 million in 2023, an organic increase of €15,558 million (+31.9%).

On the downstream market, much higher market prices led to an increase of +€15,815 million in amounts invoiced to final customers. The State also compensated EDF for the €13,899 million loss of income caused by France's tariff cap and buffer mechanisms in 2023. This compensation is included in Other operating income and expenses (impacting EBITDA).

The milder weather in 2023 had a negative impact of €237 million.

Income from ARENH scheme sales to alternative suppliers was down by €879 million because the additional ARENH volumes made available in 2022 had no equivalent in 2023 (this had a positive impact on EBITDA).

Resales of electricity acquired under purchase obligations were up by €867 million, mainly due to a rise in spot and forward market prices (the effect on EBITDA was neutral because income and expenses relating to purchase obligations are compensated by the CSPE mechanism).

Capacity auction sales had a negative impact of €348 million.

Gas sales had a positive impact of €1,066 million, driven in almost equal proportions by price and volume rises.

Finally, sales by the energy aggregation subsidiaries were down by €2,029 million (with a small positive impact on EBITDA).

Electricity generation

In France, the 41.4TWh increase in nuclear power output to 320.4TWh, in the upper end of the range announced for the year, illustrates EDF's very good operational performance. This turnaround was achieved by good management of the stress corrosion repairs and reactor outages, thanks to efficiency and reactivity of the teams to improve the fleet availability.

The 6.3TWh increase in hydropower output in France, which reached 38.7TWh[1], is explained by high availability and better hydrological conditions (see section 5.1.2.4 "Weather conditions: temperatures and hydrological conditions in France").

As a result of better nuclear and hydropower output and narrower spreads, thermal power plants were used to produce 6.7TWh, 4.5TWh less than in 2022.

Sales volumes to final customers (a market segment that includes the local distribution companies and excludes foreign operators) were stable. The weather effect is estimated at (0.8)TWh. The decline in unit consumption observed since 2022 is estimated at (9.3)TWh, but this was more than offset by gains of market share with an effect of +9.9TWh.

EDF remained a net seller on the wholesale markets to the extent of 29.3TWh, whereas in 2022 it was a net buyer to the extent of 13.8TWh.

5.1.3.1.1.2 France – Regulated activities

Sales by the **France – Regulated activities** segment amounted to €19,413 million in 2023, an organic increase of €1,331 million (+7.4% vs 2022).

Sales by Électricité de Strasbourg and SEI-PEI were up by +€774 million, reflecting the higher prices on the gas market, and the rise in regulated sales tariffs excluding taxes.

The €562 million increase in sales by Enedis [2] essentially relates to a favourable price effect (+€568 million), mainly attributable to the indexed adjustment of the TURPE 6 distribution tariff.

5.1.3.1.1.3 EDF Renewables

EDF Renewables' sales totalled €2,031 million, an organic increase of €57 million (+2.6% vs 2022) driven by the generation performance of plants in operation, and maintenance work for third parties. The volume of energy output contributing to sales was 22.8TWh for 2023, up by +10.9% compared to 2022. The positive impact of new facilities commissioned in 2022 and 2023 was mitigated by unfavourable wind conditions in North America and the United Kingdom, and also by a downturn in prices which only affected fleets exposed to market conditions.

5.1.3.1.1.4 Dalkia

Sales by **Dalkia** amounted to €6,395 million in 2023, an organic decrease of €237 million (-3.6%) from 2022.

This change principally resulted from a drop of over 50% in gas prices in 2023. However, sales benefited from dynamic business activity in all areas of business in France.

5.1.3.1.1.5 Framatome

Framatome's sales amounted to €4,066 million in 2023, a 2% downturn compared to 2022 in organic terms.

This downturn is attributable to the lower level of business in the United States, where sales were adversely affected by difficulties concerning an Instrumentation & Control contract, and a temporary decline in fuel sales.

5.1.3.1.1.6 United Kingdom

The **United Kingdom** segment registered sales of €21,132 million, an organic increase of €5,353 million compared to 2022.

This increase is mainly explained by the impact in the past year of rising energy prices on regulated tariffs for gas and electricity sales to customers.

5.1.3.1.1.7 Italy

Sales in **Italy** totalled €17,787 million in 2023, an organic decrease of €11,585 million (-39.5%) from 2022 in an environment of falling market prices and consumption across all business segments.

5.1.3.1.1.8 Other international

The **Other international** segment principally covers operations in Belgium, the United States, Brazil and Asia (China, Vietnam and Laos). Sales by this segment amounted to €5,583 million in 2023, an organic decrease of €99 million (-1.7%) compared to 2022.

In **Belgium**[3], sales registered an organic decline of €65 million (-1.4%), due to a downturn in consumption of electricity and gas.

Sales in **Brazil** showed an organic decrease of €26 million (-3.8%), as there were fewer opportunities to provide system services.

In **Vietnam**, there was an organic decrease of €12 million (-4.1%) in sales, in keeping with the lower gas prices (on a pass-through basis, so there is no impact on EBITDA).

(1) Excluding the island activities, before deduction of pumped-storage volumes. After deduction of pumped-storage volumes, total hydropower output was 33.0TWh in 2023 (25.0TWh in 2022).
(2) Enedis is an independent EDF subsidiary as defined in the French Energy Code.
(3) Belgium comprises Luminus and EDF Belgium.

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5.1.3.1.1.9 Other activities

Other activities comprise, among other entities, EDF Trading and the gas activities.

Sales by this segment amounted to €7,677 million in 2023, an organic decrease of €11,776 vs 2022:

- Sales by the **gas activities** totalled €3,784 million, down by €8,626 million vs 2022. This decrease is essentially explained by a decline in wholesale market prices for gas after an exceptional year in 2022.
- **EDF Trading's** sales totalled €3,666 million, decreasing by €3,372 million vs 2022 as market conditions returned to normal. This result is better than the performance for 2021 and previous years, indicating the robustness and diversification of EDF Trading's business activities.

5.1.3.2 EBITDA

The gradual recovery of nuclear power generation in France, the high-price environment in Europe (entailing record a ARENH scheme cropping price), and the absence of regulatory measures of the kind introduced in 2022 were the main explanations for the exceptional (almost €45 billion) improvement in EBITDA to €39.9 billion in 2023. The other businesses' operational performances also contributed. The United Kingdom registered a good performance, particularly in sales. In Italy, most business segments contributed to this rise in EBITDA, and Dalkia's sales performance was also very satisfactory.

(in millions of euros)	2023	2022	Variation	Variation (%)	Organic variation (%)
Sales	**139,715**	**143,476**	**(3,761)**	**-2.6**	**-2.1**
Fuel and energy purchases	(80,989)	(121,010)	40,021	-33.1	-32.9
Other external expenses	(10,493)	(9,420)	(1,073)	11.4	13.4
Personnel expenses	(15,470)	(15,236)	(234)	1.5	2.0
Taxes other than income taxes	(4,064)	(3,163)	(901)	28.5	28.5
Other operating income and expenses	11,228	367	10,861	n.a.	n.a.
EBITDA	**39,927**	**(4,986)**	**44,913**	**n.a.**	**n.a.**

n.a.: not applicable.

5.1.3.2.1 Change in Group EBITDA and analysis

- The Group's **fuel and energy purchases** totalled €80,989 million in 2023, an organic decrease of €39,772 million (-32.9% vs 2022):
  - > in the **France – Generation and supply** segment, fuel and energy purchases registered an organic decrease of €24,166 million due to the significantly lower volumes of energy purchased as nuclear and hydropower output improved, and the end of purchases to provide alternative suppliers with additional ARENH volumes;
  - > in the **France – Regulated activities** segment, there was an organic increase of €3,853 million in fuel and energy purchases, as a result of the rise in purchase prices for energy bought on the forward market to cover network losses;
  - > in **Italy**, fuel and energy purchases showed an organic decline of €12,501 million, essentially driven by a decrease in gas purchase volumes;
  - > in the **United Kingdom**, the organic increase of €1,712 million (+13.4%) in fuel and energy purchases principally reflects the impact of the rise in market prices, particularly during the first half of the year.
- The Group's **other external expenses** amounted to €10,493 million in 2023, an organic increase of €1,266 million (+13.4 vs 2022%):
  - > in the **France – Generation and supply** segment, other external expenses saw an organic increase of €153 million (+5.6%). This increase mainly reflects purchases associated with the growth in service activities, development of IT systems, and growing requirements for customer management;
  - > in the **France – Regulated activities** segment, the organic growth of €167 million (+10.9%) in other external expenses reflects the higher level of IT development, an increase in network maintenance including the exceptional impact of the November gales, and a larger number of new connections;
  - > **Dalkia's** other external expenses showed an organic increase of €187 million (+9.2%) driven by strong business growth in France.
- The Group's **personnel expenses** for 2023 totalled €15,470 million, an organic increase from 2022 of €306 million (+2.0%) across all segments as a result of pay measures relating to the inflationary context and a rise in the workforce; these factors were partly counterbalanced by the favourable effect of revision of pension obligations in the France segments.
- **Taxes other than income taxes** amounted to €4,064 million for 2023, an organic increase of €903 million (+28.5% vs 2022):
  - > in the **France – Generation and supply** segment, the €389 million (+22.9%) organic increase is mainly attributable to higher taxes on value added, which became positive again in 2023;
  - > in the **United Kingdom**, the organic increase of €405 million (+332%) in taxes mainly reflects the introduction of the Electricity Generation Levy on revenue from nuclear generation.
- **Other operating income and expenses** generated net income of €11,228 million in 2023, an organic increase of €10,832 million compared to 2022:
  - > in the **France – Generation and supply** segment, there was a €11,093 million organic increase in net other operating income and expenses. This increase primarily resulted from the higher CSPE compensation, essentially relating to the tariff cap in 2023;
  - > in the **France – Regulated activities** segment, the organic decrease of €263 million (-15.6%) is largely explained by penalties payable to customers for power cuts during storms at the end of the year in France, and a higher level of asset retirements;
  - > in the **United Kingdom**, net other operating income and expenses registered an organic decrease of €388 million, notably due to an increase in provisions for doubtful receivables associate with rising prices and Ofgem's moratorium on pre-payment meter installations.

5.1.3.2.2 Change in consolidated EBITDA and analysis by segment

(in millions of euros)	2023	2022	Variation	Variation (%)	Organic Variation (%)
France – Generation and supply	24,677	(23,144)	47,821	n.a.	n.a.
France – Regulated activities	3,707	6,723	(3,016)	-44.9	-44.9
EDF Renewables	932	909	23	2.5	2.8
Dalkia	407	333	74	22.2	22.8
Framatome	255	328	(73)	-22.3	-25.3
United Kingdom	3,967	1,325	2,642	199.4	201.4
Italy	1,855	1,115	740	66.4	65.3
Other international	872	336	536	159.5	158.3
Other activities	3,255	7,089	(3,834)	-54.1	-52.2
GROUP EBITDA	**39,927**	**(4,986)**	**44,913**	**n.a.**	**n.a.**

n.a.: not applicable.

5.1.3.2.2.1 France – Generation and supply

The considerable increase in EBITDA was driven by the gradual recovery by nuclear generation, with a favourable effect of €5.7 billion.

In 2022, the exceptional regulatory measures introduced by the French government to limit rises in sales prices to consumers had an adverse effect on EBITDA estimated at €8.2 billion.

The lower nuclear output in 2022 had led to purchases of large volumes at very high market prices, but this effect was much smaller in 2023, generating a positive impact of €7.3 billion.

Also, the rise in prices had an impact of €12.1 billion for final consumers and €12.5 billion covered by the tariff shield. This effect is largely explained by the average forward market price for the past 2 years, which was €218/MWh in 2023 compared to €71/MWh in 2022, and an ARENH cropping price of €410/MWh in 2023, *versus* €257/MWh in 2022.

5.1.3.2.2.2 France – Regulated activities[1]

The decrease in EBITDA is principally explained by a negative price effect estimated at €1.3 billion, caused by purchases of network losses made at very high market prices (this additional cost will be compensated by future tariff increases). However, changes in the TURPE network access tariff had a favourable effect estimated at €0.7 billion[2].

Also, in 2022 a €1.7 billion payment was received from RTE[3], corresponding to a share of interconnection fees, and there was no equivalent receipt in 2023.

The 8.2TWh decline in volumes distributed (excluding the weather effect) had a limited negative impact on EBITDA estimated at €0.1 billion.

5.1.3.2.2.3 EDF Renewables

At EDF Renewables, EBITDA for generation increased due to higher volume output following the commissioning of new plants in 2022 and 2023, despite less favourable wind conditions, particularly in the United Kingdom and the United States. The downturn in prices only affected the plants that are exposed to market prices.

5.1.3.2.2.4 Dalkia

The rise in EBITDA is attributable to the business performance, particularly in energy efficiency services and decarbonisation in France. Also, Dalkia's co-generation plants were in operation over the whole first quarter in 2023 (in 2022, Dalkia was affected by early shutdowns due to a shortened winter tariff period).

5.1.3.2.2.5 Framatome

The contribution to Group EBITDA was lower, essentially in North America (financial difficulties with performance of a safety Instrumentation & Control renovation contract, and a temporary downturn in production by the nuclear fuel assembly plant).

Order intake amounted to approximately €4.8 billion at end-2023, higher than in 2022. The rise is mainly attributable to the Installed Base business in North America.

Framatome and Naval Group completed the acquisition of Jeumont Electric in late 2023. This operation consolidates Framatome's activities in the nuclear energy sector, by integrating a supplier specialising in production and maintenance of motors and equipment for the energy sector.

5.1.3.2.2.6 United Kingdom

The increase in EBITDA was driven, in particular, by sales performance in the medium and large business segments, which helped to strengthen margins and market share. Allowances in the domestic default tariff cap led to a recovery of margins in the residential market, allowing suppliers to recuperate some of the costs incurred at the height of the energy crisis.

Operational performance was strong for the generating business, where the higher realised nuclear prices offset lower power generation of 37.3TWh, down by 6.3TWh, following the shutdown of Hinkley Point B ((4.1)TWh) in August 2022 and a more intense maintenance programme than in 2022.

5.1.3.2.2.7 Italy

The increase in EBITDA in the electricity generation business was driven by better renewable energy output, especially in hydropower generation thanks to better hydrological conditions. However, this trend was mitigated by an unfavourable price effect in thermal generation.

In the sales activities, margins recovered across all customer segments.

Finally, the gas business benefited from effective optimisation of the supply contract portfolio, despite the strong negative impact of non-delivery of agreed LNG supplies from the United States.

Wind and solar power capacities totalled 650MW net[4] at end-2023.

(1) Including Enedis, Électricité de Strasbourg and the French island activities.
(2) Indexed adjustment to the TURPE 6 distribution tariff: +2.26% at 1 August 2022 and +6.51% at 1 August 2023.
(3) In application of decision 2022-296 of 17 November 2022 published by the French energy regulator Commission de Régulation de l'Énergie (CRE). The substantial increase in wholesale prices resulted in an increase in interconnection income for RTE, and the CRE decided that this "windfall" should be shared with the users of the electricity transmission users earlier than under normal procedures.
(4) For Edison's scope.

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5.1.3.2.2.8 Other international

The rise in EBITDA in **Belgium**[1] is explained by better nuclear power output (+6%) compared to 2022, a year when results were affected by energy purchases at high prices and outage at the Chooz power plant. Generation was also up for hydropower (+54%) and wind power (+29%) in a high-price environment.

Wind power capacities totalled 633MW net[2] at the end 2023.

In **Brazil**, EBITDA was down slightly due to the downturn in system services and an unfavourable spot price effect, despite the +5% adjustment to the Power Purchase Agreement attached to EDF's Norte Fluminense plant in November 2022.

5.1.3.2.2.9 Other activities

Lower prices and lower levels of business at the Dunkirk terminal, after an exceptional year in 2022 with very high prices on the wholesale markets, explain the sharp decrease in EBITDA for the **gas activities**.

In a context of market and counterparty risks decline, **EDF Trading** achieved excellent performances, well above the pre-energy crisis levels of 2021. These performances were mainly achieved through good diversification, although the contribution to EBITDA was down from 2022 due to falling prices and lower volatility on the wholesale markets in 2023.

5.1.3.3 EBIT

The Group's consolidated **EBIT** for 2023 amounted to €13,174 million, up by €32,537 million from 2022, with an organic increase of €32,584 million.

(in millions of euros)	2023	2022	Variation	Variation (%)
EBITDA	**39,927**	**(4,986)**	**44,913**	**n.a.**
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	363	(849)	1,212	n.a.
Net depreciation and amortisation *	(11,161)	(11,079)	(82)	0.7
(Impairment)/reversals	(13,011)	(1,762)	(11,249)	n.a.
Other income and expenses	(2,944)	(687)	(2,257)	n.a.
EBIT	**13,174**	**(19,363)**	**32,537**	**N.A.**

n.a.: not applicable.

** Including net increases to provisions for replacement of concession assets.*

5.1.3.3.1 Net changes in fair value on Energy and Commodity derivatives, excluding trading activities

The net changes in fair value on Energy and Commodity derivatives, excluding trading activities, increased significantly by €1,212 million between 2022 and 2023, in a context of falling prices and volatile commodity markets.

5.1.3.3.2 (Impairment)/reversals

Impairment recognised in 2023 amounted to €13,011 million and principally concerned:

- goodwill in the United Kingdom €1,773 million;
- assets under construction for the Hinkley Point C (HPC) project (€11,151 million) following revision of the project schedule and costs[3] and discount rate, inflation and exchange rate assumptions. This impairment is reversible if there is evidence of a significant recovery in the value of the asset, other than the effect of the passage of time on discounted cash flows.

The principles and results of impairment tests are presented in note 10.8 to the 2023 consolidated financial statements, "Impairment/Reversals".

5.1.3.3.3 Other income and expenses

Other income and expenses generated a net expense of €2,944 million in 2023. The increase of €2,257 million compared to 2022 is principally due to the ATR 24-26 provision recognised in the **France – Generation and supply** segment, exceptional costs induced by the pension reform in France, and the lack of an equivalent in 2022 to the gains on disposals registered in 2022.

5.1.3.4 Financial result

(in millions of euros)	2023	2022	Variation	Variation (%)
Cost of gross financial indebtedness	(3,830)	(1,730)	(2,100)	121.4
Discount effect	(3,988)	174	(4,162)	n.a.
Other financial income and expenses	4,469	(1,997)	6,466	n.a.
FINANCIAL RESULT	**(3,349)**	**(3,553)**	**204**	**-5.7**

n.a.: not applicable.

The financial result for 2023 was an expense of €3.3 billion, a slight improvement of €0.2 billion from 2022 explained by:

- a good performance by the dedicated asset portfolio, which achieved a return of 10.2% (vs -8.5% in 2022) thanks to favourable developments on the financial markets, particularly the equity markets in 2023 leading to a €6.5 billion improvement in other financial income and expenses (with a limited cash impact);
- a €4.2 billion increase in the cost of unwinding the discount, principally owing to stability in the real discount rate applied for nuclear provisions in 2023 after the positive impact of a 50bp rate increase in 2022 (with no cash impact);
- a €2.1 billion increase in the cost of gross financial debt, primarily reflecting a significant increase in interest rates (with a cash effect of €1.8 billion).

(1) Luminus and EDF Belgium.
(2) For Luminus' scope.
(3) See the Group press release of 23 January 2024

The financial result excluding non-recurring items, particularly the change in fair value of the dedicated asset portfolio, was - €5.6 billion, a decrease of €5.4 billion.

5.1.3.5 Income taxes

The income tax expense amounts to €(2,470) million at 31 December 2023, corresponding to an effective tax rate of 25.1% (compared to an income tax receivable of €3,926 million in 2022, corresponding to an effective tax rate of 17.1%).

The €(6,396) million change between the income tax receivable in 2022 and the income tax expense in 2023 essentially reflects the €32,741 million increase in the Group's pre-tax income, generating additional tax of €(8,454) million.

The change in income taxes was also affected in 2023 by impairment in the United Kingdom, although that effect was partly counterbalanced by recognition of deferred tax assets, partial utilisation of the loss reported in 2022 by the French tax group (EDF SA, Enedis, PEI and other French subsidiaries owned more than 95%), the recognition in full of the French tax group's 2022 tax loss, and the absence in 2023 of tax litigation and unfavourable effects associated with the windfall tax on electricity-producing companies introduced in Italy in 2022.

After elimination of non-recurring items (principally impairment and changes in unrealised gains and losses on the financial asset portfolio and commodities), the effective tax rate is 20.6% at 31 December 2023, compared to 18.0% in 2022.

5.1.3.6 Net income excluding non-recurring items

Net income excluding non-recurring items stood at €18.5 billion, up by €31.1 billion in line with the significant growth in EBITDA after the corporate income tax expense (an income tax credit was booked in 2022).

5.1.3.7 EDF net income

The Group's net income totalled €10.0 billion, up by nearly €28 billion. Apart from the large increase in net income excluding non-recurring items, the principal items after tax contributing to this change are:

- the €4 billion change in the fair value of financial instruments;
- - €7.9 billion of impairment on the Hinkley Point C project and EDF Energy's goodwill in 2023, in view of the new schedule and additional costs announced in January 2024.

5.1.4 Net financial debt, cash flows and investments

(in millions of euros)	2023	2022	Variation	Variation (%)
EBITDA	**39,927**	**(4,986)**	**44,913**	**n.a.**
Cancellation of non-monetary items included in EBITDA	3,939	(7,825)	11,763	-150.3
Cash EBITDA	**43,866**	**(12,811)**	**56,676**	**n.a.**
Change in working capital	(7,785)	8,301	(16,086)	-193.8
Net investments[1]	(19,100)	(16,395)	(2,705)	16.5
Other items including dividends received from associates and joint ventures	(63)	(630)	577	-91.5
Operating cash flow[2]	**16,928**	**(21,535)**	**38,463**	**-178.6**
Asset disposals	80	535	(455)	-85
Income taxes paid	(3,695)	(1,282)	(2,413)	188.2
Net financial expenses disbursed	(2,534)	(1,003)	(1,531)	152.6
Dedicated assets	(378)	(233)	(145)	62.2
Dividends paid in cash	(1,113)	(1,085)	(28)	2.6
Group cash flow[3]	**9,288**	**(24,603)**	**33,891**	**-137.7**
Issues of hybrid notes	1,377	994	383	38.5
Redemption of hybrid notes	(1,369)	(1,966)	597	-30.4
Other monetary changes	(72)	3,470	(3,542)	-102.1
(Increase)/decrease in net indebtedness, excluding the impact of changes in exchange rate	**9,223**	**(22,105)**	**31,328**	**-141.7**
Effect of change in exchange rates	(162)	85	(247)	-290.6
Effect of other non-monetary changes	1,057	508	548	107.8
(Increase)/decrease in net indebtedness of continuing operations	**10,119**	**(21,512)**	**31,630**	**-147.0**
(Increase)/decrease in net indebtedness of discontinued operations	**-**	**-**	**-**	**n.a.**
Net financial debt at beginning of year	**64,500**	**42,988**	**21,512**	**50**
NET FINANCIAL DEBT AT END OF YEAR	**54,381**	**64,500**	**(10,118)**	**-15.7**

n.a.: not applicable.

(1) Net investments are operating investments and financial investments for growth, net of disposals. They also include net debts acquired or transferred in acquisitions or disposals of securities, investment subsidies, and non-Group partner investments. They do not include the Group's disposals of 2023.

(2) Operating cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not directly comparable with indicators of the same name reported by other companies. This indicator, also known as Funds From Operations (FFO), comprises net cash flow from operating activities, changes in working capital after adjustment where relevant for the impact of non-recurring effects, net investments (excluding the Group's disposals of 2023), and other items, including dividends received from associates and joint ventures.

(3) Group cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not directly comparable with indicators of the same name reported by other companies. It is equal to the operating cash flow defined in note (2) less asset disposals, income taxes paid, net financial expenses disbursed, net allocations to dedicated assets, and dividends paid in cash.

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5.1.4.1 Net financial debt

Net financial debt[1] totalled €54.4 billion at 31 December 2023, a decrease of €10.1 billion compared to end-2022. As well as the positive cash flow, the €2.4 billion conversion of OCEANE bonds reinforced EDF's equity.

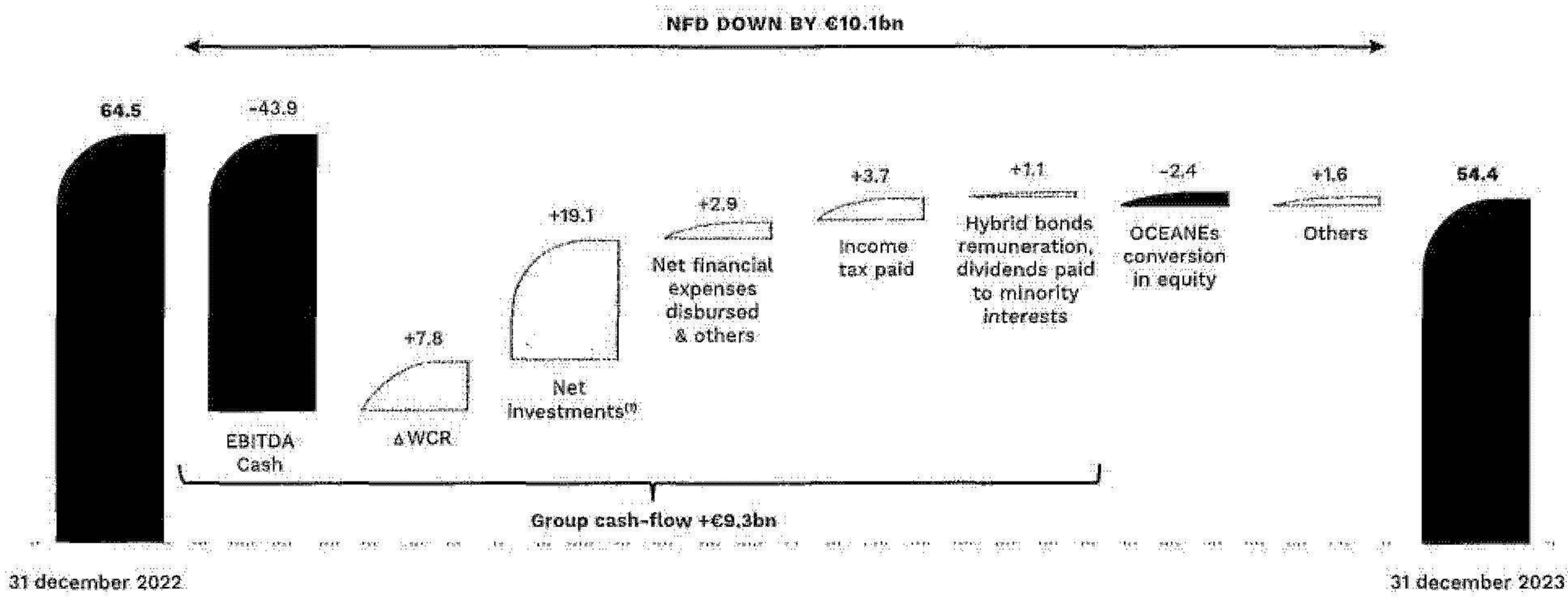
The bond issues of 2023, totalling around €8 billion, the lower level of short-term debt, and early repayments of bank loans lengthened the maturity of the Group's financial debt to 11 years at 31 December 2023 (*versus* 9.4 years at 31 December 2022).

EDF received the 2024 International Financing Review (IFR) "Corporate Issuer of the Year" award for its issues in 2023.

(in millions of euros)	31/12/2023	31/12/2022	Variation	Variation (%)
Loans and other financial liabilities	86,647	96,053	(9,406)	-10
Derivatives used to hedge liabilities	(1,379)	(2,024)	645	-32
Cash and cash equivalents	(10,775)	(10,948)	173	-2
Debt and equity securities – liquid assets	(20,077)	(18,507)	(1,570)	8
Derivatives hedging liquid assets	(35)	(74)	39	-53
NET FINANCIAL DEBT[1]	**54,381**	**64,500**	**(10,119)**	**-16**

Change in net financial debt between 31 December 2022 and 31 December 2023

In billions of euros



NB: figures rounded to the nearest whole number.
(1) Net investments excluding Group disposals.

5.1.4.2 Group cash flow

Cash flow for 2023 amounted to €9.3 billion, *versus* -€24.6 million in 2022. This is explained by cash EBITDA of €43.9 billion resulting from a good operating performance and a very high price effect. It also benefited from the closing in 2023 of trading positions taken in 2022, with an effect of €5.3 billion.

Working capital increased by €7.8 billion, comprising:

- €5.1 billion for optimisation of trading, mainly reflecting the repayment of margin calls as positions were closed in 2023;
- €3.9 billion due to the 2023 CSPE receivable generated by France's tariff shield, which was offset by lower revenues from purchase obligations in a context of declining prices, compensation payments by the French State for 2023 charges, and the regularisation of excess compensation of previous years.

This cash flow funded net investments of €19.1 billion, €2.7 billion more than in 2022 due notably to the Hinkley Point C project, extensive maintenance work on the nuclear fleet, and network growth.

(1) Net financial debt is not defined in the accounting standards and is not directly visible in the Group's consolidated balance sheet. It comprises total loans and financial liabilities, less cash and cash equivalents and liquid assets. Liquid assets are financial assets consisting of funds or securities with initial maturity of over three months that are readily convertible into cash and are managed according to a liquidity-oriented policy.

5.1.4.2.1 Net investments

Net investments (excluding asset disposals) amounted to €19,100 million for 2023, up by €2,705 million compared to 2022.

(in millions of euros)	2023	2022	Variation	Variation (%)
France – Generation and supply	6,566	5,688	878	15%
France – Regulated activities	5,025	4,564	461	10%
EDF Renewables	1,759	1,619	140	9%
Dalkia	297	324	(27)	-8%
Framatome	386	294	92	31%
United Kingdom	4,088	2,978	1,110	37%
Italy	632	701	(69)	-10%
Other international	292	167	125	75%
Other activities	55	61	(6)	-10%
NET INVESTMENTS	**19,100**	**16,395**	**2,705**	**16%**

In the **United Kingdom**, net investments were up by €1,110 million, reflecting progress on the Hinkley Point C project.

Net investments by the **France – Generation and supply** *segment* increased by €878 million, due notably to progress on the EPR2 project, costs associated with the stress corrosion phenomenon, and the *Grand Carénage* programme.

Net investments by the **France – Regulated activities** segment were up by €461 million, notably as a result of a higher amount of work on connections.

Investments by **EDF Renewables** were higher than in 2022, particularly due to development of large-scale solar plants in the United States (including Fox Squirrel – 753MW gross and Desert Quartzite – 527MW gross), in the United Kingdom and wind farms in Brazil (*Eólico Serra do Seridó* and *Serra das Almas*).

In **Italy**, net investments were down by €68 million, notably due to acquisitions in the renewables sector in 2022 that had no equivalent in 2023, and commissioning of the Marghera plant.

The rise in net investments by the **Other International** segment principally reflects the acquisition of Refoernegy Villanueva in Chile.

5.1.4.2.2 Asset disposals

Asset disposals totalled €80 million in 2023. They essentially concerned the sales of Dalkia's subsidiary Suir, and oil and gas assets belonging to Edison in Algeria and Norway.

5.1.4.2.3 Dedicated assets

In compliance with French Law no. 2006-739 of 28 June 2006 on the sustainable management of radioactive materials and waste, EDF has built up a portfolio of dedicated assets to secure financing of its long-term nuclear obligations (see section 7.1 "General information about the Company").

In general, the changes concerning dedicated assets comprise:

- allocations to reach full coverage of obligations;
- reinvestments of the financial income (dividends and interest) generated by these assets;
- withdrawals of assets corresponding to the costs incurred over the period to meet long-term nuclear obligations falling within the scope of the Law of 28 June 2006;
- exceptional withdrawals proposed to the governance bodies in charge of managing dedicated assets when the value of the portfolio exceeds the amount of the obligations to be financed; such withdrawals must be validated by these bodies.

The net -€378 million change in dedicated assets in 2023 corresponds to the second and third of these categories.

5.1.4.2.4 Dividends paid in cash

EDF paid out €1,113 million in 2023, comprising:

- payments made during the year to holders of perpetual subordinated bonds for the "hybrid note" issues (€630 million);
- dividends paid by Group subsidiaries to their minority shareholders (€483 million).

5.1.4.3 Other non-monetary changes

The **foreign exchange effect** had an unfavourable impact of -€162 million on the Group's net financial debt, caused mainly by the fall of the US dollar against the euro, offset by the rise of the pound sterling against the euro.

Other non-monetary changes had an effect of €1,057 million in 2023, compared to €508 million in 2022. They mainly comprise the conversion of OCEANE bonds into shares by the French State, new leases (IFRS 16) and accrued interest on financial liabilities.

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5.1.5 Financial outlook

2026 targets [1][2]**:**

- Net financial debt/EBITDA: **≤2.5x**
- Adjusted economic debt/Adjusted EBITDA[3]: **≤4x**

5.1.6 Management and control of market risks

See also section 2.2.4 "Financial and market risks" of the 2023 Universal Registration Document.

5.1.6.1 Management and control of financial risks

This section sets forth the policies and principles for management of the Group's financial risks defined in the strategic financial management framework (liquidity, interest rate, foreign exchange rate and equity risks), and the Group counterparty risk management policy set up by EDF. These principles apply only to EDF and operationally controlled subsidiaries or subsidiaries that do not benefit by law from specific guarantees of independent management such as Enedis. In compliance with IFRS 7, the following paragraphs describe the nature of risks resulting from financial instruments, based on analyses of sensitivities and credit (counterparty) risks.

An independent unit in the Group's Risk Division, the Financial Risks Control Department (*Département Contrôle des Risques Financiers et Investissements* – CRFI), is in charge of financial risk control at Group level, mainly by ensuring correct application of the principles of the strategic financial management framework. It also has the task of carrying out a second-level check of the risk of counterparty default (methodology and organisation) for EDF entities and operationally controlled Group subsidiaries (excluding Enedis), and a first-level check of financing activities by EDF SA's trading room. Additionally, the CRFI Department carries out a second-level check of management activities concerning the dedicated asset portfolio.

The CRFI Department issues daily and weekly monitoring reports of risk indicators relevant to activities in EDF SA's trading room.

Regular internal audits are carried out to ensure controls are actually applied and are effective.

5.1.6.1.1 Liquidity position and management of liquidity risk

5.1.6.1.1.1 Liquidity position

The Group's liquidities at 31 December 2023, consisting of liquid assets, cash and cash equivalents, totalled €30,852 million and available credit lines amounted to €15,842 million.

At 31 December 2023, the Group's loans and other financial liabilities maturing within one year totalled €18,878 million and included €3,990 million relating to bonds, including accrued interest not yet due. This amount also comprises the negative cash position (including €1,163 million for margin calls on derivatives and repurchase agreements) and the liability relating to lease obligations (see note 18.3.3 to the 2023 consolidated financial statements). The associated requirements may when necessary be funded by the Group's liquidities and available credit lines mentioned above, and other short-term resources mentioned below.

5.1.6.1.1.2 Management of liquidity risks

The EDF group was able to meet its financing needs by conservative liquidity management, and has obtained financing on satisfactory terms, undertaking the following operations:

On 19 January 2023, a 4-tranche senior multi-currency bond issue with nominal value of €2 billion and £950 million:

- a €1 billion bond with 9-year maturity, and a fixed coupon of 4.250%;
- a €1 billion bond with 20-year maturity, and a fixed coupon of 4.625%;
- a £450 million bond with 12-year maturity and a fixed coupon of 5.500%;
- a £500 million bond with 30-year maturity and a fixed coupon of 5.625%.

On 28 March 2023, a tap issue of £99 million fungible with the 30-year £500 million bond issued on 19 January 2023.

On 17 May 2023, a 5-tranche senior bond issue of $3 billion and CAD500 million:

- a US$1 billion bond with 5-year maturity, and a fixed coupon of 5.700%;
- a US$1 billion bond with 10-year maturity, and a fixed coupon of 6.250%;
- a US$1 billion bond with 30-year maturity, and a fixed coupon of 6.900%;
- a CAD 300 million bond with 7-year maturity, and a fixed coupon of 5.993%;
- a CAD 200 million bond with 30-year maturity, and a fixed coupon of 6.492%.

On 8 June 2023, a US$1.5 billion issue of hybrid notes (perpetual super-subordinated bonds) with an initial coupon of 9.125% until 2033 and a 10-year first call date.

On 22 June 2023, a 4-tranche senior Samurai bond issue of ¥33 billion:

- a ¥25.3 billion bond with 5-year maturity, and a fixed coupon of 1.059%;
- a ¥2.2 billion bond with 7-year maturity, and a fixed coupon of 1.355%;
- a ¥4.4 billion bond with 10-year maturity, and a fixed coupon of 1.695%;
- a ¥1.1 billion bond with 20-year maturity, and a fixed coupon of 2.328%.

On 20 June 2023 and 7 July 2023, redemption for a total US$904 million (US$901 million and US$3 million respectively) of part of the US dollar-denominated hybrid note issue with an initial amount of US$1.5 billion, ahead of the first call date of 22 January 2024. The principal amount of outstanding notes following settlement of the tender offer was redeemed on 22 January 2024 after EDF exercised its early redemption option.

(1) Based on scope and exchange rates as at 1 January 2024 and French nuclear output of 315-345TWh in 2024 and 335-365TWh in 2025 and 2026 by the plants currently in operation.
(2) Announced on 16 February 2024.
(3) Applying constant S&P ratio methodology.

On 21 August 2023, a 2-tranche CHF325 million Senior Green Bond issue dedicated to financing and/or refinancing all or some of the investments in electricity distribution:

- a CHF200 million bond with 4-year maturity, and a fixed coupon of 2.300%;
- a CHF125 million bond with 8-year maturity, and a fixed coupon of 2.550%.

On 28 November 2023, a Green Bond issue with nominal value of €1 billion, 3.5-year maturity and a fixed coupon of 3.75%, dedicated to the existing French nuclear fleet.

In January 2023, the Group also arranged two bilateral loans with maturities of 2 and 3 years, totalling €750 million.

EDF made early repayments of some of its bank loans in 2023, including a repayment of over €2 billion on 19 October 2023.

At 31 December 2023, the residual maturities of financial liabilities (including interest) are as follows [1]:

31 December 2023		Hedging instruments*		Guarantees given for
(in millions of euros)	Liabilities	Interest rate swaps	Currency swaps	borrowings
< 1 year	21,958	49	(179)	24
1-5 years	36,851	(331)	(986)	650
> 5 years	77,668	(300)	(3,328)	542
TOTAL	**136,477**	**(582)**	**(4,493)**	**1,216**
repayment of the nominal value	*86,647*			
interest expenses	*49,830*			

** Data on hedging instruments includes asset and liability positions.*

A range of specific levers are used to manage the Group's liquidity risk:

- the cash pooling system, which centralises cash management for controlled subsidiaries. The subsidiaries' cash balances are made available to EDF so as to optimise the Group's cash management and provide subsidiaries with a system that guarantees them market-equivalent financial terms;
- centralisation of financing for controlled subsidiaries: changes in subsidiaries' working capital are financed by the Group's cash management department through stand-by credit lines provided for subsidiaries, which can thus have revolving credit from the Group;
- active management and diversification of financing sources: the Group has access to short-term resources on various markets through programmes for French commercial paper (*billets de trésorerie*), Negotiable European Commercial Paper (NEU CP), and US commercial paper (US CP). For EDF, the ceilings are €12 billion for the NEU CP programme and US$10 billion for US CP;
- transfer of bond liabilities to banking counterparties under cash repurchase agreements.

At 31 December 2023, the amount of the Group's commercial paper outstanding was €5,050 million for NEU CP, and there was no amount outstanding on the US CP programme.

EDF has access to the world's main bond markets:

- the Euromarkets through its EMTN programme, which currently has a ceiling of €50 billion, particularly for euro and sterling issues;
- and domestic markets used for stand-alone issues in US dollars (144A bonds), yen (Samurai bonds) and Swiss francs.

The average maturity of the Group's gross debt was 11.0 years at 31 December 2023, compared to 9.4 years at 31 December 2022.

At 31 December 2023, EDF SA had a total amount of €14,057 million in available credit facilities (syndicated credit and bilateral lines):

- a syndicated credit line of €4 billion that expires in December 2025. No drawdowns had been made on this syndicated credit line at 31 December 2023;
- a syndicated social credit facility of €1.5 billion expiring in December 2026. No drawdowns had been made on this facility at 31 December 2023;
- bilateral credit lines representing an available amount of €8,557 million, with expiry dates extending to December 2026.

The level of this available financing is very frequently reviewed to ensure the Group has sufficient financial security.

The credit lines with the European Investment Bank were all fully drawn by EDF SA at 31 December 2023, for a total amount of €2,675 million.

Edison also has a €1 billion credit line granted by a pool of banks in 2023 and guaranteed to the extent of 70% by Italy's national export credit agency SACE, and a credit line with the European Investment Bank with an available amount of €162 million at 31 December 2023.

5.1.6.1.2 Credit rating

At 31 December 2023, the three financial ratings agencies Standard & Poor's, Moody's and Fitch Ratings attributed the following long-term and short-term ratings to EDF group entities. On 1 June 2023 Moody's changed the outlook for all these entities from "negative" to "stable". It upgraded the outlook of EDF by one notch in view of the high probability of support from the French State as sole shareholder, but downgraded the "standalone credit" rating by one notch.

The factors most likely to affect the Group's credit rating are "Changes in public policies and the regulatory framework in France and Europe, particularly ARENH" and "Risk of access to liquidity".

(1) Valued by reference to exchange rates and interest rates at 31 December 2023.

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Company	Agency	Long-term rating	Short-term rating
	Standard & Poor's	BBB/stable outlook	A-2
	Moody's	Baa1/stable outlook	P-2
EDF	Fitch Ratings	BBB+/stable outlook	F2
EDF Trading	Moody's	Baa3/stable outlook	n. a.
	Standard & Poor's	BB-/stable outlook	B
	Moody's	Baa3/stable outlook	n. a.
EDF Energy	Fitch Ratings	BBB-/stable outlook	n. a.
	Standard & Poor's	BBB/stable outlook	A-2
Edison	Moody's	Baa3/stable outlook	n. a.

n. a.= not applicable.

5.1.6.1.3 Management of foreign exchange risk

Due to the diversification of its activities and geographical locations, the Group is exposed to the risk of exchange rate fluctuations, which may have an impact on the translation differences affecting balance sheet items, Group financial expenses, equity, net income and the internal rate of return (IRR) of projects.

To limit exposure to foreign exchange risks, the Group has introduced the following management principles:

- local currency financing: to the extent possible given the local financial markets' capacities, each entity finances its activities in its own functional currency. When financing is contracted in other currencies, derivatives may be used to limit foreign exchange risk;
- matching of assets and liabilities: the net assets of subsidiaries located outside the Euro zone expose the Group to a foreign exchange risk. The foreign exchange risk in the consolidated balance sheet is managed by market hedging through debt issued or contracted in foreign currencies, or use of financial derivatives. Hedging of net assets in foreign currencies complies with risk/return targets, and the hedging ratio varies depending on the currency. If no hedging instruments are available, or if hedging costs are prohibitive, the foreign exchange positions remain open and the risk on such positions is monitored by sensitivity calculations;
- hedging of operating cash flows in foreign currencies: in general, the operating cash flows of EDF and its subsidiaries are in their local currencies, with the exception of flows related to fuel purchases which are primarily in US dollars, and certain flows related to purchases of equipment, which concern lower amounts. Under the principles laid down in the strategic financial management framework, EDF and the main subsidiaries concerned by foreign exchange risks (EDF Energy, EDF Trading, Edison, EDF Renewables) are required to hedge firm or highly probable commitments related to these future operating cash flows.

As a result of the financing and foreign exchange risk hedging policy, the Group's gross debt at 31 December 2023 breaks down as follows by currency after hedging:

GROSS DEBT STRUCTURE AT 30 JUNE 2023, BY CURRENCY BEFORE AND AFTER HEDGING

31 December 2023 (in millions of euros)	Initial debt structure	Impact of hedging instruments*	Debt structure after hedges	% of debt
Borrowings in euros (EUR)	51,346	12,811	64,157	74%
Borrowings in US dollars (USD)	20,860	(16,634)	4,226	5%
Borrowings in pounds sterling (GBP)	9,849	5,989	15,838	18%
Borrowings in other currencies	4,592	(2,166)	2,426	3%
TOTAL DEBT	**86,647**	**0**	**86,647**	**100%**

** Hedges of liabilities and net foreign investments.*

The table below presents the impact for equity of a variation in exchange rates on the Group's gross debt at 31 December 2023:

FOREIGN EXCHANGE RISK SENSITIVITY OF THE GROUP'S GROSS DEBT

31 December 2023 (in millions of euros)	Debt after hedging instruments converted into Euros	Impact of a 10% unfavourable variation in exchange rates	Debt after a 10% unfavourable variation in exchange rates
Borrowings in euros (EUR)	64,157	-	64,157
Borrowings in US dollars (USD)	4,226	423	4,649
Borrowings in pounds sterling (GBP)	15,838	1,584	17,422
Borrowings in other currencies	2,426	243	2,669
TOTAL DEBT	**86,647**	**2,250**	**88,897**

Due to the Group's hedging policy for foreign exchange risk on the Group's gross debt, the income statement of companies controlled by the Group is marginally exposed to foreign exchange risk.

The table below sets forth the foreign exchange position relating to net assets in foreign currencies of the Group's subsidiaries:

NET ASSET POSITION

31 December 2023 (in millions of currency units)	Net assets	Bonds	Derivatives	Net assets after hedging
USD	3,754	2,350	(103)	1,507
CHF (Switzerland)	18	-	15	3
PLN (Poland)	304	-	153	151
GBP (United Kingdom)	18,159	6,084	5,996	6,079
BRL (Brazil)	2,506	-	-	2,506
CNY (China)	7,634	-	4,604	3,030

The **above** table shows the assets of the Group's foreign subsidiaries in foreign currencies, adjusted for changes in the fair value of cash flow hedges and debt and equity instruments recorded in equity, and changes in the fair value of financial instruments recorded in income.

The **following** table sets forth the risk for equity of foreign exchange losses on net assets in foreign currencies of the Group's principal subsidiaries at 31 December 2023, assuming unfavourable, uniform exchange rate variations of 10% against the Euro. Net assets are converted at the closing rate and impacts are reported in absolute value.

FOREIGN EXCHANGE RISK SENSITIVITY OF NET ASSETS

	At 31 December 2023			At 31 December 2022		
(in millions of currency units)	Net assets after hedging, in foreign currency units	Net assets after hedging, converted into euros	Impact on equity of a 10% variation in exchange rates	Net assets after hedging, in foreign currency units	Net assets after hedging, converted into euros	Impact on equity of a 10% variation in exchange rates
USD	1,507	1,364	136	3,163	2,965	297
CHF (Switzerland)	3	3	-	2	2	-
PLN (Poland)	151	35	4	128	27	3
GBP (United Kingdom)	6,079	6,995	700	10,740	12,109	1,211
BRL (Brazil)	2,506	467	47	1,697	301	30
CNY (China)	3,030	386	39	3,179	432	43

The foreign exchange risk on debt and equity securities is mostly concentrated in EDF's dedicated asset portfolio, which is detailed in the section entitled "Management of financial risk on EDF SA's *dedicated assets*".

The foreign exchange risk associated with short-term investments and operating liabilities in foreign currencies remains under control for the Group at 31 December 2023.

5.1.6.1.4 Management of interest rate risk

The exposure of the Group's net financial debt to interest rate fluctuations covers two types of risk: a risk of change in the net financial expenses on floating-rate financial assets and liabilities, and a risk of change in the value of financial assets invested at fixed rates. These risks are managed by monitoring the floating-rate portion of net financial debt, defined by reference to the risk/return for net financial expenses, taking into consideration expected *movements in interest rates*.

Under this policy, some of the debt is variabilised and the Group may use interest rate derivatives for hedging purposes.

The Group's debt after hedging instruments at 31 December 2023 comprised 59% at fixed rates and 41% at floating rates.

A 1% uniform annual rise in interest rates would generate an approximate €354 million increase in financial expenses at 31 December 2023 based on gross floating-rate debt after hedging.

The average cost of Group debt (weighted interest rate on outstanding amounts) was 4.11% at 31 December 2023.

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STRUCTURE AND INTEREST RATE SENSITIVITY OF GROUP DEBT

31 December 2023 (in millions of euros)	Initial debt structure	Impact of hedging instruments	Debt structure after hedging	Impact on income of a 1% increase in interest rates
Fixed rate	67,531	(16,197)	51,334	-
Floating rate	19,116	16,197	35,313	353
TOTAL	**86,647**	**0**	**86,647**	**353**

Concerning financial assets, the table below presents the interest rate risk on the floating-rate notes (FRN) held by EDF, and their sensitivity to interest rate risks (impact on net income).

INTEREST RATE RISK SENSITIVITY OF FLOATING-RATE INSTRUMENTS

31 December 2023 (in millions of euros)	Value	Impact on income of a 1% variation in interest rates	Value after a 1% variation in interest rates
FLOATING-RATE INSTRUMENTS	**1,013**	**(10)**	**1,003**

The Group's interest rate risk notably relates to the value of the Group's long-term nuclear obligations and its pension and other specific employee benefit obligations (see note 15 to the 2023 consolidated financial statements), which are adjusted to present value using discount rates that depend on interest rates for various time horizons, and debt securities held for management of the dedicated assets set aside to cover these obligations.

5.1.6.1.5 Management of equity risk

Coverage of employee benefit obligations for EDF SA and EDF Energy

Assets covering EDF's employee benefit liabilities are partly invested on the international and European equities markets. Market trends therefore affect the value of these assets, and a downturn in equity prices would lead to a rise in balance sheet provisions.

32% of the assets covering EDF SA's employee benefit obligations were invested in equities at 31 December 2023, representing an amount of €3.1 billion of equities.

At 31 December 2023, the British Energy pension fund (EDFG) increased its allocation to equities and equity funds (excluding diversified growth funds) to bring its year-end exposure to 4.9%, representing now an amount of £297 million.

Coverage of EDF's nuclear obligations

Analysis of the equity risk associated with coverage of EDF's nuclear obligations is presented below in the section entitled "Management of financial risk on EDF SA's dedicated asset portfolio".

5.1.6.1.6 Management of financial risk on EDF SA's dedicated asset portfolio

Dedicated assets have been built up progressively by EDF since 1999 to ensure secure financing of its long-term nuclear obligations. The Law of 28 June 2006, codified in France's Environment code (Articles L. 594-1 to 14) and its implementing regulations, defined the provisions that are unrelated to the operating cycle, and must therefore be covered by dedicated assets. They are listed in note 15.1.3 to the 2023 financial statements, "Coverage of EDF's long-term nuclear obligations".

The dedicated asset portfolio is managed under the supervision of the Board of Directors and its advisory committees (Nuclear Commitments Monitoring Committee (CSEN), Audit Committee).

A Nuclear Commitments Financial Expertise Committee (CEFEN) exists to assist the company and its governance bodies on questions of matching assets and liabilities and asset management. The members of this Committee are independent of EDF.

Governance and management principles

The governance principles setting forth the structure of dedicated assets, and the relevant decision-making and control processes for their management, are validated by EDF's Board of Directors under a policy for ensuring secure financing of nuclear expenses, in compliance with the regulations. These principles also lay down rules for the asset portfolio's structure, selection of financial managers, and the legal, accounting and tax structure of the funds.

Strategic asset allocation is based on asset/liability reviews carried out to define the most appropriate target portfolio for financing long-term nuclear obligations. Strategic allocation is validated by EDF's Board of Directors and reviewed every three years unless circumstances require otherwise. A new strategic allocation was validated in 2021 to increase diversification in fixed-income assets. This target allocation consists of a yield portfolio, a growth portfolio and a fixed-income portfolio, respectively accounting for 30%, 40% and 30% of the total portfolio. The yield portfolio consists of real estate assets and infrastructure assets; the growth portfolio consists of equities and equity funds (both listed and unlisted); the fixed-income portfolio consists of bonds, debt funds (both listed and unlisted), and cash. These portfolios are managed by EDF Gestion and EDF Invest.

The allocation policy between growth assets and fixed-income assets was developed by the Operational Management Committee [1] on the basis of the economic and financial outlook for each market and geographical area, a review of value appreciation in different markets and market segments, and risk analyses produced by the Financial Risks Control (CRFI) department.

At 31 December 2023, the total value of the dedicated assets portfolio was €36,885 million compared to €33,904 million in 2022. Changes in dedicated assets in 2023, and details of their realisable value and book value, are presented in note 15.1.2. to the 2023 consolidated financial statements.

(1) An internal committee and permanent body for evaluation, consultation and operational decision-making for dedicated asset management.

CONTENT AND PERFORMANCE OF EDF'S DEDICATED ASSET PORTFOLIO

	31/12/2023			31/12/2022		
(in millions of euros)	Share of portfolio	Realisable value	Performance for 2023	Share of portfolio	Realisable value	Performance for 2023
Yield assets	23.4%	8,657	2.9%	25.9%	8,772	11.2%
Growth assets	38.1%	14,036	17.5%	36.1%	12,251	-15.8%
Fixed-income assets	38.5%	14,192	7.9%	38.0%	12,881	-12.1%
TOTAL DEDICATED ASSETS	**100%**	**36,885**	**10.2%**	**100%**	**33,904**	**-8.5%**

Dedicated assets' exposure to risks

EDF is exposed to equity risks, interest rate risks and foreign exchange risks through its dedicated asset portfolio.

The market value of the listed equities in EDF's dedicated asset portfolio was €13,447 million at 31 December 2023. The volatility of the listed equities at the same date was 11.36% based on 52 weekly performances, compared to 17.04% at 31 December 2022. Applying this volatility to the value of listed equity assets at 31 December 2023, the Group estimates the annual volatility of the equities portion of dedicated assets at €1,528 million.

At 31 December 2023, the sensitivity of the listed bonds (€12,489 million) is 5.34, *i.e.* a uniform 100 base point rise in interest rates would result in a €666 million decline in market value. This sensitivity was 4.9 at 31 December 2022.

Assessment of the expected rate of return on dedicated assets

In compliance with the applicable regulations, based on the target allocation for dedicated assets stated above, studies to simulate the expected rate of return for the next few years, particularly the next twenty years (a horizon close to the duration of nuclear provisions), show with high probability that the average projected rate of return is higher than the discount rate used to calculate nuclear provisions, estimated at 4.5% at 31 December 2023 (see note 15.1.1 to the 2023 consolidated financial statements).

The average annualised performance of dedicated assets since 2004, the year when their value first exceeded €1 billion, was 5.9% at 31 December 2023.

Currently valid dispensations and prescriptions granted by the administrative authority, in application of Articles D.594-6 and D. 594-7 of the Environment Code

The ministerial authorisation of 31 May 2018 allowing EDF to increase the portion of unlisted assets (excluding CTE and real estate assets) in its dedicated assets from 10% to 15% is no longer relevant following the decree of 22 November 2023 updating the rules for investing in dedicated assets, which removed the specific restrictions applicable to shares in CTE.

5.1.6.1.7 Management of counterparty/credit risk

Counterparty risk represents the potential loss the EDF group would sustain in the event of future default by its counterparty. The Group has a counterparty risk management policy which applies to EDF and all operationally controlled subsidiaries. This policy sets out the governance arrangements for organisation of counterparty risk management and monitoring, including quarterly consolidation of the Group's exposures. The Financial Risks Control (CRFI) department closely monitors Group counterparties (daily review of alerts, special cautionary measures for certain counterparties).

The table below gives details, by credit rating category, of the EDF group's consolidated exposure to counterparty risk. At 30 September 2023, 90% of the Group's exposure concerned "investment grade" counterparties, mainly due to the predominance of exposures generated by the cash and asset management activity, as most short-term investments concern low-risk assets.

	Good credit rating	Poor credit rating	No internal rating	Total
at 30/06/2023	89%	10%	1%	100%
at 30/09/2023	90%	9%	1%	100%

The exposure to counterparty risk by nature of activity is distributed as follows:

	Purchases	Insurance	Distribution and sales	Cash and asset management	Fuel purchases and energy trading	Total
at 30/06/2023	9.5%	0.3%	14.3%	58.9%	17.0%	100%
at 30/09/2023	9.9%	0.3%	13.1%	61.5%	15.2%	100%

Exposure in the energy trading activities is concentrated in EDF Trading. Each counterparty of this subsidiary is assigned a limit that depends on its financial robustness. A range of methods are used to reduce counterparty risk at EDF Trading, primarily position netting agreements, cash-collateral agreements and arrangement of guarantees with banks or affiliates.

For counterparties dealing with EDF's trading room, the Financial Risks Control (CRFI) department has drawn up a framework specifying counterparty authorisation procedures and the methodology for calculation of allocated limits. The level of exposure can be consulted in real time and is systematically monitored on a daily basis. The suitability of limits is reviewed without delay in the event of an alert or unfavourable development affecting a counterparty. Only banking, sovereign and corporate counterparties with good credit rating are authorised, for limited amounts and maturities.

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5.1.6.2 Management and control of energy market risks

5.1.6.2.1 Energy market risk policy

Through its generation, supply and trading activities, the EDF group has operations on deregulated energy markets, principally in Europe, which expose it to price variations on the energy market that can significantly affect its financial statements.

Consequently, the Group has an energy market risk policy for all energy commodities, applicable to EDF and entities over which it has operational control.

The purpose of this policy is to:

- define the general framework for management of risks on the energy markets where the Group entities carry out their asset portfolio management activities (energy generation, optimisation and sale), and trading activities in the case of EDF Trading;
- define the responsibilities of asset managers and traders, and the various levels of control of activities;
- implement a coordinated Group-wide hedging policy that is coherent with the Group's financial commitments;
- consolidate the exposure of the various entities operationally controlled by EDF on the structured energy-related markets.

The Group Risk Division presents an annual report on the implementation of this policy to the Board of Directors' Audit Committee.

At entities not operationally controlled by EDF, the risk management framework is reviewed by the governance bodies.

5.1.6.2.2 Organisation of risk control and general risk hedging principle

The process for controlling energy market risks for entities operationally controlled by the Group is based on:

- a governance and market risk exposure measurement system, clearly separating management and risk control responsibilities;
- an express delegation to each entity, defining hedging strategies and establishing the associated risk limits. This enables the Executive Committee to set out and monitor an annual Group risk profile consistent with the financial objectives, and thus direct operational management of energy market risks over market horizons (generally three years).

The basic principle for hedging is:

- netting of upstream/downstream positions; wherever possible, sales to final customers are hedged by internal sales;
- gradual closing of most positions before the end of the budget year, based on a predefined hedging trajectory (1) that captures an average price, potentially with overweighting of year N-1 in view of liquidity constraints on the forward markets.

The energy risk control process involves Group management and is based on a risk indicator and measurement system incorporating escalation procedures in the event risk limits are exceeded.

The control procedures are regularly evaluated and audited.

5.1.6.2.3 Principles for operational management and control of energy market risks

The principles for operational management and control of energy market risks for the Group's operationally controlled entities are based on strict segregation of responsibilities for managing those risks, distinguishing between management of assets (generation and supply) and trading.

The operators of generation and supply assets are responsible for implementing a risk management strategy that smooths the impact of energy market risks on the variability of their financial statements (the accounting classifications of the hedges used are described in note 18.7 to the 2023 consolidated financial statements, "Derivatives and Hedge accounting"). However, they are still exposed to structural price trends to the extent of volumes that are not yet hedged, and uncertainties over volumes (relating to the ARENH system, generation plant availability, and customers' consumption).

For operationally controlled entities in the Group, positions on the energy markets are taken predominantly by EDF Trading, which as the Group's trading entity executes most of the Group's purchase/sale orders on the wholesale markets. Consequently, EDF Trading is subject to a strict governance and control framework, particularly the European regulations on trading companies.

EDF Trading trades on organised or OTC markets in derivatives such as futures, forwards, swaps and options (regardless of the accounting classification applied at Group level). Its exposure on the energy markets is strictly controlled through daily limit monitoring overseen by the subsidiary's management and by the division in charge of energy market risk control at Group level. Automatic escalation procedures also exist to inform members of EDF Trading's Board of Directors of any breach of limits for risks (value at risk limit) or losses (stop-loss limits). Value at Risk (VaR) is a statistical measure of the potential maximum loss in market value on a portfolio in the event of unfavourable market movements, over a given time horizon and with a given confidence interval (2). Specific Capital at Risk (CaR) limits are also used in certain areas (operations on illiquid markets, long-term contracts and structured contracts) where VaR is difficult to apply. The stop-loss limit stipulates the acceptable risk for the trading business, setting a maximum level of loss in relation to the trading margin over a rolling three-month period. If these limits are exceeded, EDF Trading's Board of Directors takes appropriate action, which may include closing certain positions.

In 2023, EDF Trading's commitment on the markets was subject to a VaR limit of €57 million, below the maximum authorised limit in 2022 which was temporarily raised to €70 million, a CaR limit for long-term contracts and a CaR limit for operations on illiquid markets of €250 million each, and a stop-loss limit of €180 million.

For details of the Group's commodity-related fair value hedges, see note 6 to the 2023 consolidated financial statements. For details of commodity derivatives, see note 18.7.4 to the 2023 consolidated financial statements.

(1) The risk management frameworks, which are approved annually by the Group for each entity with exposure to energy market risks, may include acceleration or deceleration plans allowing departures from these trajectories if predefined price thresholds are exceeded. Since these plans do not comply with the general principle of gradual hedging, they can only be applied under strict conditions.

(2) EDF Trading estimates the VaR by a "Monte Carlo" method, which is based on volatilities and historical correlations measured by reference to observed market prices over the 40 most recent business days. The VaR limit applies to the total EDF Trading portfolio.

5.2 Subsequent events until closing of accounts

Subsequent events are described in note 23 to the 2023 consolidated financial statements.

5.3 Subsequent events to closing of accounts

There were no post-closing events other than those presented in the other sections of this Universal Registration Document.

5.4 Changes in market prices at the end of February 2024

The spot price of electricity over the January-February 2024 period averaged €67.8 per MWh baseline and €77.2 per MWh peak, ranging from €(0.05) per MWh to €144.11 per MWh. The base price was on average €72 per MWh below its 2023 level over the same period and €29.1 per MWh below its average level for the whole of 2023. This overall decrease in spot prices was mainly due to a relaxed supply-demand balance: good availability of the nuclear fleet (around 42GW at the end of February), high levels of hydropower reserves, and gas and CO_2 prices below their 2023 levels.

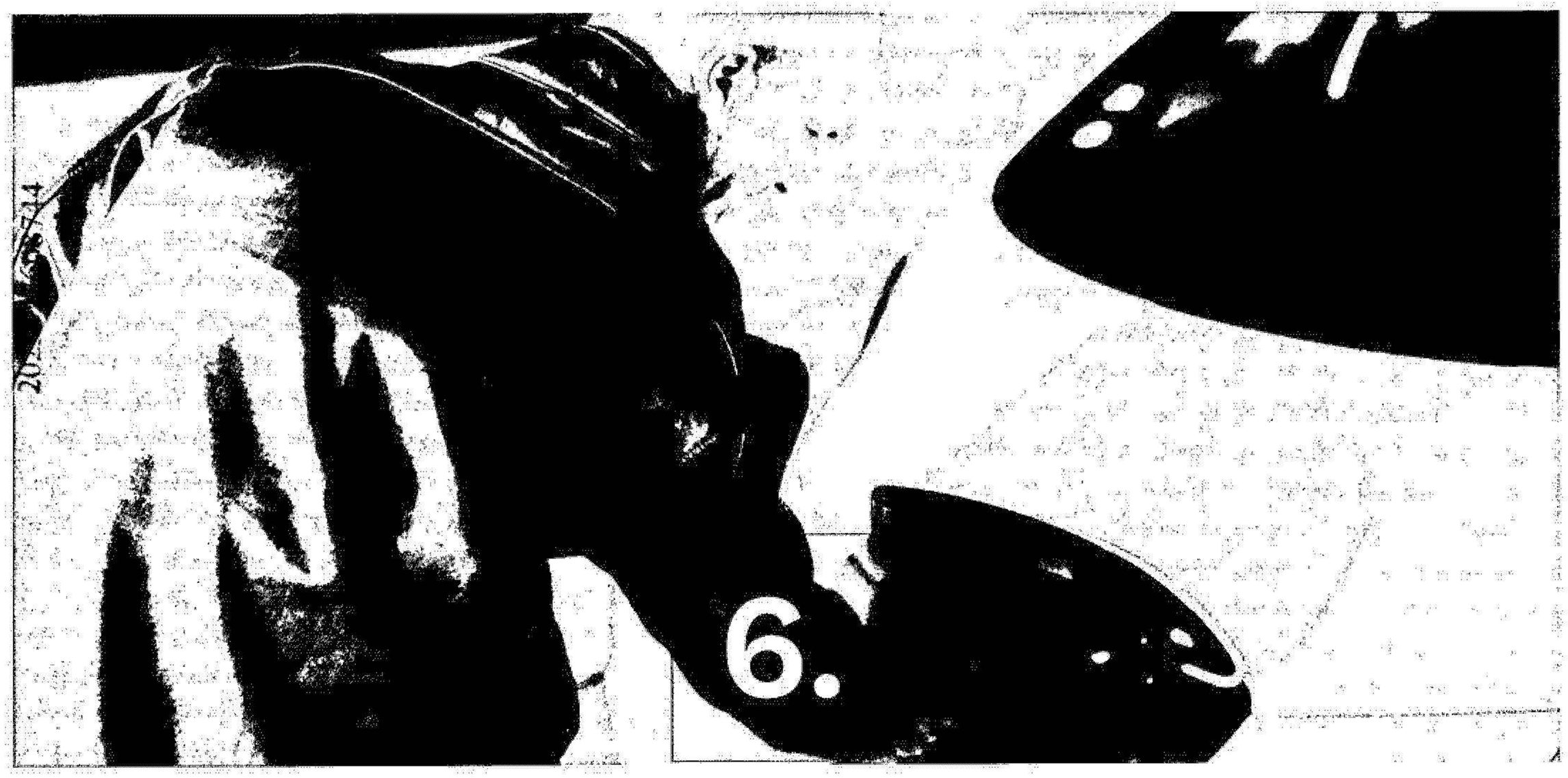
Throughout the months of January and February, the forward electricity prices continued the decline that began in 2023, across all delivery horizons. The calendar product for delivery the following year lost nearly €100 per MWh in one year. At the end of February 2024, it stood at €73.2 per MWh, compared to €166.5 per MWh at the end of February 2023 (-56%). Whereas the French product was more expensive than those of all its neighbouring countries at the end of February 2023, it was lower than its Italian, Swiss, Belgian and German counterparts at the end of February 2024.

In January-February 2024, the spot gas prices for the PEG index averaged €26.8 per MWh, down by €27.8 per MWh compared to the same period in 2023. They continued a downward trend, ranging between €33.3 per MWh at the beginning of January and €22.0 per MWh at the end of February. This decrease was mainly due to a relaxed supply-demand balance in Europe driven by robust supplies of Norwegian gas and LNG and a decline in industrial demand compared to last year. Apart from the cold spell between 8 and 16 January, temperatures remained relatively mild, making it possible to limit the use of gas-based means of generation in a context of good nuclear availability. The gas inventories remained at historical highs over the period in France and Europe, standing at 44% and 63% respectively at the end of February 2024. In the longer term, the calendar product for delivery the following year also depreciated to close at €28.7 per MWh. The price rebounded at the end of February following the upturn in the prices of the energy complex, particularly coal and emission quotas.

On 27 February, the price of a barrel of Brent for the next month closed at $83.6, the same level as at the end of February 2023. Since the beginning of 2024, prices have followed an upward trend (+10% between the beginning of January and the end of February), driven by persistent geopolitical tensions related to the conflict between Israel and Hamas. The Houti rebels have multiplied their attacks in the Red Sea, thus increasing the risk of a regional escalation that could affect oil infrastructures and maritime routes. However, the sluggish global demand has contained the increase.

At the end of February, the price of coal for delivery in the main European ports the following year closed at $101.7 per tonne, down by $52.5 per tonne compared to its closing price at the end of February 2023. The beginning of 2024 was marked by low demand from coal-fired power plants. The European inventories remained at high levels, leading freighters to look for other delivery destinations, or even reshipments from Europe to other consuming countries. However, the price moved upwards at the end of February due to the announcements of US sanctions concerning Russian coal.

At the end of February 2024, the price of CO_2 emission certificates for delivery in December 2024 closed at €56.0 per tonne, down by approximately 44% compared to the closing price at the end of February 2023 for delivery in December 2023. In early 2024, CO_2 prices continued the downward trend observed since September 2023. They have changed as a result of the weak demand and speculative positions taken by players. On the one hand, the decrease in electricity generation over the January-February period, driven by a mild winter above the normal seasonal levels and the effects of energy sobriety, led to less demand on thermal power plants and reduced demand for quotas. On the other hand, the increase in quotas put into circulation announced by Europe also encouraged the decline in prices.



Financial statements

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6.1 Consolidated financial statements at 31 December 2023

The Group's consolidated financial statements for the financial year ended on 31 December 2023, prepared under IAS-IFRS, are presented below. They will be submitted for approval at the General Shareholders' Meeting to be held on 11 June 2024.

Consolidated income statement

(in millions of euros)	Notes	2023	2022
Sales	5.1	139,715	143,476
Fuel and energy purchases	5.2	(80,989)	(121,010)
Other external expenses[1]		(10,493)	(9,420)
Personnel expenses	5.3	(15,470)	(15,236)
Taxes other than income taxes	5.4	(4,064)	(3,163)
Other operating income and expenses	5.5	11,228	367
Operating profit before depreciation and amortisation	**5**	**39,927**	**(4,986)**
Net changes in fair value on energy and commodity derivatives, excluding trading activities	6	363	(849)
Net depreciation and amortisation		(11,161)	(11,079)
(Impairment)/reversals	10.8	(13,011)	(1,762)
Other income and expenses	7	(2,944)	(687)
Operating profit		**13,174**	**(19,363)**
Cost of gross financial indebtedness	8.1	(3,830)	(1,730)
Discount effect	8.2	(3,988)	174
Other financial income and expenses	8.3	4,469	(1,997)
Financial result	**8**	**(3,349)**	**(3,553)**
Income before taxes of consolidated companies		**9,825**	**(22,916)**
Income taxes	9	(2,470)	3,926
Share in net income of associates and joint ventures	12	257	759
Net income of discontinued operations		-	6
CONSOLIDATED NET INCOME		**7,612**	**(18,225)**
EDF net income		**10,016**	**(17,940)**
EDF net income - continuing operations		10,016	(17,946)
EDF net income - discontinued operations		-	6
Net income attributable to non-controlling interests		**(2,404)**	**(285)**
Net income attributable to non-controlling interests - continuing operations		(2,404)	(285)
Net income attributable to non-controlling interests - discontinued operations		-	-

(1) Other external expenses are reported net of capitalised production costs.

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Consolidated statement of comprehensive income

(in millions of euros)	Notes	2023 EDF's share	2023 Non-controlling interests	2023 Total	2022 EDF's share	2022 Non-controlling interests	2022 Total
Consolidated net income		**10,016**	**(2,404)**	**7,612**	**(17,940)**	**(285)**	**(18,225)**
Fair value of cash flow hedges							
Fair value of cash flow hedges - gross change	18.7.5	7,089	77	7,166	(3,579)	57	(3,522)
Fair value of cash flow hedges - tax effects		(1,844)	(18)	(1,862)	936	(14)	922
Fair value of net investment hedges							
Fair value of net investment hedges - gross change	18.7.5	(107)	-	(107)	308	-	308
Fair value of net investment hedges - tax effects		23	-	23	65	-	65
Change in fair value of debt instruments							
Gross change in fair value of debt instruments	18.1.2	970	-	970	(1,660)	-	(1,660)
Related tax effect		(247)	-	(247)	428	-	428
Fair value of hedging costs (foreign currency basis spread)							
Fair value of hedging costs (foreign currency basis spread) - gross change [(1)]	18.7.5	(126)	-	(126)	155	-	155
Fair value of hedging costs (foreign currency basis spread) - tax effects		32	-	32	(40)	-	(40)
Translation adjustments - controlled entities		**326**	**204**	**530**	**(1,114)**	**(546)**	**(1,660)**
Share in net income of associates and joint ventures - items that can be recycled to profit and loss		**(244)**	**(12)**	**(256)**	**521**	**-**	**521**
Gains and losses recorded in equity with recycling		***5,872***	***251***	***6,123***	***(3,980)***	***(503)***	***(4,483)***
Change in fair value of equity instruments							
Gross change in fair value of equity instruments	18.1.2	46	1	47	(16)	-	(16)
Related tax effect			-	-	-	-	-
Change in actuarial gains and losses on post-employment benefits							
Gross change in actuarial gains and losses on post-employment benefits [(2)]	16.1.1	564	(151)	413	3,899	(405)	3,494
Related tax effect [(2)]		164	35	199	458	103	561
Share in net income of associates and joint ventures - items that cannot be recycled to profit and loss		**(19)**	**-**	**(19)**	**216**	**-**	**216**
Gains and losses recorded in equity with no recycling		***755***	***(115)***	***640***	***4,557***	***(302)***	***4,255***
Total gains and losses recorded in equity		**6,627**	**136**	**6,763**	**577**	**(805)**	**(228)**
CONSOLIDATED COMPREHENSIVE INCOME		**16,643**	**(2,268)**	**14,375**	**(17,363)**	**(1,090)**	**(18,453)**
Comprehensive income of continuing operations		16,643	(2,268)	14,375	(17,369)	(1,090)	(18,459)
Comprehensive income of discontinued operations		-	-	-	6	-	6

(1) The change in the fair value of hedging costs recognised in 2022 includes the €125 million effect of restatements of prior-year figures.

(2) In 2022, they had a limited tax effect because most of the actuarial gains recognised concern the portion of the provision for employee benefits which will reverse after more than 10 years, and for which no corresponding deferred tax amount has been recognised, in line with the Group's recognition policy for deferred taxes.

Consolidated balance sheet

ASSETS (in millions of euros)	Notes	31/12/2023	31/12/2022
Goodwill	10.1	7,895	9,513
Other intangible assets	10.2	11,300	10,619
Property, plant and equipment used in generation and other tangible assets, including right-of-use assets	10.3	100,587	101,126
Property, plant and equipment operated under French public electricity distribution concessions	11.1	66,128	63,966
Property, plant and equipment operated under concessions other than French public electricity distribution concessions	10.5	6,544	6,816
Investments in associates and joint ventures	12	9,037	9,421
Non-current financial assets	18.1	48,327	48,512
Other non-current receivables	13.3.4	2,110	2,165
Deferred tax assets	9.3	7,403	8,696
Non-current assets		**259,331**	**260,834**
Inventories	13.2	18,092	17,661
Trade receivables	13.3	26,833	24,844
Current financial assets	18.1	39,442	58,033
Current tax assets		669	497
Other current receivables	13.3.4	9,074	15,165
Cash and cash equivalents	18.2	10,775	10,948
Current assets		**104,885**	**127,148**
Assets classified as held for sale	3.2	596	150
TOTAL ASSETS		**364,812**	**388,132**

EQUITY AND LIABILITIES (in millions of euros)	Notes	31/12/2023	31/12/2022
Capital	14	2,084	1,944
EDF net income and consolidated reserves		50,084	32,396
Equity (EDF share)		***52,168***	***34,340***
Equity (non-controlling interests)	14.5	11,951	12,272
Total equity	**14**	**64,119**	**46,612**
Provisions related to nuclear generation - back-end of the nuclear cycle, plant decommissioning and last cores	15	60,206	56,021
Provisions for employee benefits	16	15,895	16,231
Other provisions	17	4,878	4,671
Non-current provisions		***80,979***	***76,923***
Special French public electricity distribution concession liabilities	11.2	50,010	49,459
Non-current financial liabilities	18.3	69,724	71,058
Other non-current liabilities	13.5	5,685	4,968
Deferred tax liabilities	9.3	978	1,533
Non-current liabilities		**207,376**	**203,941**
Current provisions	15, 16.1 and 17	7,294	7,943
Trade payables	13.4	19,687	23,284
Current financial liabilities	18.3	38,103	71,844
Current tax liabilities		1,111	967
Other current liabilities	13.5	26,975	33,504
Current liabilities		**93,170**	**137,542**
Liabilities classified as held for sale	3.2	147	37
TOTAL EQUITY AND LIABILITIES		**364,812**	**388,132**

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Consolidated cash flow statement

(in millions of euros)	Notes	2023	2022
Operating activities:			
Consolidated net income		**7,612**	**(18,225)**
Net income of discontinued operations		**-**	**6**
Net income of continuing operations		**7,612**	**(18,231)**
Impairment/(reversals)	10.8.1	13,011	1,762
Accumulated depreciation and amortisation, provisions and changes in fair value		18,116	6,820
Financial income and expenses		1,934	446
Dividends received from associates and joint ventures		702	590
Capital gains/losses		234	(143)
Income taxes	9	2,470	(3,926)
Share in net income of associates and joint ventures	12	(257)	(769)
Change in working capital	13.1	(7,785)	8,301
Net cash flow from operations		***36,037***	***(5,140)***
Net financial expenses disbursed		(2,534)	(1,003)
Income taxes paid		(3,695)	(1,282)
Net cash flow from continuing operating activities		**29,808**	**(7,425)**
Net cash flow from operating activities relating to discontinued operations		**-**	**-**
Net cash flow from operating activities		**29,808**	**(7,425)**
Investing activities:			
Acquisitions of equity investments, net of cash acquired		(181)	(198)
Disposals of equity investments, net of cash transferred		227	694
Investments in intangible assets and property, plant and equipment	10.7	(21,021)	(18,324)
Net proceeds from sale of intangible assets and property, plant and equipment		126	87
Changes in financial assets		(2,196)	(7,344)
Net cash flow from continuing investing activities		**(23,045)**	**(25,085)**
Net cash flow from investing activities relating to discontinued operations		**-**	**-**
Net cash flow from investing activities		**(23,045)**	**(25,085)**
Financing activities:			
EDF capital increase	14.1	-	3,252
Transactions with non-controlling interests[1]		1,746	1,795
Dividends paid by parent company	14.2	-	(72)
Dividends paid to non-controlling interests		(482)	(407)
Purchases/sales of treasury shares		-	4
Cash flows with shareholders		***1,264***	***4,572***
Issuance of borrowings	18.3.2.1	11,947	34,165
Repayment of borrowings	18.3.2.1	(21,712)	(5,876)
Issuance of perpetual subordinated bonds	14.3 et 14.4	1,377	994
Remunerations paid to bearers of perpetual subordinated bonds	14.3	(630)	(606)
Funding contributions received for assets operated under concessions and investment subsidies		496	694
Other cash flows from financing activities		***(8,522)***	***29,371***
Net cash flow from continuing financing activities		**(7,258)**	**33,943**
Net cash flow from financing activities relating to discontinued operations		**-**	**-**
Net cash flow from financing activities		**(7,258)**	**33,943**
Net cash flow from continuing operations		(495)	1,433
Net cash flow from discontinued operations		-	-
Net increase/(decrease) in cash and cash equivalents		**(495)**	**1,433**
CASH AND CASH EQUIVALENTS - OPENING BALANCE		**10,948**	**9,919**
Net increase/(decrease) in cash and cash equivalents		(495)	1,433
Currency fluctuations		(53)	(397)
Financial income on cash and cash equivalents		293	100
Other non-monetary changes		82	(107)
CASH AND CASH EQUIVALENTS - CLOSING BALANCE	**18.2**	**10,775**	**10,948**

(1) In 2023, these transactions notably include, in the United Kingdom, capital injections of €958 million by CGN into the Hinkley Point C project (€1,351 million in 2022), and a €485 million capital injection by the British government into the Sizewell C project (€209 million in 2022).

(2) Including €(2,789) for redemption of perpetual subordinated bonds in 2023 (€(267) million in 2022).

Change in consolidated equity

Details of the change in equity between 1 January and 31 December 2023 are as follows:

(in millions of euros)	Capital	Treasury shares	Translation adjustments	Fair value adjustment of financial instruments (OCI with recycling) [1]	Other consolidated reserves and net income [2]	Equity (EDF share)	Equity (non-controlling interests)	Total equity
EQUITY AS PUBLISHED AT 31/12/2021	**1,619**	**(14)**	**828**	**(4,474)**	**52,252**	**50,211**	**11,778**	**61,989**
Gains and losses recorded in equity	-	-	(1,003)	(2,977)	4,557	577	(805)	(228)
Net income	-	-	-	-	(17,940)	(17,940)	(285)	(18,225)
Consolidated comprehensive income	**-**	**-**	**(1,003)**	**(2,977)**	**(13,383)**	**(17,363)**	**(1,090)**	**(18,453)**
Remuneration on perpetual subordinated bonds	-	-	-	-	(606)	(606)		(606)
Issuance/Redemption of perpetual subordinated bonds (see note 14.3)	-	-	-	-	(1,025)	(1,025)		(1,025)
Dividends paid	-	-	-	-	(1,050)	(1,050)	(407)	(1,457)
Purchases/sales of treasury shares	-	7	-	-	-	7	-	7
Capital increase by EDF (see note 14.1)	325	-	-	-	3,915	4,240	-	4,240
Other changes[3]	-	-	-	-	(74)	(74)	1,991	1,917
EQUITY AT 31/12/2022	**1,944**	**(7)**	**(175)**	**(7,451)**	**40,029**	**34,340**	**12,272**	**46,612**
Gains and losses recorded in equity	-	-	156	5,716	755	6,627	136	6,763
Net income	-	-	-	-	10,016	10,016	(2,404)	7,612
Consolidated comprehensive income	**-**	**-**	**156**	**5,716**	**10,771**	**16,643**	**(2,268)**	**14,375**
Remuneration on perpetual subordinated bonds	-	-	-	-	(630)	(630)	-	(630)
Issuance/Redemption of perpetual subordinated bonds and OCEANEs (see notes 14.3 and 14.4)	140	-	-	-	2,523	2,663	-	2,663
Dividends paid	-	-	-	-	-	-	(482)	(482)
Purchases/sales of treasury shares	-	7	-	-	-	7	-	7
Other changes[3]	-	-	-	3	(858)	(855)	2,429	1,574
EQUITY AT 31/12/2023	**2,084**	**-**	**(19)**	**(1,732)**	**51,835**	**52,168**	**11,951**	**64,119**

(1) Changes in reserves recorded in OCI (Other Comprehensive Income) with recycling are shown in the Statement of Comprehensive Income. They correspond to the effects of fair value adjustments of debt securities and financial instruments hedging cash flows and net foreign investments, and amounts recycled to profit and loss in respect of unwound hedging contracts and debt instruments sold. They also include changes in the value of hedging costs resulting from the foreign currency basis spread on interest rate swaps and cross-currency swaps.

(2) Fair value changes recorded in OCI with no recycling are presented in this column.

(3) In 2023, "Other changes" in equity (non-controlling interests) notably include, in the United Kingdom, CGN's capital injections into the Hinkley Point C project totalling €958 million (€1,351 million in 2022), and the British government's €485 million capital injection into the Sizewell C project (€209 million in 2022) (see note 14.5).

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Notes to the consolidated financial statements

Électricité de France (EDF or the "Company") is a French *société anonyme* governed by French law, and registered in France (22-30, Avenue de Wagram, 75008 Paris).

The consolidated financial statements reflect the accounting position of the Company and its subsidiaries (which together form the "Group") and the Group's interests in associates, joint arrangements classified as joint operations, and joint ventures, for the year ended 31 December 2023.

The Group is an integrated energy operator engaged in all aspects of the energy business: power generation (nuclear power, hydropower, wind and solar power, thermal energy, *etc.*), transmission, distribution, supply, trading, energy services, production of equipment and fuel assemblies, and reactor services.

The Group's consolidated financial statements at 31 December 2023 were prepared under the responsibility of the Board of Directors and approved by the Directors at the Board meeting held on 15 February 2024.

Note 1 Group accounting policies

1.1 Declaration of conformity and group accounting policies

Pursuant to European regulation 1606/2002 of 19 July 2002 on the adoption of international accounting standards, the EDF group's consolidated financial statements at 31 December 2023 are prepared under the presentation, recognition and measurement rules set out in the international accounting standards published by the IASB and approved by the European Union for application at 31 December 2023. These international standards are IAS (*International Accounting Standards*), IFRS (*International Financial Reporting Standards*), and SIC and IFRIC interpretations.

1.2 Changes in accounting standards

The parent company's functional currency is the Euro. The Group's financial statements are presented in millions of euros[1].

The accounting and valuation methods applied by the Group in the consolidated financial statements at 31 December 2023 are identical to those used in the consolidated financial statements at 31 December 2022, with the exception of the changes presented below in notes 1.2.1 to 1.2.5. Information is also given on the standards, amendments and interpretations published by the IASB that are applicable for the Group from 1 January 2024 with no early application in the 2023 consolidated financial statements (note 1.2.6).

The accounting principles and methods used are described in individual notes to the financial statements.

1.2.1 Amendments to IAS 12 "Income taxes" - Deferred tax related to assets and liabilities arising from a single transaction

As of 1 January 2023, entities are required to recognise deferred taxes on transactions that give rise upon initial recognition to equal amounts of taxable and deductible temporary differences.

The amendments to IAS 12 are intended to clarify the treatment of deferred taxes associated with leases and decommissioning obligations. They require recognition of a deferred tax asset and a deferred tax liability for all deductible and taxable temporary differences on such transactions.

As the Group already recognised a net deferred tax amount equal to the difference between deductible and taxable temporary differences on leases and decommissioning obligations, application of these amendments does not have any material impact on its consolidated financial statements. The only change will concern the breakdown of deferred taxes by nature to be provided in the notes to the annual financial statements, starting from the 2023 year-end (note 9.4).

1.2.2 Amendments to IAS 12 "Income taxes" - International Tax Reform — Pillar Two Model Rules

This amendment to IAS 12 published by the IASB in May 2023 contains:

- An exception to IAS 12 requirements, such that deferred taxes related to the Pillar 2 rules are not to be recognised and related disclosures are not required;
- A requirement to disclose in the notes to the financial statements, particularly in the transitional period when Pillar 2 legislation has been adopted but has not yet come into force, all known or reasonably estimable qualitative and quantitative information about the entity's exposure to the additional taxes resulting from Pillar 2 (note 9).

1.2.3 IFRS 17 "Insurance contracts"

IFRS 17 defines the recognition, measurement, presentation and disclosure principles for insurance contracts that fall within the standard's scope of application.

The Group has not noted any material impact resulting from application of this standard, largely because the insurance operations of captive companies are internal to the Group since the only beneficiaries are subsidiaries, and are therefore eliminated in consolidation.

1.2.4 Other amendments

The following amendments, applicable since 1 January 2023, have no impact on the Group's financial statements:

- IAS 1 "Presentation of financial statements" – Disclosure of accounting policies;
- IAS 8 "Accounting policies, changes in accounting estimates and errors" - Definition of accounting estimates.

(1) As the totals in the tables are aggregates of figures that are not rounded up or down, there may be variances between these totals and the sum of their rounded up/down component figures.

1.2.5 Interest Rate Benchmark Reform - Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16

These amendments have been applicable since 1 January 2021 to financial assets and liabilities for which contractual modifications result directly from the interest rate reform.

This reform is applied prospectively, with no impact on profit and loss, keeping the hedging relationships for the instruments concerned. Its effects are mainly operational (renegotiation of contracts, fallback provisions, information system upgrades).

The replacement operations for the last benchmark rate, USD Libor, were completed in line with its cessation on 30 June 2023.

1.2.6 Standards published by the IASB and applicable for financial years beginning on or after 1 January 2024

1.2.6.1 Amendments to IAS 7 "Statement of cash flows" and IFRS 7 "Financial Instruments: Disclosures - Supplier finance arrangements

In 2023 the IASB published an amendment to IAS 7 and IFRS 7 defining the quantitative and qualitative disclosures required about supplier finance arrangements, to assess how such arrangements affect the entity's liabilities and cash flows, and also its exposure to liquidity risk.

The Group provides the required disclosures in note 13.4, and does not expect application of this amendment to have any material impact on its financial statements.

1.2.6.2 Amendments to IAS 1 "Presentation of financial statements" - Classification of liabilities as current or non-current and Non-current liabilities with covenants

The Group does not anticipate any material impact to result from the first application of the following amendments:

- Classification of liabilities as current or non-current, which clarifies the principles for classifying a balance sheet liability as current or non-current;
- Non-current liabilities with covenants, which states that covenants with which an entity is required to comply after the closing date do not affect the classification of a liability as current or non-current at that date. This amendment aims to improve disclosures on long-term liabilities containing covenants.

1.3 Basis for preparation of the financial statements

1.3.1 Valuation

The consolidated financial statements are prepared on a historical cost basis, with the exception of assets acquired and liabilities assumed through business combinations, and of certain financial instruments, which are stated at fair value.

1.3.2 Translation methods

1.3.2.1 Functional currency

An entity's functional currency is the currency of the economic environment in which it primarily operates. In most cases, the local currency is the functional currency.

1.3.2.2 Translation of the financial statements of foreign companies whose functional currency is not the Euro

The financial statements of foreign companies whose functional currency is not the Euro are translated as follows:

- balance sheets are translated into Euros at the closing rate;
- income statements and cash flows are translated at the average rate for the period;
- resulting differences are recognised in equity under the heading "Translation adjustments".

Translation adjustments affecting a monetary item that is an integral part of the Group's net investment in a consolidated foreign company are included in consolidated equity until the disposal or liquidation of the net investment, at which date they are recognised as income or expenses in the income statement, in the same way as other exchange differences concerning the Company.

1.3.2.3 Translation of transactions in foreign currencies

In application of IAS 21, transactions expressed in foreign currencies are initially translated and recorded in the functional currency of the entity concerned, using the rate in force at the transaction date.

At each reporting date, monetary assets and liabilities expressed in foreign currencies are translated at the closing rate. The resulting foreign exchange differences are taken to the income statement.

However, any payment or receipt of a non-monetary advance in a foreign currency is translated at the exchange rate of the transaction date, with no subsequent adjustment.

1.3.3 Financial statement presentation rules

Assets and liabilities contributing to working capital used in the entity's normal operating cycle are classified as current in the consolidated balance sheet. Other assets and liabilities are classified as current if they mature within one year of the closing date, and non-current if they mature more than one year after the closing date.

The income statement presents items by nature. The heading "Other income and expenses" presented below the operating profit before depreciation and amortisation comprises items of an unusual nature or amount.

1.3.4 Management judgements and estimates

The preparation of the financial statements requires the use of judgments, best estimates and assumptions in determining the value of assets and liabilities, income and expenses recorded for the period, and in considering positive and negative contingencies existing at year-end. The figures in the Group's future financial statements could differ significantly from current estimates due to changes in these assumptions or economic conditions.

In a context characterised by volatility on the financial and energy markets, the parameters used to prepare estimates are based on macro-economic assumptions appropriate to the very long-term cycle of Group assets.

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The principal items for which the Group uses estimates and judgments are the following:

1.3.4.1 Depreciation period of nuclear power plants in France

In the specific case of the depreciation period of its French nuclear power plants, the EDF group's industrial strategy is to continue operation beyond 40 years, in optimum conditions as regards safety and efficiency.

The Group has therefore been making preparations for several years to extend the operation period, and making the necessary investments under its *Grand Carénage* industrial refurbishment programme which was approved in principle by the Board of Directors in January 2015.

The depreciation period of 900MW-series power plants was extended from 40 years to 50 years in 2016 (except for Fessenheim where both reactors were permanently shut down in the first half of 2020) since all the technical, economic and governance conditions were fulfilled.

On 23 February 2021, the Nuclear Safety Authority (*Autorité de Sûreté Nucléaire* - ASN) issued a resolution on the conditions for continued operation of EDF's 900MW reactors beyond their fourth 10-year inspection. The ASN considered that "the measures planned by EDF combined with those prescribed by ASN open the prospect of continued operation of these reactors for a further ten years following their fourth 10-year inspection". This resolution ends the "generic" phase of the review, which concerns the studies and modifications of facilities common to all the 900MW reactors, which all have a similar design model.

The fourth 10-year inspections have been completed at 12 of the 32 reactors in the 900MW series, including Blayais 1 and Saint-Laurent B2 in 2023, and five more are currently in process (Blayais 2, Bugey 3, Chinon B1, Dampierre 3, Gravelines 2).

In 2021, the technical, economic and governance conditions for extending the depreciation period of 1300MW-series plants were fulfilled, and their depreciation period was extended from 40 to 50 years.

The depreciation period of the 1450MW-series units (the four reactors at Chooz and Civaux), which are much more recent, currently remains at 40 years as the conditions for extension are not yet fulfilled.

These depreciation periods take into account the date of recoupling with the network after the most recent 10-year inspection.

1.3.4.2 Nuclear provisions

The measurement of provisions for the back-end of the nuclear cycle, decommissioning and last cores is sensitive to assumptions concerning technical processes, costs, inflation rates, long-term discount rates, the depreciation period of plants currently in operation and disbursement schedules.

These parameters are therefore re-estimated at each closing date to ensure that the amounts accrued correspond to the best estimate of the costs eventually to be borne by the Group.

The Group considers that the assumptions used at 31 December 2023 are appropriate and justified. However, any future change in assumptions could have a significant impact on the Group's financial statements (see note 15).

For France, the main assumptions and sensitivity analyses relating to EDF's nuclear provisions are presented in note 15.1.1.5.

The calculation of provisions incorporates a level of risks and unknowns as appropriate to the operations concerned, together with uncertainty factors such as:

- changes in the regulations, particularly on safety, security and environmental protection, and financing of long-term nuclear expenses;
- changes in the regulatory decommissioning process and the time necessary for issuance of administrative authorisation;
- future methods for storing long-lived radioactive waste and provision of storage facilities by the French agency for radioactive waste management ANDRA (*Agence nationale pour la gestion des déchets radioactifs*);
- changes in the contractual terms for spent fuel management and more generally the outlook for Orano's long-term industrial strategy in line with French energy policy, the operating performance of its installations, and the level of associated costs and investments;
- changes in certain financial parameters such as discount rates and/or inflation rates;
- the useful life of nuclear facilities (calculation of decommissioning provisions for nuclear plants in operation is based on the depreciation period of the assets concerned, *i.e.* 50 years for 900MW-series and 1300MW-series power plants and 40 years for 1450MW-series power plants).

1.3.4.3 Pensions and other long-term and post-employment benefit obligations

The value of pensions and other long-term and post-employment benefit obligations is based on actuarial valuations that are sensitive to all the actuarial assumptions used, particularly concerning discount rates, inflation rates and wage increase rates.

The principal actuarial assumptions used to calculate these post-employment and long-term benefits at 31 December 2023 are presented in note 16. These assumptions are updated annually. The Group considers the actuarial assumptions used at 31 December 2023 appropriate and well-founded, but future changes in these assumptions could have a significant effect on the amount of the obligations and the Group's equity and net income. Sensitivity analyses are therefore presented in note 16.

1.3.4.4 Impairment of goodwill and long-term assets

Impairment tests on goodwill and long-term assets are sensitive to the macro-economic and segment assumptions used, particularly concerning changes in energy prices, and to medium-term financial forecasts (discount and inflation rates) and completion costs for assets under construction. The Group therefore revises the underlying estimates and assumptions based on regularly updated information.

These assumptions, which are specific to Group companies, are presented in note 10.8.

1.3.4.5 Financial instruments

In measuring the fair value of unlisted financial instruments (principally the debt and equity securities included in dedicated assets, and energy contracts), the Group uses valuation models based on a certain number of assumptions subject to unforeseeable developments.

1.3.4.6 Energy supplied but not yet measured and billed

As explained in note 5.1, the quantities of energy supplied but not yet measured and billed are calculated at the reporting date based on statistic consumption models and selling price estimates. Determination of the unbilled portion of sales revenues at the year-end is sensitive to the assumptions used to prepare these statistics and estimates.

1.3.4.7 Obligations concerning French public distribution concession assets to be replaced

In view of the specific nature of French public electricity distribution concessions, the Group has opted to present its obligations to replace concession assets in the balance sheet at a value based on the amount of contractual commitments as calculated and disclosed to the concession-granting authorities in the annual business reports (see note 11). Measurement of the concession liabilities concerning assets to be replaced is notably subject to unforeseeable developments in terms of costs, the useful life of assets and disbursement dates.

1.3.4.8 Deferred tax assets

The use of estimates and assumptions over recovery horizons is particularly important in the recognition of deferred tax assets.

1.3.4.9 Climate issues

The Group is concerned by the effects of climate change, which are an implicit factor in application of the methods and models used to estimate the values of certain accounting items (see note 20), particularly impairment of non-financial assets.

1.3.4.10 Other judgements and estimates

When there is no standard or interpretation applicable to a specific transaction, the Group exercises judgment to define and apply accounting methods that supply relevant and reliable information for preparation of its financial statements.

For the application of IFRS 10 and IFRS 11, the Group uses judgment to assess control or classify the type of partnership arrangement represented by a jointly-controlled entity. For example EDF has set up "reserved" investment funds (FCPRs) for some of its funds set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste (see note 15.1.2.2). In view of the funds' characteristics, the prerogatives exercised by their managers and the procedures for defining the management strategies applicable to them, the Group does not consolidate these funds. They are consequently treated as debt securities, in application of IFRS 9.

Through its subsidiary Luminus, the Group has a 49% stake in Luminus Seraing 2.0 SA. The governance and contractual agreements give Luminus exclusive control over this entity, which is fully consolidated in application of IFRS 10.

1.3.5 Restrictions on the Group's ability to access and use assets or settle liabilities

The main restrictions that may limit the Group's ability to access or use its assets or settle its liabilities concern the following items:

- assets held to fund employee benefits (principally in France and the United Kingdom – see note 16) and expenses related to nuclear liabilities (principally in France – see note 15.1.2 – and the United Kingdom – see note 15.2);
- tangible and intangible assets and the related liabilities associated with concession agreements, whether or not they are subject to regulatory mechanisms (obligations to supply energy or energy-related services, rules governing investments, an obligation to return concession facilities at the end of the contract, amounts payable at the end of the contract, tariff constraints, *etc.*). These restrictions mainly apply to assets of this type in France (EDF, Enedis, Électricité de Strasbourg and Dalkia), and to a lesser extent in Italy (see note 10.5);
- the disposal of Group investments in certain subsidiaries may require authorisations from State bodies, particularly when they exercise a regulated activity or operate nuclear power plants (this is the case for EDF Nuclear Generation Ltd. in the United Kingdom and Taishan (TNPJVC) in China);
- prudential reserves established and measures taken as regards distribution capacity, so that the insurance subsidiaries will meet their prudential ratio requirements;
- the cash of certain entities that use financing arrangements stipulating that dividend distribution is subject to conditions concerning repayment of bank debt (or qualification for loans) and shareholders, or are subject to regulatory limitations in certain countries.

Certain shareholder agreements concerning companies controlled by the Group include clauses to protect minority shareholders, requiring approval from minority shareholders for certain particularly important decisions.

Finally, certain financing loans granted to Group entities contain early repayment clauses (see note 18.3.4), and certain items of cash and cash equivalents are subject to restrictions (see note 18.2).

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Note 2 Summary of significant events

The main significant events and transactions for the Group **in 2023** are the following (references indicate the relevant notes in the 2023 consolidated financial statements):

- **Operation on the Group's capital:**
  - > The result of the reopened simplified public tender offer for the equity securities of EDF was published (see the Group press release of 23 May 2023, and note 14);
  - > The squeeze-out procedure for the equity securities of EDF was implemented (see the Group press release of 8 June 2023, and note 14).
- **Nuclear developments:**
  - > EDF proposed an update to its strategy for controlling stress corrosion (see the Group press releases of 16 March and 26 April 2023, and note 10.6);
  - > Sizewell C: an equity raise process was launched in November 2023 to raise finance for construction of this nuclear power plant (see note 10.6);
  - > Hinkley Point C: the project review was finalised, leading to adjustment of the schedule and costs for construction of the two reactors (see the Group press release of 23 January 2024, notes 10.6 and 10.8).
- **Financing operations:**
  - > The French State requested conversion of EDF's OCEANE bonds by 2024 (see the Group press releases of 28 February 2023 and 24 May 2023, and note 14.4);
  - > EDF issued approximately €8 billion of senior bonds on various markets, and undertook its first green bond issue dedicated to funding the existing nuclear fleet, totalling €1 billion (see the Group press release of 28 November 2023, and note 18.3.2.2).
- **Environmental, social and governance (ESG) events:**
  - > The EDF group announced new objectives to reduce its CO2 emissions and reach "Net Zero Emissions" (see the Group press release of 28 November 2023, and note 20.1.1);
  - > The Port Est oil-fired power plant (Reunion island) was converted to liquid biomass (see the Group press release of 4 December 2023).
- **Renewable energies:**
  - > The EDF group and Maple Power were awarded a 1GW offshore wind project wind off the coast of Normandy (see the EDF Renewables and Group press releases of 27 March 2023, and note 12.3).
- **Disposals:**
  - > EDF completed the sale (announced on 27 September 2022) of its interest in the Sloe CCGT plant (870MW) in the Netherlands (see the Group press release of 25 January 2023, and note 3.1.1);
  - > Imtech, a Dalkia group company in the United Kingdom, completed an agreement with Duke Street for the sale (announced on 14 November 2022) of its subsidiary Suir Engineering (see the Dalkia press release of 1 February 2023, and note 3.1.2).

The main significant events and transactions for the Group in **2022** were the following (references indicate the relevant notes in the 2022 consolidated financial statements):

- **Operation on the Group's capital:**
  - > The simplified public tender offer for the equity securities of EDF opened (see the Group press release of 23 November 2022);
- **Nuclear developments:**
  - > Zero-carbon electricity generation ended and defueling began at Hunterston B (see the EDF Energy press releases of 7 January 2022 and 17 May 2022, and note 15);
  - > Flamanville EPR updates were released (see the Group press releases of 12 January and 16 December 2022, and note 10.6);
  - > EDF updated its estimated nuclear output in France for 2022 in accordance with the Group press releases of 13 January, 7 February, 11 February, 15 September and 3 November 2022;
  - > An update was released on the stress corrosion phenomenon and the 2022 French nuclear output estimate was adjusted (see the Group press release of 19 May 2022, and notes 5 and 10.6);
  - > Hinkley Point C update: the project schedule and costs were reviewed (see the Group press release of 19 May 2022, and notes 10.6 and 10.8);
  - > Sizewell C updates were released: A major milestone was reached as the UK Government granted the Development Consent Order to Sizewell C and EDF welcomed the UK government's decision to cofinance development of the Sizewell C project (see the Group press release of 29 November 2022, and note 10.6);
  - > EDF signed an exclusive agreement to acquire part of GE Steam Power's Nuclear Activities (see the Group press release of 4 November 2022 and note 3.1.3).
- **Disposals:**
  - > Edison signed an agreement to sell its stake in North Reggane to Repsol and Wintershall Dea (see the Edison press releases of 5 May 2022 and 29 June 2022, and note 3.1.1);
  - > EDF Trading sold its north American retail business to bp (see the EDF Trading press releases of 12 September and 30 November 2022, and note 3.1.2);
- **Other significant events:**
  - > Exceptional measures were announced by the French Government (see the Group press release of 13 January 2022, and note 5);
  - > EDF issued a statement concerning the decision made by the French Competition Authority (see the Group press release of 22 February 2022, and note 17);
  - > Following publication of the decree and orders relating to the additional allocation of 20TWh of ARENH volumes for 2022, an update of the impact on the 2022 EBITDA outlook was released (see the Group press release of 14 March 2022, and note 5.1.1);
  - > An appeal was filed concerning the allocation of additional ARENH electricity volumes for 2022 (see the Group press releases of 9 August 2022 and 27 October 2022, and note 5.1.1).

Note 3 Scope of consolidation

ACCOUNTING PRINCIPLES AND METHODS

CONTROLLED ENTITIES

Subsidiaries are companies in which the Group exercises exclusive control and are fully consolidated. The Group controls an entity when the three following conditions are fulfilled:

- it holds power over the entity;
- it is exposed, or has rights, to variable returns from its involvement with the entity;
- it has the ability to use its power to affect the amount of the investor's returns.

The Group considers all facts and circumstances when assessing control. All substantive potential voting rights exercisable, including by another party, are also taken into consideration.

INVESTMENTS IN ASSOCIATES AND JOINT VENTURES

An associate is an entity in which the Group exercises significant influence on financial and operational policies without having exclusive or joint control. Significant influence is presumed to exist when the Group's investment is at least 20%.

A joint venture is a partnership in which the parties (joint venturers) that exercise joint control over the entity have rights to the entity's net assets. Joint control is the contractually agreed sharing of control of an entity operated jointly by a limited number of partners or shareholders, such that the financial and operational policies result from unanimous consent of the parties.

Investments in associates and joint ventures are accounted for by the equity method. They are carried in the balance sheet at historical cost, adjusted for the share in net assets generated after the acquisition, less any impairment. The share in the net income for the period is reported in "Share in net income of associates and joint ventures" in the income statement (see note 12).

INVESTMENTS IN JOINT OPERATIONS

A joint operation is a joint arrangement in which the parties (joint operators) that exercise joint control over the entity have direct rights to its assets, and obligations for its liabilities. The Group, as an operator in a joint operation, reports the assets and liabilities and income and expenses related to its investment line by line.

The Group's principal joint operations are the LNG optimisation activities of JERA Global Markets, co-owned by EDF Trading, and the gas storage operator activity carried out by Friedeburger Speicherbetriebsgesellschaft mbH (FSG).

BUSINESS COMBINATIONS

In application of IFRS 3 business combinations arising since 1 January 2010 are measured and recognised under the following principles:

- at the date of acquisition, the identifiable assets acquired and liabilities assumed, measured at fair value, and any non-controlling interests in the company acquired (minority interests) are recorded separately from goodwill;
- non-controlling interests may be valued either at fair value (full goodwill method) or their share in the fair value of the net assets of the acquired company (partial goodwill method). The decision is made individually for each transaction;
- any acquisition or disposal of an investment in a subsidiary that does not affect control is considered as a transaction between shareholders and must be recorded directly in equity;
- if additional interests are acquired in a joint venture, joint operation or associate without resulting in acquisition of control, the value of the previously-acquired assets and liabilities remains unchanged in the consolidated financial statements;
- if control is acquired in stages, the cost of the business combination includes the fair value, at the date control is acquired, of the purchaser's previously-held interest in the acquired company;
- related costs directly attributable to an acquisition leading to control are treated as expenses for the periods in which they were incurred, except for issuance costs for debt securities or equity instruments, which must be recorded in compliance with IAS 32 and IFRS 9;
- IFRS 3 does not apply to common control business combinations, which are examined on a case-by-case basis to determine the appropriate accounting treatment;
- commitments given by the Group to purchase minority interests in Group-controlled companies are included in liabilities. For commitments of this kind given since 1 January 2010, the date of the Group's first application of IAS 27 (amended) and IFRS 3 (revised), the differential between the value of the non-controlling interests and the liability corresponding to the commitment is recorded in equity.

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3.1 Changes in the scope of consolidation

3.1.1 Changes in the scope of consolidation in 2023

The following changes in the Group's scope of consolidation took place during 2023:

- sale of the investment in the Sloe CCGT plant in the Netherlands to EPH, an energy producer and operator of the Czech electricity grid, on 25 January 2023. EDF was a 50% owner and operator of the plant, alongside its partner Pzem. This transaction has an impact of €0.2 billion on the Group's income statement in 2022 (principally due to reversal of a provision for onerous contracts that is no longer relevant) and has a non-significant impact on the Group's net indebtedness in 2023.
- sale of 100% of Suir Engineering by Imtech to the private equity fund Duke Street on 1 February 2023. This transaction has a positive impact of €0.1 billion on the Group's net indebtedness in 2023, and a non-material impact on consolidated net income.

Edison also finalised the sale of its 11.25% stake in the North Reggane gas field licence in Algeria to Repsol and Wintershall Dea on 12 October 2023, following approval of the operation by the Algerian authorities. As the relevant binding agreements were signed in 2022, the corresponding assets and liabilities were classified as assets held for sale and related liabilities at 31 December 2022 (see note 3.2). This operation has no impact on the net income for 2023.

3.1.2 Changes in the scope of consolidation in 2022

The following changes in the Group's scope of consolidation took place during 2022 (see note 3.1.1 to the consolidated financial statements at 31 December 2022):

- acquisition by Imtech (a Dalkia subsidiary) of SPIE UK on 19 December 2022. This acquisition had no significant impact on the Group's financial statements;
- EDF Trading Limited sold its subsidiary EDF Energy Services LLC (EDFES), which covers the retail businesses of EDF Trading North America, on 30 November 2022. EDF Trading's business in Europe and Asia and its wholesale trading business in North America were unaffected by this transaction, which reduced the Group's net indebtedness by €0.5 billion in 2022.

3.1.3 GE Steam Power's Nuclear Activities

On 4 November 2022, GE and EDF signed a final agreement related to EDF's acquisition of GE Steam Power's nuclear activities. These activities include the manufacturing of conventional island equipment for new nuclear power plants, including the Arabelle steam turbine as well as maintenance and upgrade activities for existing nuclear power plants in all regions other than the Americas. The transaction also includes steam turbine technology for first and second-generation European pressurized reactors (EPR and EPR2) and small modular reactors (SMR).

This acquisition will enable EDF group to strengthen its conventional Island technologies and skills, which are essential for the durability of the existing nuclear fleet and future projects.

Completion of this operation, initially expected during the second half of 2023, will take place once all the necessary conditions, including issuance of the required regulatory authorisations, have been fulfilled.

3.2 Assets held for sale and related liabilities

ACCOUNTING PRINCIPLES AND METHODS

Assets that qualify as held for sale and related liabilities are disclosed separately from other assets and liabilities in the balance sheet.

When assets or groups of assets are classified as discontinued operations, income and expenses relating to these discontinued operations are disclosed in a single net amount after taxes in the income statement and net changes in cash and cash equivalents of discontinued operations are also reported separately in the cash flow statement.

Impairment is booked when the realisable value is lower than the net book value.

In accordance with *IFRS 5*:

- for assets or groups of assets that are identified and classified as held for sale during the year, there is no change of presentation or retrospective restatement in prior year balance sheets;
- assets or groups of assets that qualify as discontinued operations are restated in the income statement and the cash flow statement for the prior periods presented in the financial statements.

At 31 December 2023, assets held for sale and related liabilities concern the ongoing sales of Edison's gaz storage assets in Italy and a gas storage asset belonging to EDF Energy in the United Kingdom, as well as a price supplement on the Cassiopea gas project (E&P in Italy).

In application of IFRS 5, assets held for sale and related liabilities are shown below:

(in millions of euros)	31/12/2023	31/12/2022
ASSETS HELD FOR SALE	**596**	**150**
Property, plant and equipment and intangible assets	440	62
Other current assets[1]	156	88
LIABILITIES RELATED TO ASSETS HELD FOR SALE	**147**	**37**
Provisions and other non-current liabilities	137	-
Other current liabilities[1]	10	37

(1) Other current assets and liabilities comprise components of working capital.

3.3 Scope of consolidation at 31 December 2023

The Group's business sectors are defined as follows:

- **"Generation/Supply" (G)**: generation of nuclear energy, thermal energy, and renewable energies (wind, photovoltaic and hydro) and energy sales to industry, local authorities, small businesses and private customers. This segment also includes trading activities;
- **"Distribution" (D)**: management of the low and medium-voltage public electricity distribution networks;
- **"Reactors and Services (Framatome)" (R)**: services and production of equipment and fuel for nuclear reactors;
- **"Services and other activities" (O)**: energy services (district heating, thermal energy services, *etc.*) for industry and local authorities. This activity also includes EDF Invest's holding companies and entities that are classified as dedicated assets.

The companies and subgroups included in the EDF group consolidation are listed below.

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3.3.1 Fully consolidated companies

		Percentage ownership at 31/12/2023	Percentage ownership at 31/12/2022	Business sector
France – Generation and Supply				
Électricité de France – Parent Company		100.00	100.00	G,D,O
Group Support Services (G2S)		100.00	100.00	O
Edvance		95.10	95.10	O
Nuward[1]		100.00	-	O
Cyclife		100.00	100.00	O
IZI Confort (formerly CHAM SAS)		100.00	100.00	O
Sowee		100.00	100.00	O
IZI Solutions		100.00	100.00	O
IZI Solutions Renov		100.00	100.00	O
IZIVIA		100.00	100.00	O
EDF Pulse Holding		100.00	100.00	O
Hynamics		100.00	100.00	G
Agregio Solutions[2]		100.00	100.00	O
Energy2Market (E2M)		100.00	100.00	O
EDF ENR (formerly ENRS)		100.00	100.00	O
Immo C47		51.00	51.00	O
Other holding companies (EDF Invest)		100.00	100.00	O
France – Regulated activities				
Enedis		100.00	100.00	D
Électricité de Strasbourg		88.64	88.64	G, D
EDF Production Electrique Insulaire (EDF PEI)		100.00	100.00	G
Framatome				
Framatome	France	75.50	75.50	R
United Kingdom				
EDF Energy Holdings Limited (EDF Energy)		100.00	100.00	G, O
EDF Energy UK Ltd.		100.00	100.00	O
Italy				
Edison SpA (Edison)		97.17	97.17	G, O
Transalpina di Energia SpA (TdE SpA)		100.00	100.00	O
Other international				
EDF International SAS	France	100.00	100.00	O
EDF Belgium SA	Belgium	100.00	100.00	G
Luminus SA	Belgium	68.63	68.63	G, O
EDF Norte Fluminense SA	Brazil	100.00	100.00	G
EDF (China) Holding Ltd.	China	100.00	100.00	O
EDF Inc.	USA	100.00	100.00	O
Mekong Energy Company Ltd. (MECO)	Vietnam	56.25	56.25	G
Lingbao	Chine	65.00	65.00	G
EDF Andes Spa	Chili	100.00	100.00	G

(1) Nuward was formed in 2023 (see the Group press release of 30 March 2023).

(2) Agregio Solutions is a new entity resulting from the merger of two existing subsidiaries, Agregio and EDF Store&Forecast (see the Group press release of 16 May 2023).

		Percentage ownership at 31/12/2023	Percentage ownership at 31/12/2022	Business sector
EDF Renewables				
EDF Renewables	France	100.00	100.00	G,O
Dalkia				
Dalkia	France	99.94	99.94	O
Other activities				
EDF Développement Environnement SA	France	100.00	100.00	O
EDF IMMO and real estate subsidiaries	France	100.00	100.00	O
Société C3	France	100.00	100.00	O
EDF Holding SAS	France	100.00	100.00	O
Citégestion	France	100.00	100.00	O
EDF Trading Ltd.	United Kingdom	100.00	100.00	G
Wagram Insurance Company DAC	Ireland	100.00	100.00	O
EDF Investissements Groupe SA	Belgium	92.46	92.46	O
Océane Re	Luxembourg	99.98	99.98	O
EDF Gas Deutschland GmbH	Germany	100.00	100.00	O

3.3.2 Joint operations

Other activities		Percentage ownership at 31/12/2023	Percentage ownership at 31/12/2022	Business sector
Friedeburger Speicherbetriebsgesellschaft GmbH (Crystal)	Germany	50.00	50.00	O

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3.3.3 Companies accounted for by the equity method

France – Generation and Supply		Percentage ownership at 31/12/2023	Percentage ownership at 31/12/2022	Business sector
Domofinance	France	45.00	45.00	O
CTE (EDF Invest)[1]	France	50.10	50.10	O
Elisandra IV (Madrileña Red de Gas Holding) (EDF Invest)	Spain	20.00	20.00	O
Central Sicaf (EDF Invest)	Italy	24.50	24.50	O
Aéroports Côte d'Azur (EDF Invest)	France	19.40	19.40	O
Ecowest (EDF Invest)	France	50.00	50.00	O
Fallago Rig (EDF Invest)	United Kingdom	20.00	20.00	G
Fenland Wind Farm (EDF Invest)	United Kingdom	20.00	20.00	G
Catalinar Solar (EDF Invest)	USA	50.00	50.00	G
Switch (EDF Invest)	USA	50.00	50.00	G
Red Pine (EDF Invest)	USA	50.00	50.00	G
Energy Assets Group (EDF Invest)	United-Kingdom	40.00	40.00	O
Valentine Solar (EDF Invest)	USA	50.00	50.00	G
Glacier's Edge (EDF Invest)	USA	50.00	50.00	G
Nicolas Riou (EDF Invest)	Canada	50.00	50.00	G
Korian & Partenaires Immobilier 1 & 2 (EDF Invest)	France	24.50	24.50	O
Issy Shift (EDF Invest)	France	33.33	33.33	O
Orange Concessions (EDF Invest)	France	16.67	16.67	O
92 France (EDF Invest)	France	50.00	50.00	O
Memphis (EDF invest)	France	50.00	-	O
Other international				
Compagnie Énergétique de Sinop (CES)	Brazil	51.00	51.00	G
SLOE Centrale Holding BV	Netherlands	-	50.00	G
Shandong Zhonghua Power Company, Ltd.	China	19.60	19.60	G
Datang Sanmenxia Power Generation Co., Ltd.	China	35.00	35.00	G
San Men XIA	China	35.00	35.00	G
Taishan Nuclear Power Joint Venture Company Ltd. (TNPJVC)	China	30.00	30.00	G
Jiangxi Datang International Fuzhou Power Generation Company Ltd.	China	49.00	49.00	G
Nam Theun 2 Power Company (NTPC) (EDF Invest)	Laos	40.00	40.00	G
Generadora Metropolitan (GM)	Chile	50.00	50.00	G
Nachtigal Hydro Power Company	Cameroon	40.00	40.00	G

(1) Coentreprise de Transport d'Électricité or CTE, the company holding 100% of RTE.

3.3.4 Companies in which the EDF group's voting rights differ from its percentage ownership

The percentage of voting rights, which is decisive for assessing control, differs from the Group's percentage ownership for the following entities:

	Percentage ownership at 31/12/2023	Percentage of voting rights held at 31/12/2023
Edison SpA	97.17	100.00
EDF Investissements Groupe SA	92.46	50.00

Note 4 Segment reporting

4.1 Reporting by operating segment

ACCOUNTING PRINCIPLES AND METHODS

Segment reporting presentation complies with IFRS 8, "Operating segments".

Segment reporting is presented before inter-segment eliminations. Inter-segment transactions take place at market prices.

In accordance with IFRS 8, the breakdown used by the EDF group corresponds to the operating segments as regularly reviewed by the Management Committee (the Group's chief operating decision-maker).

The Group's segments are:

- **"France – Generation and Supply"**: EDF SA's energy production and sales activities. This segment also includes entities operating on the downstream sectors (B2B and B2C, aggregation) and all EDF Invest's shareholdings;
- **"France – Regulated activities"**: Enedis and Électricité de Strasbourg's distribution activities, and EDF's island activities;
- **"Framatome"**: the entities of the Framatome subgroup;
- **"United Kingdom"**: the entities of the EDF Energy subgroup;
- **"Italy"**: Edison entities and TdE SpA;
- **"Other international"**: EDF International and the entities located in continental Europe, the US, Latin America and Asia;
- **"EDF Renewables"**: the entities of the EDF Renewables subgroup;
- **"Dalkia"**: the entities of the Dalkia subgroup;
- **"Other activities"**: comprising in particular EDF Trading and EDF Investissements Groupe.

No segments have been merged.

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4.1.1 At 31 December 2023

(in millions of euros)	France – Generation and Supply	France – Regulated activities	Framatome	United Kingdom	Italy	Other International	EDF Renewables	Dalkia	Other activities[5]	Inter-segment eliminations	Total
Income statement:											
External sales	60,313	19,370	2,010	21,094	17,745	5,168	1,338	5,733	6,944	-	139,715
Inter-segment sales	3,931	43	2,056	38	42	415	693	662	733	(8,613)	-
TOTAL SALES	**64,244**	**19,413**	**4,066**	**21,132**	**17,787**	**5,583**	**2,031**	**6,395**	**7,677**	**(8,613)**	**139,715**
OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION	**24,677**	**3,707**	**597**	**3,967**	**1,855**	**872**	**932**	**407**	**3,255**	**(342)**	**39,927**
OPERATING PROFIT	**18,651**	**13**	**238**	**(9,823)**	**789**	**245**	**206**	**35**	**3,162**	**(342)**	**13,174**
Balance sheet:											
Goodwill	130	223	1,475	4,901	150	51	197	626	142	-	7,896
Intangible assets and property, plant and equipment	64,499	71,353	2,953	21,593	5,721	2,495	13,060	2,429	456	-	184,559
Investments in associates and joint ventures[1]	3,379	-	68	187	301	1,666	2,509	60	867	-	9,037
Financial assets and cash[2]	61,901	369	486	13,553	366	1,174	2,237	201	18,257	-	98,544
Other segment assets[3]	34,376	4,436	2,298	5,953	2,986	1,531	939	2,881	8,781	-	64,181
Assets classified as held for sale	-	-	-	53	543	-	-	-	-	-	596
TOTAL ASSETS	**164,285**	**76,381**	**7,280**	**46,240**	**10,067**	**6,917**	**18,942**	**6,197**	**28,503**	**-**	**364,812**
Other information:											
Net depreciation and amortisation[4]	(4,572)	(3,579)	(332)	(854)	(531)	(298)	(643)	(307)	(45)	-	(11,161)
Impairment	(50)	21	(19)	(12,871)	(8)	-	(83)	(1)	-	-	(13,011)
Equity (non-controlling interests)	120	54	218	8,520	541	708	1,073	198	519	-	11,951
Investments in intangible assets and property, plant and equipment	6,584	5,217	341	5,529	520	315	2,124	366	25	-	21,021
Loans and other financial liabilities	96,129	6,152	296	7,984	1,780	18,754	11,603	2,086	2,795	(60,932)	86,647
- external liabilities	*79,349*	*853*	*268*	*373*	*1,031*	*156*	*3,970*	*383*	*264*	*-*	*86,647*
- intersegment liabilities[6]	*16,780*	*5,299*	*28*	*7,611*	*749*	*18,598*	*7,633*	*1,703*	*2,531*	*(60,932)*	*-*

(1) At 31 December 2023, investments in associates and joint ventures include 50.1% of CTE (the joint venture holding RTE's shares) which is part of the France – Generation and Supply segment.

(2) Financial assets and cash mainly comprise dedicated assets amounting to €30,410 million in the France – Generation and Supply segment (see note 18.1.2), the NLF receivable (see note 18.1.3) amounting to €13,104 million in the United Kingdom segment and the positive fair value of EDF Trading's derivatives, amounting to €14,052 million (in "Other activities").

(3) Other segment assets include inventories, trade receivables, other receivables and tax assets.

(4) Including net increases in provisions for renewal of property, plant and equipment operated under concessions.

(5) Sales by the "Other activities" segment include the €3,666 million trading margin realised by EDF Trading.

(6) The amount of intersegment liabilities corresponds to the group's centralised cash management (cash pooling by EDF SA, included in the France – Generation and Supply segment) and financing of controlled subsidiaries, particularly EDF International (Other International segment), EDF Energy (United Kingdom segment) and EDF Trading (in the "Other activities" segment).

4.1.2 At 31 December 2022

(in millions of euros)	France – Generation and Supply	France – Regulated activities	Framatome	United Kingdom	Italy	Other International	EDF Renewables	Dalkia	Other activities[5]	Inter-segment eliminations	Total
Income statement:											
External sales	46,787	17,888	2,099	16,085	29,278	5,369	1,404	5,825	18,741	-	143,476
Inter-segment sales	1,899	194	2,023	13	24	290	754	838	983	(7,018)	-
TOTAL SALES	**48,686**	**18,082**	**4,122**	**16,098**	**29,302**	**5,659**	**2,158**	**6,663**	**19,724**	**(7,018)**	**143,476**
OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION	**(23,144)**	**6,723**	**589**	**1,325**	**1,115**	**336**	**909**	**333**	**7,089**	**(261)**	**(4,986)**
OPERATING PROFIT	**(28,739)**	**3,142**	**271**	**(1,166)**	**481**	**(40)**	**179**	**120**	**6,650**	**(261)**	**(19,363)**
Balance sheet:											
Goodwill	132	223	1,448	6,541	148	49	187	643	142	-	9,513
Intangible assets and property, plant and equipment	61,310	69,070	2,894	26,676	5,876	2,276	11,595	2,347	483	-	182,527
Investments in associates and joint ventures[1]	3,421	-	84	180	234	1,965	2,519	63	955	-	9,421
Financial assets and cash[2]	57,926	450	402	15,202	1,209	879	2,583	293	38,549	-	117,493
Other segment assets[3]	32,997	5,402	2,156	6,072	5,501	1,415	1,127	3,311	11,047	-	69,028
Assets classified as held for sale	-	-	-	-	150	-	-	-	-	-	150
TOTAL ASSETS	**155,787**	**75,145**	**6,984**	**54,671**	**13,118**	**6,584**	**18,011**	**6,657**	**51,176**	**-**	**388,132**
Other information:											
Net depreciation and amortisation[4]	(4,552)	(3,560)	(310)	(915)	(480)	(314)	(601)	(294)	(53)	-	(11,079)
Impairment	(4)	(54)	(1)	(1,447)	(68)	(57)	(129)	-	(2)	-	(1,762)
Equity (non-controlling interests)	117	48	63	9,347	479	558	916	225	519	-	12,272
Investments in intangible assets and property, plant and equipment	5,745	4,739	283	4,541	560	306	1,806	319	25	-	18,324
Loans and other financial liabilities	103,476	5,270	326	7,945	1,733	16,442	9,694	2,467	5,251	(56,551)	96,053
- external liabilities	*89,547*	*797*	*267*	*309*	*902*	*157*	*3,593*	*347*	*134*	*-*	*96,053*
- intersegment liabilities[6]	*13,929*	*4,473*	*59*	*7,636*	*831*	*16,285*	*6,101*	*2,120*	*5,117*	*(56,551)*	*-*

(1) At 31 December 2022, investments in associates and joint ventures include 50.1% of CTE (the joint venture holding RTE's shares) which is part of the France – Generation and Supply segment.

(2) Financial assets and cash mainly comprise dedicated assets amounting to €27,369 million in the France – Generation and Supply segment (see note 18.1.2), the NLF receivable (see note 18.1.3) amounting to €14,000 million in the United Kingdom segment and the positive fair value of EDF Trading's derivatives, amounting to €29,861 million (in "Other activities").

(3) Other segment assets include inventories, trade receivables, other receivables and tax assets.

(4) Including net increases in provisions for renewal of property, plant and equipment operated under concessions.

(5) Sales by the "Other activities" segment include the €7,038 million trading margin realised by EDF Trading.

(6) The amount of intersegment liabilities corresponds to the group's centralised cash management (cash pooling by EDF SA, included in the France – Generation and Supply segment) and financing of controlled subsidiaries, particularly EDF International (Other International segment), EDF Energy (United Kingdom segment) and EDF Trading (in the "Other activities" segment).

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4.2 Sales to external customers, by product and service group

The Group's sales are broken down by product and service group as follows:

- **"Generation/Supply"**: energy generation and energy sales to industry, local authorities, small businesses and residential consumers. This segment also includes EDF Trading;
- **"Distribution"**: management of the low and medium-voltage public electricity distribution networks;
- **"Other"**: services and production of equipment and fuel for reactors, energy services (district heating, thermal energy services, *etc.*) for industry and local authorities, and electricity generation through cogeneration and renewable energy sources (*e.g.* wind turbines, photovoltaic panels, *etc.*).

(in millions of euros)	Generation - Supply	Distribution	Other[1]	Total
2023 :				
External sales:				
- France[2]	60,920	18,046	718	79,684
- International and Other activities	50,761	-	9,270	60,031
SALES	**111,681**	**18,046**	**9,988**	**139,715**

(in millions of euros)	Generation - Supply	Distribution	Other[1]	Total
2022 :				
External sales:				
- France[2]	47,087	17,077	511	64,675
- International and Other activities	69,086	-	9,715	78,801
SALES	**116,173**	**17,077**	**10,226**	**143,476**

(1) "Other" groups of services include Framatome and Dalkia.

(2) France comprises the two operating segments France – Generation and Supply and France – Regulated activities (see note 4.1).

Note 5 Operating profit before depreciation and amortisation

(in millions of euros)	Notes	2023	2022
Sales	**5.1**	**139,715**	**143,476**
Fuel and energy purchases	**5.2**	**(80,989)**	**(121,010)**
External services		(17,281)	(15,353)
Other purchases (excluding external services, fuel and energy)		(4,550)	(4,284)
Change in inventories and capitalised production		11,041	9,949
(Increase)/decrease in provisions on other external expenses		297	268
Other external expenses[1]		**(10,493)**	**(9,420)**
Personnel expenses	**5.3**	**(15,470)**	**(15,236)**
Taxes other than income taxes	**5.4**	**(4,064)**	**(3,163)**
Other operating income and expenses	**5.5**	**11,228**	**367**
OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION		**39,927**	**(4,986)**

(1) After elimination of foreign exchange effects and changes in the scope of consolidation, Other external expenses increased by 13.4% compared to 2022.

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's operating profit before depreciation and amortisation showed an organic increase of +€45,046 million. This growth is principally explained by the contributions of the France - Generation and Supply segment (+€47,821 million) and the United Kingdom segment (+€2,668 million), whereas there was a decrease in the contributions of the France - Regulated activities segment (€(3,016) million) and the Other activities segment (€(3,704) million).

In the France – Generation and Supply segment, the organic increase of +€47,821 million in the operating profit before depreciation and amortisation is mainly explained by the significant recovery in production of nuclear power (+41.5TWh) and the increase of hydropower output (+6.3TWh) and favourable price effects, as in contrast to 2022, there were no exceptional regulatory measures penalising the Group in 2023. The caps and buffers introduced in 2022 to limit tariffs (which reduced sales revenues) have been compensated by the State through the CSPE mechanism (in other operating income and expenses).

The organic growth of +€2,668 million in the United Kingdom segment's operating profit before depreciation and amortisation is essentially due to price effects (realised nuclear prices rose by +£23.3/MWh), despite a 6.3TWh decrease in nuclear power output that was mostly attributable to the closure of the Hinkley Point B plant from August 2022.

In the France – Regulated activities segment, the organic decline of €(3,016) million in operating profit before depreciation and amortisation is mainly due to a negative price effect estimated at €(1.3) billion, caused by purchases to cover network power losses at very high market prices (this surplus cost will be offset by future tariff increases). Also, in 2022 a €1.7 billion payment was received from RTE[1] corresponding to a retrocession of interconnection fees, and there was no equivalent to this in 2023.

(1) In application of decision 2022-296 of 17 November 2022 published by the French energy regulator Commission de Régulation de l'Énergie (CRE). The substantial increase in wholesale prices resulted in an increase in interconnection income for RTE, and the CRE decided that this "windfall" should be shared with the users of the electricity transmission users earlier than under normal procedures.

5.1 Sales

ACCOUNTING PRINCIPLES AND METHODS

Sales essentially comprise income from energy sales (to final customers and as part of trading activities), delivery services related to use of the transmission and distribution network, and connection services. They also comprise income from other services and deliveries of goods, mainly engineering, operating and maintenance services, services related to energy sales, design, delivery and commissioning services for power plants or their major components.

Income on energy sales is recognised as deliveries are made to customers.

The quantities of energy supplied but not yet measured and billed are calculated using consumption statistics and selling price estimates, and are recognised in sales on that basis.

Some Group entities conduct optimisation operations on the wholesale gas and electricity markets, to balance supply and demand in compliance with the Group's risk management policy. The sales concerned are recorded net of purchases. When an entity has a net long position in euros, it is included in "energy sales". A net short position in euros is included in "fuel and energy purchases".

In accordance with IFRS 15 on the principal/agent distinction, energy delivery services are recognised in sales upon delivery to the customer in the following two cases:

- when these services are not distinct from the energy supply service;
- when they are distinct from the energy supply service and the entity concerned is acting as a principal, notably because it bears the risk of execution of the service or is able to set the tariff for delivery to the final customer.

Income from connections to the French electricity network is recognised in sales at the date when the connection becomes operational.

The sales revenue from other services or deliveries of goods is recognised over time in the three following cases, based on a contractual analysis:

- when the customer simultaneously receives and consumes all the benefits generated as the service is performed by the Group (this is notably the case of operations and maintenance services);
- when the good or service to be supplied cannot be reallocated to another customer, and the Group is entitled to payment for the work done so far (this is notably the case of certain design, delivery and commissioning activities for power plants or major components designed specifically for a customer);
- when the service creates or enhances an asset (good or service) for which the customer acquires control as performance of the service progresses.

TRADING ACTIVITIES

Sales revenues include the margin realised, essentially by EDF Trading, on energy market trading operations that fall within the scope of IFRS 9, which are recognised at fair value.

EDF Trading is the Group's trading entity. It operates on the markets on behalf of other Group entities and through trading activity for its own purposes or for non-Group entities, backed by the Group's industrial assets and within its assigned risk mandate.

It operates on organised or OTC markets in derivatives such as futures, forwards, swaps and options.

EDF Trading undertakes purchase and sale operations on the wholesale markets in Europe and North America for:

- electricity and fuel (principally gas);
- CO_2 emission permits, weather derivatives and other environmental instruments;
- capacity guarantees for electricity production.

For LNG, optimisation activities (recognised as a joint operation) and trading activities (recognised as a joint venture) are carried out through JERA Global Markets, which is jointly owned with JERA.

CAPACITY MECHANISM

Capacity mechanisms have been set up in France, the UK and Italy to ensure secure power supplies during peak periods.

French system: French law 2010-1488 of 7 December 2010 on the new organisation of the electricity market introduced an obligation in France to contribute to guaranteeing a secure power supply from January 2017.

Operators of electricity generation plants and load-shedding operators must have their capacities certified by RTE, and commit to a forecast level of availability for a given year of delivery. In return, they are awarded capacity certificates.

Meanwhile, electricity suppliers and purchasers of power to compensate for network losses (obligated actors) must have capacity certificates equivalent to consumption by their customers in peak periods. Suppliers pass on the cost of the capacity mechanism to final customers through their sale prices.

The system is completed by registers for capacity trading between actors. Capacity auctions are held several times a year.

The Group is concerned by both aspects of this system, as an operator of electricity plants (EDF SA, Dalkia, EDF Renewables), as an electricity supplier (EDF SA, Électricité de Strasbourg) and as a purchaser of power to compensate for network losses (Enedis and Électricité de Strasbourg).

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On 11 September 2023, RTE submitted a proposed change to the capacity mechanism rules to the CRE for its opinion. In its decision 2023-309 of 28 September 2023, the CRE responded in favour of changing the rules and changing certain parameters for delivery years 2025 and 2026 (the safety coefficient, the contribution by interconnections, and the offshore wind power coefficient). The proposed changes provide frameworks for early termination of purchase obligation contracts, and for the inclusion from 2025 of capacities using fossil fuels.

These new rules were approved by decision of the Ministry for the Ecological Transition on 5 October 2023. They set the opening dates for trading of capacity guarantees for delivery years 2025 and 2026 at 1 October 2023 and 1 January 2024 respectively. The duration of the current mechanism's final delivery year, 2026, has been modified so that the future capacity mechanism can be introduced from November 2026; delivery year 2026 of the current capacity mechanism is thus "shortened" and will run from 1 January to 31 March 2026.

For the delivery years shown below, the mean market prices resulting from capacity auctions ahead of the delivery year were as follows:

Delivery year	2022	2023	2024
Price (€/kW)	26.2	45.6	27.1

For the delivery year 2025, three auctions have been held, with the following results: €25.5/kW in October, €25.0/kW in November and €9.37/kW in December.

The operations are recorded as follows:

- Sales of certificates are recognised in income when the auctions or over-the-counter sales take place;
- The cost of the capacity mechanism passed on to final customers through regulated sales tariffs and market-price offers is recognised in sales revenues as and when the electricity is delivered. In addition, the ARENH price is considered to include a capacity value
- Stocks of certificates are stated either at their certification value (*i.e.* cost of certification by RTE) or at their purchase value on the markets;
- Decreases in the stock of certificates are valued at the weighted average unit cost. The timing of recognition depends on the actor:
  - > operators of installations: when the auction sales take place;
  - > obligated actors: over the 5-month peak period;
- For operators of installations, if the effective capacity is lower than the certified capacity, a liability (accrued expenses or provision) is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation (rebalancing or settlement mechanism);
- For obligated actors, if there is a shortfall in the stocks of capacity certificates, a provision is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation;
- At the closing date, if the realisable value of the stock of capacity certificates is lower than its net book value, impairment is recognised.

British system: The British capacity mechanism was introduced in 2014 to ensure security of electricity supply by providing a payment for reliable sources of capacity, alongside their electricity revenues, to ensure they deliver energy when needed. It is based on a system of auctions for operators, organised by the electricity system operator "National Grid ESO" to procure capacity 4 years ahead of delivery, with "top-up" actions one year ahead of delivery. Delivery years run from 1 October to 30 September. Capacity providers which have been successful at the auctions are remunerated in the year of delivery out of a fund consisting of contributions from electricity suppliers but may be liable for penalties for failure to meet their obligations.

The electricity suppliers' contribution to this mechanism is proportional to their sales to customers in the peak demand period and the cost of capacity is passed on to final customers through their sale price.

EDF Energy is concerned by both aspects of this system, as an operator of electricity plants and a supplier.

For accounting purposes, the remuneration received in its capacity as an operator is recognised in sales revenues in the year of delivery, and the contribution paid to the mechanism in its capacity as an electricity supplier is recognised in energy purchases over the peak period. The cost of the capacity mechanism passed on to final customers is recognised in sales revenues as and when the electricity is delivered.

There are penalties for under-delivery and payments for over-delivery during stress events. Thus, any over payments or penalties are recognised as incurred along with the capacity payments, in a 'net capacity income' revenue line.

The government has implemented several changes to the detailed operation of the Capacity Market with the objective of ensuring that it continues to meet its objective in an efficient way. However, the main principles of the mechanism have remained unchanged.

The government is currently exploring options for reform of the Capacity Market to improve delivery assurance and to support alignment with net zero and its commitment to deliver a decarbonised electricity system by 2035, subject to security of supply. It may also consider further changes as part of the Review of Electricity Market Arrangements (REMA). The key measures currently under consideration include: strengthening security of supply through changes to the requirements for demonstrating satisfactory performance and increasing penalties for non-delivery at times of system stress; and aligning the Capacity Market with net zero by introducing much tighter emission limits from October 2034 for new plants.

As with previous changes to the Capacity Market, changes to the rules should apply to any new capacity agreements awarded but would not materially change the rights and obligations of capacity providers in respect of existing capacity agreements.

Italian system: A capacity mechanism was set up in 2019 using rules approved in a decree of 28 June 2019 issued by the Economic Development Ministry.

This mechanism is based on an auction process organised by TERNA, the Italian transmission grid operator, for each delivery year. Operators of existing and future production or storage units can participate in the auctions. The operators of the capacities selected are paid through a fixed premium during one year for existing capacities and 15 years for future capacities. The fixed premium is paid during the delivery year.

The selected operator must offer its capacity on the day-ahead market (Mercato del Giorno Prima) and the balancing market (Mercato per il Servizio di Dispacciamento). If the selling price on these markets reaches a level exceeding a strike price defined by the Italian Regulatory Authority for Energy, Networks and Environment (ARERA), the operator must repay the surplus to TERNA.

Two auctions were held during 2019 for delivery dates set in 2022 and 2023, and Edison won 3.8GW for 2022 and 4.3GW for 2023 for an annual price of €75,000/MW for new capacities and €33,000/MW for existing capacities. In February 2022 another auction for 2024 was held: the capacity offered by Edison (from existing 2.3GW power plants) was entirely assigned for an annual price of 33k€/MW for existing plants.

The fixed premium is recorded in income during the corresponding delivery year, and reduced if appropriate by any repayments made to TERNA, or if the power plant is unavailable.

5.1.1 Regulatory changes in France

Regulated electricity sales tariffs in France – "Blue" tariffs

In accordance with article L. 337-4 of the French Energy Code, regulated electricity sales tariffs are set by the Ministers for Energy and the Economy following proposals by the French Energy Regulatory Commission (*Commission de Régulation de l'Énergie* or CRE).

France's Council of State ruled in decisions of 18 May and 3 October 2018 that the principle of regulated electricity sales tariffs is compatible with European Union law when such tariffs serve the general economic interest objective of guaranteeing consumers an electricity price that is more stable than market prices.

In accordance with European Directive 2019/944 of 5 June 2019 on common rules for the internal market for electricity, the French Energy and Climate law of 8 November 2019 authorises continuation of regulated sales tariffs, but they are reserved for residential or business consumers with a subscribed power level of up to 36kVA, provided they have fewer than 10 employees and their annual sales, income or balance sheet total is below €2 million.

Tariff changes

In accordance with article L. 337-4 of the French Energy Code, the French Energy Regulatory Commission "CRE" (*Commission de Régulation de l'Énergie*) is responsible for sending the Ministers for the Economy and Energy its reasoned proposals for regulated sales tariffs for electricity. If no objections are made within three months, the proposals are deemed to have been approved.

The comparability of sales between periods is affected by the tariff changes, presented in the table below:

Date of the CRE proposal	Increase in "blue" residential customer tariffs (incl. taxes / excl. taxes)	Increase in "blue" non-residential customer tariffs (incl. taxes/excl. taxes)	Date of the tariff decision	Date of application
18/01/2022	4.00% / 24.3%	4.00% / 23.6%	28/01/2022	01/02/2022
07/07/2022	No change	No change	28/07/2022	01/08/2022
19/01/2023	15.00% / 20.00%	15.00% / 19.9%	31/01/2023	01/02/2023
22/06/2023	10% / 10.0%	10% / 10.0%	28/07/2023	01/08/2023
18/01/2024	9.5% / 0.18%	5.7% / -3.55%	29/01/2024	01/02/2024

The French government decided to prolong the tariff cap from 1 February 2023, and limited the increase in regulated electricity sales tariffs to 15% (including taxes) above the tariffs in force since 1 February 2022 for all categories of eligible consumers. The government then decided to scale back the tariff cap from 1 August 2023, raising the regulated electricity sales tariffs at that date by 10% (including taxes) compared to the tariffs in force since 1 February 2023.

Article 181 of the Finance Law for 2023, adopted on 30 December 2022, stipulates that if the reasoned proposals for regulated sales tariffs presented by the CRE lead to tariffs defined under article R.337-18 of the same code that, including the applicable taxes, are more than 15% higher than the tariffs applicable at 31 December 2022, the Ministers for the Economy, Energy and the Budget may object to the proposals and by joint decision set a lower level accounting for 95% of the tariff applied for customers' consumption, in order to serve the objective of price stability.

In such an event, the law defines a mechanism to compensate EDF and the local distribution companies for the loss of income on their regulated-tariff offerings, and to compensate all suppliers for the loss of income on market-price offerings for residential and non-residential customers eligible for regulated sales tariffs, *via* the compensation for public service charges (CSPE).

In a decision of 19 January 2023, the CRE proposed an increase of 99.36% including taxes (108.91% excluding taxes) in the "blue" tariffs for residential customers and 97.94% including taxes (106.88% excluding taxes) in the "blue" tariffs for non-residential customers from 1 February 2023. This proposed increase was primarily justified by:

- the exceptionally high prices on the wholesale markets for delivery in 2023, which had been at record levels for more than a year;
- the outstanding consequences of the tariff cap applied in 2022, to reflect the ultimate reality of the costs involved in the "cost stacking" calculations, including the effects of the additional 20TWh of ARENH supplies.

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In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential and non-residential customers at 15% including taxes (20% and 19.9% respectively excluding taxes) through tariff orders of 30 January 2023, published in the Journal officiel of 31 January 2023 and implemented from 1 February 2023.

In a decision of 22 June 2023, the CRE proposed an increase of 0.88% including taxes (0.84% excluding taxes) in the "blue" tariffs for residential customers, and a decrease of 0.32% including taxes (0.35% excluding taxes) in the "blue" tariffs for non-residential customers from 1 August 2023. This proposal was justified primarily by the change in the TURPE tariffs for access to the public electricity network from 1 August 2023, which was partly offset by a downward revision to the catch-up adjustment for 2022, particularly for non-residential customers.

These developments led the CRE to consider the theoretical tariff to be 74.5% higher (including taxes) than the frozen tariffs in place since 1 February 2023.

In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential and non-residential customers at 10% including taxes through tariff orders of 28 July 2023, published in the *Journal officiel* of 30 July 2023 and implemented from 1 August 2023.

The Group therefore recognised compensation in the income statement at 31 December 2023, for the €13,992 million loss of income (including €1,458 million under the "electricity buffer" mechanism and €88 million under the tariff cap for gas) in operating subsidies at 31 December 2023) (see note 5.5.1).

A CRE proposal submitted on 19 January 2024 to the Higher Energy Council (*Conseil supérieur de l'énergie)* for its meeting of 25 January 2024 proposed a change in average regulated sales tariffs for electricity from 1 February 2024 of +0.18% excluding taxes for the "blue" tariffs for residential customers and -3.55% excluding taxes for the "blue" tariffs for non-residential customers (compared to the tariffs in force since 1 August 2023).

This proposed change was primarily justified by the decrease in wholesale market prices following the exceptionally high levels observed during the energy price crisis, leading to the discontinuation of the tariff cap component included in the previous tariff.

Article 92 of France's Finance Law of 29 December 2023 for 2024 allows the government to raise the excise duty on electricity (previously named the domestic tax on the final consumption of electricity or TICFE) by a maximum 10% (including taxes) of the average regulated sales tariffs compared to 1 August 2023. The excise duty applicable from 1 February 2024 was set by a decision of 30 January 2024 at €21/MWh, leading to a 9.5% increase (including taxes) in the "blue" tariffs for residential customers and a 5.7% increase (including taxes) in the "blue" tariffs for non-residential customers.

"TURPE" Network access tariffs

The costs borne by the network operators Enedis and RTE for management of the public electricity distribution and transmission networks are covered, provided they are in line with the costs of an efficient network operator, by the "TURPE" tariffs for using the networks, as stipulated in Articles L. 341 - 2 and following of the French Energy Code.

These tariffs apply to users connected to the distribution and transmission networks.

TURPE 6 Distribution and Transmission tariffs

The CRE issued two decisions of 21 January 2021 (published in France's *Journal Officiel* 0096 of 23 April 2021) on the TURPE 6 Transmission (high voltage) and TURPE 6 Distribution (medium voltage – low voltage) tariffs, after the Higher Energy Council (*Conseil supérieur de l'énergie*) gave its approval. These tariffs were introduced from 1 August 2021 for a period of approximately 4 years.

For distribution expenses, in its tariff decision n°2021 - 13 of 21 January 2021, the CRE set the margin on assets at 2.5% and the additional return on regulated equity at 2.3%. The average tariff increase was +0.91% at 1 August 2021. In decision n°2022-158 of 9 June 2022, the CRE set the increase in the average TURPE Distribution tariff from 1 August 2022 at +2.26%. In its decision n°2023-137 of 31 May 2023, the rise in the average TURPE Distribution tariff from 1 August 2023 was set at +6.51%.

For transmission expenses, in its tariff decision n°2021 - 12 of 21 January 2021, the CRE set a nominal pre-tax weighted average cost of capital (WACC) of 4.6% for the return on RTE's regulated asset base. The average tariff increase was +1.09% at 1 August 2021. In decision n°2022-157 of 9 June 2022, the CRE set the change in the average TURPE Transmission tariff from 1 August 2022 at -0.01%. In its decision n°2023-136 of 31 May 2023, the rise in the average TURPE Transmission tariff from 1 August 2023 was set at +6.69%.

In its decision 2023 - 01 of 5 January 2023, the CRE adapted the price regulation framework, particularly to make the TURPE 6 (high voltage) and TURPE 6 (medium voltage – low voltage) tariffs incorporate the impact of wholesale electricity prices on the business of RTE and Enedis, by refocusing certain incentives on the electricity volumes purchased to compensate for network losses, rather than on prices.

In another decision, n°2022 - 323 of 8 December 2022, the CRE decided to put in place an exceptional advance payment, to users of the public electricity transmission network, of part of the balance of RTE's income and expense adjustment account (CRCP). In a context of significant growth and volatility in wholesale electricity prices at European level, this surplus for 2022 essentially resulted from particularly high interconnection income. The exceptional payment had a direct effect for users connected to France's public transmission network operated by RTE, including Enedis, who received a one-off payment from RTE in February 2023. The Group therefore recognised a sales credit receivable from RTE at 31 December 2022, amounting to €1,723 million (see note 13.3.4).

Electricity Equalisation Fund

The TURPE tariff for the medium and low-voltage network is identical for every electricity network operator. It is determined on the basis of forecast expenses to be borne by Enedis, provided they correspond to an efficient network operator, and forecasts of the number of consumers connected to Enedis' networks, their consumption, and the power level subscribed.

As this tariff cannot always cover the specific needs of certain service zones, the Electricity Equalisation Fund (FPE) exists to compensate for disparities in network operating conditions. The Energy Code requires electricity distribution costs resulting from public network operation to be shared between public distribution network operators. There are two equalisation mechanisms: one based on fixed amounts, the other set by the CRE based on analysis of the network operators' accounts. The calculation method for the fixed-rate allocation mechanism is defined by decree and ministerial order. The EDF entities concerned by the Electricity Equalisation Fund are Enedis, Électricité de Strasbourg and SEI.

In its decision n°2023-201 of 19 July 2023, the CRE set the final amount of the allocation from the Electricity Equalisation Fund (Fonds de Péréquation de l'Électricité) to SEI at €229.4 million for 2023, following analysis of the network operators' accounts.

For the fixed-amount mechanism, the ministerial order of 22 November 2023 set the 2023 contributions payable and allocations receivable from the Electricity Equalisation Fund for distribution network operators. The fixed contributions due by Strasbourg Électricité Réseaux and Enedis amount to around €1.1 million and €30.1 million respectively. Enedis is also the CRE's designated operator for collection and payment of Electricity Equalisation Fund contributions from all the Local Distribution Companies.

ARENH

General description of the scheme

The ARENH (*Accès Régulé à l'Energie Nucléaire Historique*) scheme for regulated access to historic nuclear power, set up in 2011 and due to end on 31 December 2025, allows alternative suppliers to purchase electricity from EDF to supply their final customers, after signing a framework agreement, at a regulated price for set quantities determined under the provisions of the French Energy Code. This scheme is also open to network operators to cover their energy losses.

The ARENH price, determined by the Ministers for Energy and the Economy following a proposal by the CRE, has been fixed at €42/MWh since January 2012. This includes delivery of the electricity and has incorporated the associated capacity guarantees since 2017.

The maximum total ARENH volume that can be sold by law to suppliers who apply to the scheme to cover the needs of their final customers is set by ministerial order and cannot exceed a legal ceiling. Until 31 December 2019, the ceiling was 100TWh per year. It was then raised to 150TWh by the energy and climate law of 8 November 2019.

The "MUPPA" law of 16 August 2022 introducing urgent measures to protect purchasing power reduced this legal ceiling to 120TWh. The MUPPA law also set a minimum ARENH price of €49.50/MWh, although its application is conditional on prior approval by the European Commission, which has not yet been given.

Additional ARENH scheme measures for 2022

Under exceptional measures imposed on EDF by the Government in early 2022, eligible alternative electricity suppliers could benefit from additional volumes at the price of €46.20/MWh during the period 1 April to 31 December 2022, provided they first sold EDF an equivalent volume to the volume they would buy under the ARENH scheme, at the price of €256.98/MWh. The alternative suppliers only made applications for 19.5TWh of the additional ARENH volume offered.

Applying the procedure set out in its decision n°2022-98 of 31 March 2022, the CRE set up a mechanism to monitor and control the way eligible suppliers passed on the effect of their reduced sourcing costs (resulting from allocation of additional ARENH volumes at the price of €46.20/MWh) through their customer invoicing. EDF was obliged to replicate the terms imposed on alternative suppliers in its own market-price contracts.

This caused very significant prejudice for the company, and on 9 August 2022 EDF filed an appeal against the exceptional measures before the Council of State, on the grounds that the State had exceeded its power.

EDF also lodged a claim before the Paris Administrative Court on 27 October 2022 to obtain full compensation from the French government for the prejudice caused by these measures.

On 3 February 2023, the Council of State rejected EDF's appeal against these measures, in a decision that cannot be challenged. The proceedings brought by EDF in 2023 before the Paris Administrative Court claiming full reparation from the State for the prejudice borne by EDF as a result of the exceptional measures are ongoing. The prejudice suffered was estimated by EDF at €7.96 billion at 13 October 2023, the date when the company filed its reply submissions, plus interest estimated at €0.20 billion at 31 December 2023.

The ARENH scheme in 2023

During 2023, the CRE notified EDF of three suspensions to ARENH deliveries. In two cases this was due to decisions by the CRE's Dispute Resolution and Enforcement Committee (CoRDIS), and in the third case it followed a failure to pay price supplements due on deliveries made during 2022. Over the entire year these suspensions concerned a total 5.2MW of electricity.

The ARENH scheme in 2024

For the ARENH allocations for 2024 determined by the CRE's decision n°2023-330 of 26 October 2023, as required by the Energy Code (article R.336-14 of the Energy Code modified by decree n°2022-1380 of 29 October 2022), the CRE has defined the method for allocating ARENH volumes if applications exceed the maximum total volume allowed for 2024. It has also laid down criteria for assessing ARENH applications (verification methods, and where relevant correction procedures for ARENH applications from alternative suppliers).

Under these criteria, any application by EDF-controlled subsidiaries (this does not apply to network operators) taking the total volume above the limit would be fully curtailed, but they could enter into contracts directly with their parent company for supplies on terms identical to the ARENH framework agreement, including the curtailment conditions applied to other alternative suppliers.

On 15 November 2023, the CRE decided on a change to the calculation rules for the ARENH price supplement (CP2) paid by alternative suppliers whose ARENH applications are excessive in view of their actual sales volumes. These changes are likely to make the penalty for such disproportionate applications more dissuasive.

Finally, ARENH applications during the November 2023 session for delivery in 2024 totalled 130.45TWh (excluding applications from EDF subsidiaries and network operators). The CRE scaled down certain applications (-0.04TWh in total), bringing the application volume validated by the CRE to 130.41TWh, and curtailed each supplier's application, to respect the overall ARENH ceiling of 100TWh. The final attribution rate was thus 76.68%. Further volumes were also sold by EDF to its subsidiaries through contracts that replicate the ARENH scheme, and to compensate for network electricity losses (25.54TWh).

Post-ARENH regulation

On 22 November 2023, the French government began a consultation to determine proposed measures to give electricity consumers in France protection, stability and billing predictability after the ARENH scheme ends on 31 December 2025.

Following this public consultation, a proposed law on energy sovereignty was presented by the government on 9 January 2024. The potential implications of this law were taken into account in defining the assumptions used by the Group for impairment testing (see note 10.8).

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5.1.2 Sales

Sales are comprised of:

(In millions of euros)	2023	2022
Sales of energy and energy-related services	129,892	129,831
– energy[1]	*108,153*	*109,281*
– energy-related services (including delivery[2])	*21,739*	*20,550*
Other sales of goods and services	6,157	6,607
Trading	3,666	7,038
SALES	**139,715**	**143,476**

(1) Sales of energy include €5,330 million of sales related to optimisation operations on the wholesale gas and electricity markets in 2023 (€12,229 million in 2022). These operations are carried out by certain Group entities to balance supply and demand, in compliance with the group's risk management policy. In 2023 as 2022, the principal operating segments with a net short position in euros on the markers are France – Generation and supply (gas), Italy (electricity) and Dalkia (electricity).

(2) Delivery services included in this item concern the distribution network operators Enedis, Électricité de Strasbourg and EDF SA for non-interconnected zones. However, delivery services concerning EDF Energy and Edison are included in Sales of energy, because those entities are classified as the principal under IFRS 15 for both supply and delivery. The delivery services by EDF Energy and Edison have no impact on net income because they are included in "Transmission and delivery expenses" in note 5.2.

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's sales for 2023 were down -2.1% or €(3.1) billion. This principally reflects decreases in the Italy segment (€(11.6) billion or -39.6%) and the Other activities segment (€(11.5) billion or -61.5%) which were partly offset the increases in the France – Generation and Supply segment (+€13.5 billion or +28,9%) and the United Kingdom segment (+€5.3 billion or +33.1%).

Sales by the **France – Generation and supply** segment showed organic growth of +€13.5 billion. This increase is mainly explained by favourable price effects on regulated-tariff and market-price sales, despite tariffs being limited by government measures (the tariff cap and electricity buffer). It is also attributable to favourable energy market price effects of +€0.9 billion on purchase obligations (the effect on operating income before depreciation and amortisation was neutral due to the CSPE compensation mechanism covering expenses related to purchase obligations booked in "Other operating income and expenses").

Sales in the **United Kingdom** segment registered an organic increase of €+5.3 billion, principally attributable to the impact of rising energy prices on customer sales tariffs, despite the lower nuclear power output in 2023.

The organic downturn in sales by the **Italy** segment reached €(11.6) billion in 2023. This decrease is essentially explained by lower volumes and prices for gas sales (€(10.3) billion).

The €(11.5) billion organic contraction in sales by the **Other activities** segment is essentially attributable to the gas activities (€(8.4) billion) due to the decrease in wholesale gas prices and in the trading margin (€(3.2) billion). This reflects lower volatility on the markets as prices followed a downward trend, counterbalanced by a lower systemic credit risk.

5.2 Fuel and energy purchases

Fuel and energy purchases comprise:

(In millions of euros)	2023	2022
Fuel purchases used – power generation[1]	(21,497)	(34,509)
Energy purchases[1]	(51,600)	(81,943)
Transmission and delivery expenses	(8,509)	(6,142)
Gain/loss on hedge accounting	(257)	(6)
(Increase)/decrease in provisions related to nuclear fuels and energy purchases	874	1,590
FUEL AND ENERGY PURCHASES	**(80,989)**	**(121,010)**

(1) Fuel purchases used and Energy purchases include respectively €1,867 million and €26,792 million for optimisation operations on the wholesale gas and electricity markets in 2023 (€2,927 million and €41,458 million in 2022). In 2023 as in 2022, the principal operating segments with net long positions in euros on the markets are France – Generation and supply (electricity), the United Kingdom (gas and electricity), Other international (Luminus – gas and electricity) and Dalkia (gas).

Fuel purchases used include costs relating to raw materials for energy generation (principally nuclear fuels and fissile materials, gas, and a non-significant proportion of coal and oil), purchases of services related to the nuclear fuel cycle, and costs associated with environmental schemes (mainly greenhouse gas emission certificates and renewable energy certificates).

"Energy purchases" include purchases made under the purchase obligation mechanism in France.

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's fuel and energy purchases were €40 billion lower than in 2022, principally in the France-Generation and Supply segment (€24.2 billion, essentially for electricity purchases), Italy (€12.5 billion for gas purchases), and Other activities (€7.7 billion, principally in the gas business). In France, this decrease is mainly explained by the significantly lower volumes of energy purchased as nuclear and hydropower output improved, and the end of purchases to provide alternative suppliers with additional ARENH volumes.

5.3 Personnel expenses

Personnel expenses comprise:

(in millions of euros)	2023	2022
Wages and salaries	(10,428)	(10,254)
Social contributions	(2,247)	(2,208)
Employee profit sharing	(386)	(333)
Other contributions related to personnel	(365)	(352)
Other expenses linked to short-term benefits	(222)	(226)
Short-term benefits	**(13,648)**	**(13,373)**
Expenses under defined-contribution plans	(1,258)	(1,096)
Expenses under defined-benefit plans	(423)	(855)
Post-employment benefits	**(1,681)**	**(1,951)**
Other long-term benefits	(120)	121
Termination payments	(21)	(33)
Other personnel expenses	**(141)**	**88**
PERSONNEL EXPENSES	**(15,470)**	**(15,236)**

Excluding foreign exchange effects and changes in the scope of consolidation, personnel expenses increased by +2% compared to 2022. The increase in wages and salaries reflects the effect of pay rises introduced in the various Group entities during 2023, to take account of inflation.

The impacts of the French pension reform and decisions made by EDF Energy to limit inflation-related increases in pensions (inflation rate of 10%) are presented in Other income and expenses (see note 7).

Average workforce comprise:

(in full time equivalent)	2023	2022
IEG status	96,093	94,232
Other	75,769	70,796
AVERAGE WORKFORCE	**171,862**	**165,028**

5.4 Taxes other than income taxes

(in millions of euros)	2023	2022
Payroll taxes	(347)	(310)
Energy taxes	(1,556)	(1,623)
Other non-income taxes	(2,161)	(1,230)
TAXES OTHER THAN INCOME TAXES	**(4,064)**	**(3,163)**

After elimination of changes in foreign exchange rates and the scope of consolidation, taxes other than income taxes showed an organic increase of €(903) million or 28.5%, reflecting the introduction of the additional revenue tax mechanisms (the Inframarginal revenue cap on electricity production in the European Union and the Electricity Generator Levy in the United Kingdom), which had an effect of €(567) million in 2023 (compared to €102 million in 2022), principally in the United Kingdom (€(400) million) and Other international segments (€(146) million). In the France-Generation and Supply segment, the tax due under the inframarginal revenue cap mechanism is very limited due a significant tax loss carryforward from 2022, generated by purchases on the markets at high prices as a result of the substantial downturn in nuclear power generation that year.

The increase in taxes other than income taxes is also attributable to the France – Generation and supply segment. In 2022, the French Local Economic Contribution tax was exceptionally low, due to lower value added in 2022 caused by an increase in energy purchases observed in 2022 in a context of declining nuclear power output, and the purchase of 19.5TWh of electricity for the ARENH scheme.

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The EU inframarginal revenue cap on electricity production (CRI)

On 6 October 2022 the **European Union** adopted a regulation for harmonised action to address the energy price crisis. Among other measures, this regulation set targets for reducing energy consumption during the winter of 2023, and introduced state aid for businesses and households, funded by a windfall tax on the fossil fuel sectors, and an inframarginal revenue cap on electricity production.

This inframarginal revenue cap is a compulsory tax measure requiring electricity producers to pay to the State all revenues above a threshold expressed in €/MWh. Under the EU regulation, this cap was applicable from 1 December 2022 to 30 June 2023 with a threshold of €180/MWh, but many EU member states decided to lengthen the application period and set different thresholds, well below the EU level, for different generation technologies.

In the ***EDF group****, this regulation mainly concerns activities in France, Belgium and the United Kingdom.*

In **France,** a 90% tax on inframarginal rents was introduced for three periods: 1 July - 30 November 2022, 1 December 2022 - 30 June 2023, and 1 July - 31 December 2023. Any deficit in one period could be partially carried over to the next. This tax was renewed for the period 1 January 2024 to 31 December 2024 by article 80 of France's Finance Law for 2024.

Separate inframarginal rent thresholds (in €/MWh) are set for each electricity generation technology (8 different categories), principally €90/MWh for nuclear power, €100/MWh for wind and solar power, €80-€140/MWh for hydropower (depending on the power of each plant). France has also opted to tax gas-fired electricity generation plants (including cogeneration plants), which are subject to caps of €40-€110/MWh, plus fuel costs.

Consequently, in the EDF group in **France** in 2023, the inframarginal revenue cap concerns EDF SA and the French entities of Dalkia (€9 million in 2023, €14 million in 2022), and EDF Renewables (€12 million in 2023, €37 million in 2022), respectively for their cogeneration and renewable energy output.

EDF SA made a significant loss (that could be carried forward) for the first period in 2022, and also for the month of December 2022, reflecting purchases made on high-price markets due to the very substantial downturn in nuclear power output (-81,7 TWh) over that period. In view of the carry-forward mechanism, EDF does not expect to pay any tax on inframarginal rents for 2023.

In **Belgium,** the inframarginal revenue cap concerns EDF's nuclear and renewable power output: the liability amounted to €146 million in 2023 in application of the country's 100% tax above a threshold of €130/MWh.

In **Italy**, the Group was concerned by windfall taxes in 2022 which no longer existed in 2023 (see note 9).

Other similar mechanisms in the Group

The **United Kingdom** introduced a 45% tax on revenues in excess of £75/MWh tax from electricity generation (the Electricity Generator Levy) applicable from 1 January 2023. It is payable by entities producing electricity from coal, renewable and nuclear sources but does not apply to gas-fired power plants. This tax is scheduled to apply until 30 March 2028 and generated an expense of €400 million for EDF Energy in 2023.

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5.5 Other operating income and expenses

Other operating income and expenses comprise:

(in millions of euros)	Notes	2023	2022
Operating subsidies	5.5.1	14,493	1,055
Net income on deconsolidation	5.5.2	55	168
Gains on disposal of fixed assets	5.5.2	(228)	(167)
Net increase/decrease in provisions on current assets	5.5.3	(702)	(307)
Net increase in provisions for operating contingencies and losses [1]		(77)	(1,059)
Other items	5.5.4	(2,313)	677
OTHER OPERATING INCOME AND EXPENSES		**11,228**	**367**

(1) see notes 15.1.1.1 and 17.2.

5.5.1 Operating subsidies

This item mainly comprises the subsidy received or receivable by EDF in respect of the compensation for public energy service charges, reflected in the financial statements through recognition of income of €14,126 million for 2023 (€808 million in 2022). The public service charges to be covered in 2023 include an amount of €13,992 million in compensation for the lower sales revenues resulting from limits on the sale prices to final customers introduced by the authorities through tariff caps for electricity and gas and "electricity buffer" mechanisms (see note 5.1.1). However, the charges to be covered for renewable energy support were once again negative in 2023, because market prices were high and generally above the price of EDF's purchase obligation.

Compensation for public energy charges (CSPE) (France)

Mechanism

The compensation mechanism for public energy service charges (*compensation des Charges de Service Public de l'Energie*) resulted from a reform introduced by France's amended Finance Law for 2015, but since 1 January 2021 public energy service charges have been compensated through the State's general budget.

In compensation for the 2023 charges, France's initial Finance Law for 2023 introduced an €8.4 billion "public energy service" budget (P345) to cover additional costs (purchase obligations and additional remuneration) incurred on support contracts for renewable energies and biogas, expenses associated with the electricity and gas tariff caps (see note 5.1.1), solidarity charges borne by gas and electricity suppliers, costs associated with support for non-renewable energy production (essentially cogeneration), and the cost of applying the standard national tariffs to zones that are not connected to France's mainland network.

Income generated by the excise duty on electricity (previously named the domestic tax on the final consumption of electricity (TICFE), and shown on customer invoices as the "Contribution to the public energy service" (CSPE)) goes directly into the general budget. This excise duty is received directly from final consumers of electricity through an additional levy on the electricity sale price (collected by their suppliers), or directly from electricity producers that produce electricity for their own uses.

The level of this excise duty was set at a full rate of €32/MWh for residential users. The law also defines a special rate, reduced rates and exemptions for businesses depending on their activity and consumption levels. However, France's electricity tariff cap then effectively reduced the tax to its minimum level of €1/MWh for residential customers and €0.5/MWh for business customers.

In accordance with decree 2016 - 158 of 18 February 2016 concerning compensation for public service energy charges, the CRE published two decisions in 2023 (decision n°2023 - 200 of 20 July and decision 2023 - 293 of 21 September), setting out a forecast of EDF's public service charges for 2024, a revised forecast of charges for 2023, and the actual charges recorded for 2022.

5.5.2 Net income on deconsolidation and gains on disposal of fixed assets

In 2023, net income on deconsolidation and gains on disposal of property, plant and equipment includes gains on sales of EDF Renewables' generation assets as part of the Development and Sale of Structured Assets (DSSA) activities, amounting to €48 million (€192 million in 2022).

5.5.3 Net increase and decrease in provisions on current assets

In 2023, the net increase/decrease in provisions on current assets principally concerns trade receivables in the United Kingdom and France, and €230 million of provisions on the coal stock at the Cordemais power plant in France as the consumption forecast at the end of 2023 was substantially lower than in 2022.

5.5.4 Other items

Other items mainly include costs incurred to obtain energy savings certificates, losses on non-recoverable operating receivables, French hydropower concession fees and additional remuneration paid to producers of electricity from renewable sources in France.

The additional remuneration paid to electricity producers using renewable energies was introduced by France's law on the Energy Transition for green growth. It is a support mechanism intended to guarantee reasonable remuneration for producers who sell their energy directly on the markets, by compensating for the differential between the revenues from those sales and a reference amount. Conversely, when these revenues are higher than the reference amount, the producer must repay the differential received. This mechanism complements the purchase obligation system in France.

Other items also include expenses and income related to closure of the Fessenheim plant at 31 December 2023 mainly comprising:

- expenses of €93 million (salaries and social security charges for labour at the site amounting to €45 million, purchases of goods and services amounting to €43 million, taxes other than income taxes, mainly payroll taxes, energy taxes and local taxes amounting to €5 million);
- the compensation defined in the protocol for expenses that will be incurred after the closure, amounting to €43 million, recognised as an operating subsidy in the income statement as explained above.

Closure of Fessenheim nuclear power plant

In accordance with the application for termination of operations and the declaration of the permanent shutdown of both reactors at Fessenheim nuclear power plant sent by EDF to the Minister for the Ecological and Inclusive Transition and to the ASN on 30 September 2019, EDF shut down reactor 1 on 22 February 2020 and reactor 2 on 30 June 2020.

On 27 September 2019, due to the cap on nuclear power output set by the "energy transition for green growth" law of 17 August 2015, the French State and EDF signed a protocol agreement whereby the State will compensate EDF for the early closure of Fessenheim.

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The compensation paid under the terms of this protocol comprises:

- Initial instalments to compensate for expenses incurred after the closure of the plant (end-of-operations expenditure, BNI taxes, dismantling costs and staff redeployment costs), which will essentially be paid over a 4-year period following the closure. An amount of €370 million was received on 14 December 2020 (see note 13.5);

  This compensation is recognised as income in profit and loss as and when the associated costs are incurred;
- Subsequent payments corresponding to the lost income that would have been generated by future power generation up until 2041, based on Fessenheim's previous output figures and calculated "ex post" on the basis of nuclear power sale prices, particularly observed market prices. There is no reason to recognise such income in the financial statements at this stage.

Once decoupled from the network, the Fessenheim plant entered a post-operating phase of approximately five years. Units 1 and 2 continue to be operated and maintained as "defueled core" and "evacuated fuel" reactors. This requires a series of technical and administrative operations. By the end of 2022, all the spent fuel had been removed to La Hague, and decontamination of the nuclear zone had been finalised by 31 December 2023. The dismantling decree for Fessenheim is expected to be issued in 2026.

ENERGY SAVINGS CERTIFICATES

ACCOUNTING PRINCIPLES AND METHODS

In France, the Law of 13 July 2005 introduced a system of energy savings certificates. Suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level became subject to energy savings obligations, initially for a three-year period.

To meet this obligation, three sources are available to the EDF group: supporting consumers in their energy efficiency operations, funding State-approved energy savings certificate schemes, and purchasing certificates on the secondary market.

Expenses incurred for this purpose are recorded in expenses of the year concerned, in "Other operating income and expenses". Expenses in excess of the accumulated obligation at year-end are included in inventories and may be used to cover the obligation in later years.

A provision is recognised if the volume of energy savings certificates obtained is lower than the cumulative energy savings obligation at the year-end. The amount of the provision is equal to the cost of actions still to be taken to extinguish the obligations related to the energy sales made.

ENERGY SAVING REGULATIONS IN FRANCE

The fifth period of France's energy savings certificates scheme (2022-2025) began on 1 January 2022. Decree 2021-712 tightened up the scheme (for example by significantly reducing special measures and bringing calculations closer to the real savings), and directs more funding to very vulnerable households (raising the "energy poverty" obligations, restricting the scope to very vulnerable households, and increasing in the penalties in this category to €20/MWhc).

However, to reinforce the dynamic, the DGEC issued a decree just 10 months after the fifth period began (decree 2022-1368 of 27 October 2022) that raised the scheme obligations for the period from 1 January 2023 as follows:

- "Standard" obligation: 1970TWhc vs 1770TWhc initially, and +200TWhc for the period 2023 - 2025;
- "Energy poverty" obligation: 1130TWhc vs 730TWhc initially, and +400TWhc for the period 2023 - 2025.

These regulatory changes in the course of the period are obliging the actors concerned to make adaptations. At 31 December 2023, the EDF group had met its obligation for the fifth period of the scheme (2022-2025).

Note 6 Net changes in fair value on energy and commodity derivatives, excluding trading activities

ACCOUNTING PRINCIPLES AND METHODS

This item essentially consists of changes over the period in the fair value of derivatives used for economic hedging of commodity purchases or sales that are not eligible for hedge accounting as defined in IFRS 9, and are therefore included directly in profit and loss. The Group reports these changes in a specific line of the income statement, "Net changes in fair value on Energy and Commodity derivatives, excluding trading activities" below the operating profit before depreciation and amortisation.

(in millions of euros)	2023	2022
NET CHANGES IN FAIR VALUE ON ENERGY AND COMMODITY DERIVATIVES, EXCLUDING TRADING ACTIVITIES	**363**	**(849)**

Net changes in fair value on Energy and Commodity derivatives, excluding trading activities, stood at €(849) million at 31 December 2022 then €363 million at 31 December 2023. This change was principally due to lower price volatility in 2023 as commodity prices followed a downward trend, in contrast to 2022.

Note 7 Other income and expenses

Other income and expenses amount to €(2 944) million for 2023. They principally comprise:

- an exceptional additional allocation of €(1,073) million to provisions for spent fuel management, in view of the agreement signed in September 2023 with Orano Recyclage fixing the principles of future amendments for the period 2024-2026 (see note 15.1.1.1);
- an allocation of €(525) million to Edison's provisions for environmental litigation;
- exceptional additional costs totalling €(499) million, relating to repair work on the main secondary circuit welds at the Flamanville 3 EPR (these are abnormal costs under IAS 16.22 and cannot be included in the cost of assets under construction);
- an increase of €(345) million to provisions following the final agreement signed on 13 December 2023 between Engie and the Belgian government concerning all nuclear waste-related obligations (see note 15.1);
- a past service cost of €(338) million resulting from the pension plan amendment introduced by France's pension reform;
- a provision of €(162) million for surplus costs related to the design of the Hinkley Point C project, to be reimbursed to CGN under a specific agreement;
- income of €92 million resulting from the United Kingdom's pension cap.

In 2022, other income and expenses amounted to €(687) million. They principally comprised:

- exceptional additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR, totalling €(638) million;
- the expense of the Employee Reserved Offer (ERO) during the period, amounting to €(64) million;
- the gain on sale of EDF Energy Services LLC (the energy sales activity of EDF Trading North America, see note 3.1) and Dalkia Russia, and the compensation paid to partners amounting to a net €68 million;
- provisions relating to proceedings before the civil, administrative and criminal courts concerning the sale by Montedison of Ausimont (the Bussi site) in Italy to Solvay in 2002 (see note 17.3.5).

Note 8 Financial result

8.1 Cost of gross financial indebtedness

Details of the components of the cost of gross financial indebtedness are as follows:

(in millions of euros)	2023	2022
Interest expenses on financing operations[1]	(3,924)	(1,940)
Change in the fair value of derivatives and hedges of liabilities	17	(31)
Transfer to income of changes in the fair value of cash flow hedges	(34)	89
Net foreign exchange gain on indebtedness	111	152
COST OF GROSS FINANCIAL INDEBTEDNESS	**(3,830)**	**(1,730)**

(1) Including interest on the lease liability amounting to €(100) million in 2023 and €(77) million in 2022.

Interest expenses on financing operations increased by €1,984 million. This increase is explained by an interest rate effect as rates rose, and to a lesser degree the effect of the higher volume of debt.

8.2 Discount effect

The effect of winding the discount primarily concerns provisions for the back-end of the nuclear cycle, decommissioning and last cores, and long-term and post-employment employee benefits.

Details of the final discount effect are as follows:

(in millions of euros)	2023	2022
Provisions for long-term and post-employment employee benefits [1]	(1,337)	(663)
Provisions for the back-end of the nuclear cycle, decommissioning and last cores [2]	(2,603)	770
Other provisions and advances	(48)	67
DISCOUNT EFFECT	**(3,988)**	**174**

[1] See note 16.1.3.
[2] Including the effect of discounting the receivable corresponding to amounts reimbursable by the NLF (see note 18.1.3).

The increase in the discount effect on provisions for long-term and post-employment employee benefits in 2023 is explained by the higher discount rate applicable at 1 January 2023 (in France: 3.9%, against 1.6% at 1 January 2022), partly offset by a lower volume of commitments at 1 January 2023.

The increase in the discount expenses on nuclear provisions in 2023 results mainly from a rate effect of €(2,533) million attributable to the stability of the real discount rate in France over the period (2.5%), after the 50 base point increase in the discount rate in 2022 (see note 15.1). The cost of unwinding the discount in 2022 was more than offset by a favourable discount effect caused by this change in the rate.

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8.3 Other financial income and expenses

Other financial income and expenses comprise:

(in millions of euros)	2023	2022
Financial income on cash and cash equivalents	293	95
Gains/(losses) on other financial assets (including loans and financial receivables)	374	311
Gains/(losses) on debt and equity securities	760	345
Changes in financial instruments carried at fair value through profit and loss	2,058	(3,272)
Other financial expenses	(403)	(433)
Foreign exchange gain/loss on financial items other than debts	(143)	75
Return on fund assets	708	419
Capitalised borrowing costs	822	463
OTHER FINANCIAL INCOME AND EXPENSES	**4,469**	**(1,997)**

"Gains/(losses) on debt and equity securities" in 2023 principally include:

- €877 million of dividends and interest income on debt securities (€467 million in 2022);
- €(118) million of net gains and losses on sales of debt securities carried at fair value through OCI with recycling (including €(101) million on dedicated assets), compared to €(122) million in 2022 (including €(68) million on dedicated assets).

In 2023, other financial income and expenses include changes in the fair value of financial instruments, amounting to €2,058 million (€(3,272) million in 2022) in a market environment that remained volatile. €2,220 million of this change related to the fair value of dedicated assets (€(3,096) million in 2022).

Note 9 Income taxes

ACCOUNTING PRINCIPLES AND METHODS

Income taxes include the current tax expense (income) and the deferred tax expense (income), calculated under the tax legislation in force in the countries where earnings are taxable.

In compliance with IAS 12, current and deferred taxes are generally recorded in the income statement or in equity symmetrically to the underlying operation.

In application of IFRS 9, the Group considers that payments made to holders of perpetual subordinated bonds qualify as "dividends" under the definition given in the standard. Consequently, in compliance with IAS 12, the tax effects of such distributions are included in profit and loss of the relevant period, in the same way as the effects of dividend payments.

In application of IFRIC 23, a tax asset or liability is recognised when there is uncertainty over income tax treatments. If the Group considers it likely that the tax authorities will not accept its chosen treatment, it recognises a tax liability, and if it considers it likely that the tax authorities will reimburse a tax that has already been paid, it recognises a tax asset. The tax assets and liabilities relating to these uncertainties are estimated on a case-by-case basis and stated at the most likely amount, or the weighted average of the various outcomes considered. These tax assets and liabilities are included in deferred taxes.

The current tax expense (income) is the estimated amount of tax due on the taxable income for the period, calculated using the tax rates adopted at the year-end.

Deferred taxes result from temporary differences between the book value of assets and liabilities and their tax basis, except in specific cases defined in IAS 12, for which no deferred taxes are recognised..

Deferred tax assets and liabilities are valued at the expected tax rate for the period in which the asset will be realised or the liability extinguished, based on tax rates adopted at the year-end. If the tax rate changes, deferred taxes are adjusted to the new rate and the adjustment is recorded in the income statement, unless it relates to an underlying for which changes in value are recorded in equity, for example in accounting for actuarial gains and losses or fair value on hedging instruments and debt or equity securities.

Deferred taxes are reviewed at each closing date, to take into account changes in tax legislation and the prospects for recovery of deductible temporary differences. Deferred tax assets are only recognised when it is probable that the Group will have sufficient taxable profit to utilise the benefit of the asset in the foreseeable future, or beyond that horizon, if there are deferred tax liabilities with the same maturity.

Deferred tax assets and liabilities are reported on a net basis, determined at the level of a tax entity or tax group.

Pillar two rules

To address concerns about declining corporate income tax bases and the shifting of taxable profits between States by large multinational companies, a worldwide agreement to introduce a minimum corporate tax rate has been reached in 2021 by more than 135 countries. In December 2021, the Organisation for Economic Co-operation and Development (OECD) published a proposed reform of international tax rules, notably including the introduction of a minimum 15% tax rate on profits of multinational groups (the "Pillar Two Rules").

Following the European Union's adoption of the "Pillar Two" directive on 15 December 2022, on 20 December the OECD published simplified procedures which will only apply for financial years beginning on or before 31 December 2026 (which in practice for the Group means financial years 2024 to 2026). During that transition period, provided certain requirements are met in the country of operation, groups may be exempt from calculating top-up tax under the Pillar Two rules.

France's Finance Law for 2024 has transposed these new rules into French legislation. The first application will be in 2024, with the first declaration to be filed in June 2026.

During 2023, the Group continued its work to implement and evaluate the Pillar 2 rules. Based on the legislation applicable in France, the tax rates currently in force in the countries where the Group has operations, and subject to the Group developing new businesses or the law changing in the relevant countries before the Pillar Two rules take effect, the Group does not expect these rules to have any significant income tax impacts.

9.1 Breakdown of tax expense

The tax income / (expense) breaks down as follows:

(in millions of euros)	2023	2022
Current tax expense	(3,887)	(1,894)
Deferred taxes	1,417	5,820
TOTAL	**(2,470)**	**3,926**

In 2023, €(2,167) million of the current tax expense relates to French companies, and €(1,720) million relates to foreign subsidiaries (€(562) million and €(1,332) million respectively in 2022).

9.2 Reconciliation of the theoretical and effective tax expense (tax proof)

(in millions of euros)	2023	2022
Income of consolidated companies before tax	**9,825**	**(22,916)**
Income tax rate applicable to the parent company	25.82%	25.82%
Theoretical tax expense	**(2,537)**	**5,917**
Differences in tax rate[1]	(61)	145
Permanent differences[2]	(1,188)	(336)
Taxes without basis[3]	253	(478)
Unrecognised deferred tax assets[4]	1,062	(1,320)
Other	1	(2)
ACTUAL TAX EXPENSE	**(2,470)**	**3,926**
EFFECTIVE TAX RATE	**25.13%**	**17.13%**

The income tax expense amounts to €(2,470) million at 31 December 2023, corresponding to an effective tax rate of 25.13% (compared to an income tax credit of €3,926 million in 2022, corresponding to an effective tax rate of 17.13%).

The €(6,396) million change between the tax income in 2022 and the tax expense in 2023 essentially reflects the €32,741 million increase in the Group's pre-tax income, generating additional tax of €(8,454) million.

The change in the income tax expense in 2023 is also affected by impairment in the United Kingdom, although that effect is partly offset by recognition of deferred tax assets on the loss reported in 2022 by the French tax group (EDF SA, Enedis, PEI and other French subsidiaries owned more than 95%), and the absence in 2023 of tax litigation and unfavourable effects of the windfall tax on electricity-producing companies introduced in Italy in 2022.

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At 31 December 2022, the French tax group's loss gave rise to partial recognition of a deferred tax asset since the prospects of recovery within a 10-year horizon were uncertain, but after a reassessment at 31 December 2023 of its ability to recover this tax loss, the Group recognised an additional deferred tax asset of €1,060 million such that the entire 2022 tax loss is now recognised.

After elimination of these non-recurring items (principally impairment and unrealised gains and losses on financial assets and commodities), the effective current tax rate for 2023 is 20.6%, compared to 18.0% in 2022.

The main factors explaining the difference between the theoretical tax rate and this effective rate are:

- 2023:
  - the unfavourable €(62) million impact of tax rate differences in Italy, where the normative tax rate applicable in 2023 is 27.9%;
  - the unfavourable impacts in the United Kingdom of impairment (€(1,020) million) and the Electricity Generator Levy, a 45% tax on electricity generators' windfall revenues, which will apply until 31 March 2028 (€(100) million);
  - the favourable impact of deduction of the payments made to bearers of perpetual subordinated bonds, amounting to €164 million;
  - the favourable impacts of recognition and reversals of impairment of deferred tax assets of the tax group in France (€938 million) (including €1,060 million relating to the loss reported in 2022), and in the United States (€182 million) (see note 9.4).
- 2022:
  - the favourable impact of tax rate differences amounting to €145 million, mainly relating to the United Kingdom where the normative tax rate applicable in 2022 is 19%,
  - provisions and impairment amounting to €(279) million,
  - the unfavourable impact of windfall taxes in Italy (€(317) million), and tax litigation (€(346) million), partly offset by the favourable impact of deduction of the payments made to bearers of perpetual subordinated bonds, amounting to €156 million,
  - the effect of non-recognition of deferred tax assets, amounting to €(1,320) million including €(1,551) million relating to the French tax group (see note 9.4), partly offset by the favourable effect of deferred tax assets recognised in the United States, amounting to €296 million.

9.3 Change in deferred tax assets and liabilities

(in millions of euros)	2023	2022
Deferred tax assets	8,696	1,667
Deferred tax liabilities	(1,533)	(2,401)
Net deferred taxes at 1 January	**7,163**	**(734)**
Change in net income	1,417	5,820
Change in equity	(2,040)	2,323
Translation adjustments	(28)	79
Changes in scope of consolidation	(78)	13
Other movements	(9)	(338)
NET DEFERRED TAXES AT 31 DECEMBER	**6,425**	**7,163**
Deferred tax assets	7,403	8,696
Deferred tax liabilities	(978)	(1,533)

In 2023, the change in deferred taxes in equity includes €199 million of actuarial gains and losses on post-employment benefits (€(558) million in 2022) and €(2,216) million of changes in the fair value of hedges (€(1,181) million in 2022).

9.4 Breakdown of deferred tax assets and liabilities by nature

(in millions of euros)	31/12/2023	31/12/2022
Deferred taxes:		
Fixed assets and right-of-use assets [1]	(5,114)	(6,946)
Provisions for employee benefits	3,938	3,927
Other provisions and impairment	216	778
Financial instruments	509	2,401
Tax loss carryforwards and unused tax credits	7,915	9,555
Lease liabilities [1]	838	845
Other	544	497
Total deferred tax assets and liabilities	**8,846**	**11,057**
Unrecognised deferred tax assets	(2,421)	(3,894)
NET DEFERRED TAXES	**6,425**	**7,163**

(1) Due to application of the amendments to IAS 12, deferred tax assets and liabilities associated with leases, amounting to €845 million, are shown separately from deferred tax assets and liabilities associated with decommissioning costs, amounting to €37 million at 31 December 2022. The presentation used for deferred tax assets and liabilities in 2022 has been adjusted accordingly by €882 million, with no impact on the total deferred assets reported in the balance sheet.

At 31 December 2023, unrecognised deferred tax assets represent a potential tax saving of €2,421 million (€3,894 million at 31 December 2022), mainly relating to France, Italy and the United States.

The potential tax saving in France, amounting to €1,709 million (€2,952 million in 2022) essentially relates to the stock of deferred tax assets on employee benefits. These deferred tax assets have no time limit. Some of the corresponding deferred taxes are unrecognised, in application of the Group's conservative policy for recognition of deferred taxes beyond a 10-year horizon

The potential tax saving in Italy, amounting to €308 million (€309 million in 2022), relates to the tax value of goodwill, which was revised in 2021 and is amortisable over 50 years for tax purposes. Some of the corresponding deferred tax assets are unrecognised due to the Group's conservative policy for recognition of deferred taxes beyond a 10-year horizon.

The potential tax saving in the United States, amounting to €287 million (€490 million in 2022) relates mainly to tax losses that can be carried forward until dates between 2026 and 2037 (this concerns losses generated before 31 December 2017, and long-term capital losses), or for an unlimited period (for losses generated after 2017).

Recognised deferred tax assets on tax loss carryforwards and unused tax credits amount to €7,538 million (€7,898 million in 2022) and principally concern France (€6,190 million in 2023, €6,890 million in 2022), the United States (€561 million in 2023, €430 million in 2022), and the United Kingdom (€475 million in 2023, €306 million in 2022).

In France, they include a deferred tax asset of €6,103 million recognised in connection with the loss reported in 2022 by the French tax group (EDF SA, Enedis, PEI and other French subsidiaries owned more than 95%), which has not yet been utilised.

Based on the projected future tax results of the French tax group, the gross deferred tax asset of €6,103 million is expected to be recovered over a period of less than 10 years, and this led to reversal of the provision previously booked. These projections take account of the Group's 2024 Budget as approved by the Board of Directors and the Group's internal financial trajectory, including the agreement of 14 November 2023.

In the United Stated and United Kingdom, deferred tax assets on tax loss carryforwards and tax credits were recognised due to the existence of deferred tax liabilities in the same entities that will reverse over the same time horizons, or because taxable profits are expected.

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Note 10 Property, plant and equipment and intangible assets (excluding French public electricity distribution concession assets)

Details of property, plant and equipment and intangible assets (excluding French electricity distribution concession assets) are as follows:

(in millions of euros)	Notes	31/12/2023	Assets in progress[1]	31/12/2022	Assets in progress[1]
Goodwill	10.1	7,895	n.a.	9,513	n.a.
Other intangible assets	10.2	11,300	2,600	10,619	2,110
Property, plant and equipment used in generation and other tangible assets, including right-of-use assets	10.3	100,587	46,735	101,126	49,700
Right-of-use assets	10.4	*4,173*	*n.a.*	*4,051*	*n.a.*
Property, plant and equipment operated under concessions other than French electricity distribution concessions	10.5	6,544	775	6,816	668
TOTAL PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS (EXCLUDING FRENCH ELECTRICITY DISTRIBUTION CONCESSION ASSETS)		**126,326**	**50,110**	**128,074**	**52,478**

n.a.: not applicable.

(1) Assets in progress are presented in note 10.6.

10.1 Goodwill

ACCOUNTING PRINCIPLES AND METHODS

DETERMINATION OF GOODWILL

In application of IFRS 3, "Business combinations" (see note 3), goodwill is the difference between:

- the sum of the following items:
  - the acquisition-date fair value of the price paid to acquire control;
  - the value of non-controlling interests in the entity acquired; and
  - for acquisitions achieved in stages, the acquisition-date fair value of the Group's share in the acquired entity before it acquired control; and
- the net value of the assets acquired and liabilities assumed, measured at fair value at the acquisition date.

When this difference is negative it is immediately included in net income.

The fair values of assets and liabilities and the resulting goodwill are finalised within twelve months of the acquisition.

MEASUREMENT AND PRESENTATION OF GOODWILL

Goodwill on acquisition of subsidiaries is disclosed separately in the balance sheet. Impairment on this goodwill is reported under the heading "Impairment" in the income statement. After initial recognition, goodwill is carried at cost less any impairment recognised.

Goodwill on acquisition of associates and joint ventures is included in the investment's net book value. Impairment on this goodwill is included under the heading "Share in income of associates and joint ventures".

Goodwill is not amortised, but impairment tests are carried out as soon as there is an indication of possible loss of value, and at least annually, as described in note 10.8.

In 2023, goodwill primarily related to EDF Energy (€4,901 million net of the impairment recognised in 2023) and Framatome (€1,475 million). The breakdown by operating segment is presented in note 4.1.

Changes in goodwill in 2023 and 2022 were as follows:

(in millions of euros)	31/12/2023	31/12/2022
Net book value at opening date	**9,513**	**10,945**
Acquisitions	43	154
Disposals	(24)	(2)
Impairment (note 10.8)	(1,779)	(1,178)
Translation adjustments	134	(379)
Other changes	8	(27)
NET BOOK VALUE AT CLOSING DATE	**7,895**	**9,513**
Gross value at closing date	11,832	11,650
Accumulated impairment at closing date	(3,937)	(2,137)

The changes in goodwill in 2023 primarily related to:

- impairment of €(1,773) million on the goodwill of EDF Energy;
- translation adjustments (€134 million), mainly resulting from the appreciation of the pound sterling against the Euro.

The changes in goodwill in 2022 primarily related to:

- impairment of €(1,176) million on the goodwill of EDF Energy;
- translation adjustments (€(379) million), mainly resulting from the decline of the pound sterling against the Euro.

10.2 Other intangible assets

ACCOUNTING PRINCIPLES AND METHODS

GENERAL PRINCIPLES

Other intangible assets mainly comprise:

- software, which is amortised on a straight-line basis over its useful life, including SaaS (Software as a Service) contracts which are not treated as service contracts and included in expenses. To qualify for treatment as fixed assets, SaaS contracts must confer a right of control to the user in addition to access to the software for a fixed period;
- development costs that qualify for capitalisation under IAS 38 amortised on a straight-line basis over their foreseeable useful life;
- purchased brands with an indefinite useful life, or amortised on a straight-line basis over their useful life;
- operating or usage rights for power plants, which are amortised on a straight-line basis over the useful life of the underlying asset;
- the positive value of energy purchase/sale contracts stated at fair value as part of a business combination governed by IFRS 3: this value is amortised as the contractual deliveries take place;
- assets related to concession contracts governed by IFRIC 12, under the "intangible model" (see note 10.5);
- technology related to activities as designer and supplier of nuclear steam supply systems and manufacturer of control rod clusters and nuclear fuel (Framatome) including codes and methods, EPR technology, patents and manufacturing processes, all amortised over their useful life;
- purchased customer contracts and relations, amortised over their useful life;
- incremental costs of winning or renewing customer contracts, which are amortised over the average duration of customer contracts;
- intangible assets related to environmental regulations.

INTANGIBLE ASSETS RELATING TO ENVIRONMENTAL REGULATIONS

These include greenhouse gas emission certificates and renewable energy certificates purchased (see notes 20.1.1 and 20.1.2).

Greenhouse gas emission certificates

EU Directive 2003/87/EC set up a greenhouse gas emission quota system for the European Union. The UK has its own emissions trading scheme (UK ETS) which has been in operation since 1 January 2021.

This quota system was incorporated into national laws. Among other things it requires obligated actors, which is the case of EDF, to surrender to the State a number of greenhouse gas emission credits each year, corresponding to their emissions for the year.

In the EDF group, the entities subject to these regulations are EDF, EDF Energy, Edison, Dalkia, and Luminus.

The accounting treatment of emission certificates depends on the holding intention. Two economic models coexist in the Group:

- Certificates held under the "Trading" model are included in "Other inventories" at fair value. The change in fair value observed over the year is recorded in the income statement;
- Certificates held to comply with regulatory requirements on greenhouse gas emissions (the "Generation" model) are recorded in other intangible assets:
  - at acquisition cost when purchased on the market,
  - at nil value when allocated free of charge (in countries that still have a free allocation system).

A provision corresponding to emissions for the year is established at the year-end (see note 17.2).

This provision is equal to the acquisition cost up to the amount of certificates acquired on forward markets, and by reference to market prices for the balance. It is cancelled when the certificates are surrendered to the State.

At the closing date, the certificates held and the obligation to surrender certificates for the emissions of the year are presented gross, without netting.

If the number of emission certificates at the end of the year not subject to forward sale is higher than the number of certificates to be surrendered to the State for the year's emissions, an impairment test is applied to the excess and impairment is recognised if the net book value exceeds the market value.

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Renewable energy certificates (green certificates)

In application of EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources, every EU member state has set national targets for consumption of electricity from renewable sources. The UK has its own equivalent system.

States can use two possible mechanisms to meet these targets:

- introducing a specific sales tariff for energy from renewable sources (this system is used in France and Italy);
- introducing a system of renewable energy certificates to be surrendered by energy suppliers (this system is used in the United Kingdom (Renewable Obligation Certificates) and Belgium (*Certificats verts*)).

For renewable energy certificate systems, the Group applies the following accounting treatment:

- certificates earned through energy generation are not recognised, since their cost is nil;
- certificates purchased are recognised as intangible assets in the line "Greenhouse gas emission rights - green certificates";
- a provision is established to reflect the obligation to surrender certificates. It is based on the cost of certificates earned (with nil value) and purchased (on the spot or forward market), the market price of the certificates still be purchased, and where relevant the market penalty price for the balance. The provision is cancelled when the certificates are surrendered to the State (see note 17.2).

The net value of other intangible assets breaks down as follows:

(in millions of euros)	31/12/2022	Acquisitions	Disposals	Translation adjustments	Changes in scope[2]	Other movements	31/12/2023
Software	7,605	927	(631)	18	-	45	7,964
Positive fair value of commodity contracts acquired in a business combination	504	-	-	-	-	-	504
Greenhouse gas emission certificates – green certificates	979	1,365	(1,351)	8	-	7	1,008
Other intangible assets	8,394	739	(53)	12	(146)	(117)	8,829
Intangible assets in development[1]	2,110	512	(28)	-	2	4	2,600
Gross value	**19,592**	**3,543**	**(2,063)**	**38**	**(144)**	**(61)**	**20,905**
Software	(4,968)	(870)	619	(16)	-	(14)	(5,249)
Positive fair value of commodity contracts acquired in a business combination	(266)	(25)	-	-	-	-	(291)
Other intangible assets	(3,739)	(540)	70	(12)	110	46	(4,065)
Accumulated amortisation and impairment	**(8,973)**	**(1,435)**	**689**	**(28)**	**110**	**32**	**(9,605)**
NET VALUE	**10,619**	**2,108**	**(1,374)**	**10**	**(34)**	**(29)**	**11,300**

(1) Increases in intangible assets in development are stated net of the effects of newly-commissioned assets. Intangible assets in development are detailed in note 10.6.

(2) The changes in scope essentially concern reclassifications of gas storage assets in Italy and the United Kingdom as assets held for sale.

The gross value of other intangible assets (except intangible assets in development) at 31 December 2023 includes:

- Enedis' network map, amounting to €927 million (€814 million in 2022);
- the Edison brand and intangible assets related to Edison's hydropower concessions, amounting to €945 million and €489 million respectively;
- the Dalkia brand and intangible assets related to Dalkia's concession agreements in France, amounting to €130 million and €1,552 million respectively;
- the Framatome brand, Framatome's nuclear technology-related intangible assets and Framatome's customer contracts, amounting to €151 million, €493 million and €216 million respectively.

Net impairment of €(44) million was recorded in respect of other intangible assets in 2023 (€(65) million in 2022).

EDF's research and development expenses recorded in the income statement total €483 million for 2023 (€473 million in 2022).

10.3 Property, plant and equipment used in generation and other tangible assets by the Group

ACCOUNTING PRINCIPLES AND METHODS

Property, plant and equipment is recorded at acquisition or production cost:

- the cost of facilities developed in-house includes all labour and materials costs, and all other production costs that can be included in the construction of the asset;
- borrowing costs attributable to the financing of an asset incurred during the construction period are included in the value of the asset provided it is a qualifying asset as defined by IAS 23 "Borrowing costs";
- the cost of property, plant and equipment also includes the initial estimate of decommissioning costs. These costs are recognised in assets against the provision recognised to cover these obligations. At the date of commissioning, these assets are measured and recorded in the same way as the corresponding provision (see note 15);
- decommissioning costs for nuclear generation installations also include last core costs (see note 15).

When some of the decommissioning costs for a plant are to be borne by a partner, the expected reimbursement is recognised as accrued income in the assets.

The Group capitalises safety expenses incurred as a result of legal and regulatory obligations sanctioning non-compliance by an administrative ban from operation.

Strategic safety spare parts for generation facilities are treated as property, plant and equipment, and depreciated over the residual useful life of the installations.

The costs of operations that are necessary for generation assets to remain in service, and are undertaken at the time of scheduled shutdowns, particularly during major inspections, are capitalised and amortised over a period corresponding to the time elapsing between two inspections.

DEPRECIATION

Items of property, plant and equipment are depreciated on a straight-line basis over their useful life, defined as the period during which the Group expects to draw future economic benefits from their use.

When a part of an asset has a different useful life from the overall asset's useful life, it is identified as an asset component and depreciated over a specific period.

Depending on each country's specific regulations and contractual arrangements, the expected useful lives for the main facilities are as follows:

• nuclear generation facilities	40 to 50 years
• wind farm and photovoltaic facilities	20 to 25 years
• fossil-fired power plants (mainly CCGT-Combined Cycle Gas Turbine plants)	25 to 45 years
• transmission and distribution installations (lines, substations)	20 to 60 years
• other general plant and machinery	10 to 20 years

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The net values of property, plant and equipment used in generation and other tangible assets are as follows:

(in millions of euros)	31/12/2022	Increases	Decreases	Translation adjustments	Changes in the scope of consolidation	Other movements	31/12/2023
Land and buildings	14,464	385	(67)	14	15	(240)	14,561
Nuclear power plants	79,559	4,576	(1,774)	195	-	240	82,796
Fossil-fired & hydropower plants	17,705	230	(66)	34	(20)	(5)	17,878
Other installations, plant, machinery, equipment & other	24,545	2,140	(527)	(146)	(175)	118	25,955
Right-of-use assets (1)	6,610	704	-	(13)	5	(149)	7,157
Assets in progress (2)	49,887	8,035	(90)	459	12	(262)	58,041
Gross value	**192,760**	**16,070**	**(2,524)**	**543**	**(163)**	**(298)**	**206,388**
Land and buildings	(8,682)	(382)	62	(11)	-	245	(8,768)
Nuclear power plants	(55,381)	(3,490)	1,685	(124)	-	492	(56,818)
Fossil-fired & hydropower plants	(12,922)	(440)	63	(28)	331	(11)	(13,007)
Other installations, plant, machinery, equipment & other	(11,903)	(1,437)	515	6	(83)	(16)	(12,918)
Right-of-use assets (1)	(2,559)	(772)	-	3	(2)	346	(2,984)
Assets in progress (2)	(187)	(11,190)	5	(13)	-	79	(11,306)
Depreciation and impairment	**(91,634)**	**(17,711)**	**2,330**	**(167)**	**246**	**1,135**	**(105,801)**
NET VALUE	**101,126**	**(1,641)**	**(194)**	**376**	**83**	**837**	**100,587**

(1) See note 10.4.

(2) Increases in assets in progress are stated net of the effects of newly-commissioned assets. Assets in progress are detailed in note 10.6.

Increases in 2023 in assets relating to the Group's major projects are detailed in notes 10.6 and 10.7.

The value of nuclear power plants decreased by €(194) million, principally due to replacement of important components and major upgrades, particularly in connection with the *Grand Carénage* programme and regular inspections.

The increase in impairment on assets in progress (€(11,190) million) essentially concerns the Hinkley Point C project currently under construction in the United Kingdom, following the updated project schedule and cost (see note 10.8).

The changes observed in property, plant and equipment used in generation and other tangible assets include a €376 million translation adjustment (resulting from a €544 million rise by the pound sterling against the euro) and €837 million of other changes, mainly related to reestimation of provisions for decommissioning.

Changes in the scope of consolidation essentially concern Edison (€34 million) and EDF Renewables (€28 million).

Depreciation periods of nuclear plants in France

As stated in note 1.3.4.1, the depreciation period of nuclear power plants currently in operation in France, *i.e.* thirty-two 900MW reactors, twenty 1300MW reactors and four 1450MW reactors, is 50 years for 900MW-series plants (since 1 January 2016) and 1300MW-series plants (since 1 January 2021), and 40 years for N4-series plants which do not yet fulfil the conditions for a longer depreciation period.

Under France's multi-year energy programme (PPE, standing for *Programmation Pluriannuelle de l'Énergie*) for the period 2019-2028, adopted in April 2020, twelve French nuclear reactors are to be shut down by 2035. As this includes the shutdowns of two 900MW reactors in 2027 and 2028 ahead of their fifth 10-year inspection, an early shutdown scenario for two 900MW reactors was adopted. Its effects on nuclear provisions and depreciation in the Group's financial statements are not significant. Application of this scenario continued at 31 December 2023 while awaiting the next multi-year energy programme, which could be adopted in 2024 as part of the current revision of France's energy and climate strategy.

Depreciation period of Cordemais coal-fired plant in France

In view of France's Energy and Climate law of 8 November 2019, the end of the depreciation period for the Cordemais coal-fired plant was brought forward to 2026 at the 2021 year-end.

RTE, in its Projected Supply Estimate Report published on September 20, 2023, confirmed the need to keep the Cordemais plant in operation for the supply-demand balance in the west of France until Flamanville 3 is put into operation. EDF has started action to continue maintenance of the plant until 2027, and to limit its carbon footprint during that time. Work has therefore been done to allow the use of biomass in replacement of 20% of the coal in each of Cordemais' two reactors.

As the authorities have announced that the last remaining coal-fired plants in France should be totally converted to biomass by 2027, EDF has begun discussions with them to explore regulatory questions related to this prospect.

Until new regulatory measures are adopted, the end of the accounting depreciation period for Cordemais remains set at 2026.

10.4 Right-of-use assets

ACCOUNTING PRINCIPLES AND METHODS

Under IFRS 16, a contract is, or contains, a lease if it confers the right to control the use of an identified asset for a period of time in exchange for a consideration.

Identified arrangements that do not have the legal form of a lease contract but nonetheless convey the right to control the use of an asset or group of specific assets to the purchaser are classified as leases by reference to IFRS 16.

RECOGNITION OF A LEASE CONTRACT AS LESSEE UNDER IFRS 16

The Group's lease contracts as lessee essentially concern real estate assets (office and residential properties), industrial installations (land, wind farms) and to a lesser extent vehicles, IT and industrial equipment.

IFRS 16 requires leases to be recognised in the lessee's balance sheet when the leased asset is made available, in the form of a "right-of-use" asset, presented in "Property, plant and equipment used in generation and other tangible assets, including right-of-use assets" with a corresponding financial liability associated with the lease commitment, presented in "Current and non-current financial liabilities".

Upon initial recognition of a lease, the right of use and the lease liability are valued by discounting the future lease payments over the term of the lease, taking into consideration assumptions regarding the renewal or termination of leases if the relevant options are reasonably certain to be exercised.

As a rule, since the implicit interest rate in a lease is difficult to determine, the lessee's incremental borrowing rate is used to discount the lease liability. This rate is based on zero-coupon EDF bond rates, adjusted for the currency risk, a country risk premium, the term of the lease contracts and the subsidiary's credit risk at the date of initial recognition of the contract. In certain cases, it is based on a subsidiary's specific incremental borrowing rate.

Subsequently, the right of use is amortised over the expected term of the lease, while the lease liability is stated at amortised cost, *i.e.* adding the interest recognised in the financial result, and deducting the amount of the lease payments made.

The Group applies the two exemptions allowed by IFRS 16, and as a result leases with a term of 12 months or less and leases of assets with individual value when new of less than USD 5,000 are not recognised in the balance sheet. Consequently, the payments on these leases are recognised on a straight-line basis over the lease term in the income statement.

Off-balance sheet commitments presented in note 21.1.1 concern:

- *short-term leases (12 months or less);*
- leases of assets with low value (less than USD 5,000 when new);
- leases signed for which the leased assets have not yet been made available (for example, assets under construction).

RECOGNITION OF A LEASE CONTRACT AS LESSOR

The accounting treatment of a lease contract in which the Group is lessor depends on the classification of the contract. For a finance lease which transfers substantially all risks and rewards inherent to ownership of the underlying asset to the lessee, the Group recognises a financial asset in its balance sheet instead of the initial fixed asset; in this case, the receivable is equal to the discounted value of future lease payments.

10.4.1 Change in right-of-use assets

(in millions of euros)	31/12/2022	Increases[1]	Decreases	Changes in the scope of consolidation	Other movements[2]	31/12/2023
Land and buildings	5,502	482	-	3	(51)	5,936
Other installations, plant, machinery, equipment & other	1,108	222	-	2	(111)	1,221
Gross value	**6,610**	**704**	**-**	**5**	**(162)**	**7,157**
Land and buildings	(1,942)	(599)	2	(2)	241	(2,300)
Other installations, plant, machinery, equipment & other	(617)	(173)	-	-	106	(684)
Depreciation and impairment	**(2,559)**	**(772)**	**2**	**(2)**	**347**	**(2,984)**
NET VALUE	**4,051**	**(68)**	**2**	**3**	**185**	**4,173**

(1) Increases concern right-of-use assets recognised in respect of new leases.
(2) Other movements include the effect of contract revisions on right-of-use assets and translation differences.

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10.4.2 Impacts in the income statement

The main impacts in the income statement of the Group's lease contracts as lessee are as follows:

(in millions of euros)	2023	2022
Income from subleases	7	7
Variable lease expenses	(74)	(53)
Expenses on short-term leases or leases of low-value assets	(140)	(108)
Income from sale and leaseback operations	-	-
Operating profit before depreciation and amortisation	**(207)**	**(154)**
Depreciation on right-of-use assets	(772)	(725)
Operating profit	**(979)**	**(879)**
Interest expense on the lease liability	(100)	(77)
INCOME BEFORE TAXES OF CONSOLIDATED COMPANIES	**(1,079)**	**(956)**

10.4.3 Payments relating to leases

(in millions of euros)	2023	2022
TOTAL PAYMENTS RELATING TO THE LEASE LIABILITY	**(845)**	**(776)**

Payments relating to the lease liability mainly concern principal repayments, and amount to €752 million in 2023 (€702 million in 2022).

10.5 Property, plant and equipment operated under concessions other than French public electricity distribution concessions

ACCOUNTING PRINCIPLES AND METHODS

The accounting treatment of concession agreements depends on the nature of the agreements and their specific contractual features.

CONCESSIONS IN FRANCE

In France, the Group is the operator for three types of concessions:

- public electricity distribution concessions granted by local authorities (municipalities or syndicated municipalities) (see note 11);
- hydropower concessions granted by the State;
- heat generation and distribution concessions from public authorities.

HYDROPOWER CONCESSIONS

Hydropower concessions follow standard rules approved by decree. For concessions granted before 1999, hydropower concession assets consist solely of hydropower generation equipment (dams, pipes, turbines, etc.), while for more recent concessions, they also include hydropower generation equipment and switching facilities (alternators, etc.).

Most concessions that expired before 2012 were initially for 75 years and were renewed for terms of 30 to 50 years. However, the French government has not yet renewed 31 concessions that have expired. Since their expiry these concessions have thus been in the "rolling extension" situation defined by the law, which stipulates that at the expiry date of a concession, if no new concession has been established "*the concession is extended on the existing terms until such time as a new concession is granted*", *so as to ensure continuity* of operations in the meantime (Article L. 521 - 16 par. 3 of the French Energy Code).

As these concession agreements are not concerned by IFRIC 12 "Service concession agreements", the assets used, whether directly owned or part of the concession, are recorded under "Property, plant and equipment operated under concessions other than French public electricity distribution concessions" at acquisition cost.

The main useful lives are the following; for concession assets, the depreciation periods also take account of the duration of the concession agreement:

- Hydroelectric dams — 75 years
- Electromechanical equipment used in hydropower plants — 50 years

HEAT GENERATION AND DISTRIBUTION CONCESSIONS FROM PUBLIC AUTHORITIES

Heat generation and distribution concession agreements signed by Dalkia with public authorities confer the right to operate facilities remitted by or constructed at the request of those authorities for a limited period, under the concession-granting authority's supervision.

These agreements set the terms for remuneration and transfer of the facilities to the concession-granting authority or another operator taking over at the end of the agreement.

The assets are recorded as "Other intangible assets", in accordance with IFRIC 12 "Service concession agreements". Intangible assets are depreciated on a straight-line basis over the term of the concession, which is generally between 15 and 25 years.

Almost all of these assets are located in France.

FOREIGN CONCESSIONS

Foreign concessions are governed by a range of contracts and national laws. Most assets operated under foreign concessions are recorded under "Property, plant and equipment operated under concessions other than French public electricity distribution concessions". Foreign concessions essentially concern Edison in Italy, which operates local gas distribution networks, hydropower generating plants and energy services under concessions. Edison owns all the assets except for some items of property, plant and equipment on the hydropower generation sites, which will be returned to the concession-granting authority for nil consideration or with an indemnity when the concession ends. In compliance with IFRIC 12, certain concession agreements are recorded as intangible assets.

Hydropower generation assets which will be returned for nil consideration at the end of the concession are depreciated over the duration of the concession.

The net values of property, plant and equipment operated under concessions other than French public electricity distribution concessions are as follows:

(in millions of euros)	31/12/2022	Increases	Decreases	Changes in the scope of consolidation	Other movements	31/12/2023
Land and buildings	1,649	31	(7)	-	1	1,674
Fossil-fired & hydropower plants	12,153	274	(24)	(507)	(6)	11,890
Other	686	38	(16)	-	(9)	699
Assets in progress[1]	685	104	(4)	(2)	9	792
Gross value	**15,173**	**447**	**(51)**	**(509)**	**(5)**	**15,055**
Land and buildings	(1,026)	(34)	6	1	(1)	(1,054)
Fossil-fired & hydropower plants	(6,816)	(336)	17	189	15	(6,931)
Other	(498)	(32)	17	-	4	(509)
Assets in progress[1]	(17)	(6)	-	-	6	(17)
Depreciation and impairment	**(8,357)**	**(408)**	**40**	**190**	**24**	**(8,511)**
NET VALUE	**6,816**	**39**	**(11)**	**(319)**	**19**	**6,544**

[1] Increases in assets in progress are stated net of the effects of newly-commissioned assets. Assets in progress are detailed in note 10.6.

At 31 December 2023, property, plant and equipment operated under concessions other than French public electricity distribution concessions comprise concession facilities mainly located in France and in Italy (hydropower, excluding public electricity distribution).

10.6 Assets in progress

(in millions of euros)	2023	2022
Intangible assets	2,600	2,110
Property, plant and equipment used in generation and other tangible assets	46,735	49,700
Property, plant and equipment operated under concessions other than French public electricity distribution concessions	775	668
TOTAL ASSETS IN PROGRESS	**50,110**	**52,478**

Intangible assets

At 31 December 2023, intangible assets in progress notably include studies for the EPR2 amounting to €1,569 million (€1,055 million at 31 December 2022). They also include investments of €254 million in the SMR *(small modular reactors)* project (€142 million at 31 December 2022).

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New nuclear reactors in France: the EPR2 project

The EPR2 project concerns a new pressurised water nuclear reactor that meets the objectives for third-generation reactor safety, aiming to incorporate design, construction and commissioning experience acquired from EPR reactors and the nuclear reactors currently in operation.

On 16 July 2019, the ASN issued an opinion that the safety levels of EDF's key design options for its EPR2 were satisfactory. It stated that "the general safety objectives, the safety baseline requirements and the main design options are on the whole satisfactory".

The EPR2 will offer superior operating performance in terms of power (1650MW compared to 1450MW for the most powerful current reactor), output, availability and manoeuvrability.

On 10 February 2022, the French President announced the launch of a programme to construct 6 EPR2 reactors by 2035, and begin studies for an additional 8 EPR2 reactors by 2050. He also observed that it was necessary to aim to have the first new reactor commissioned by 2035, and said that these new EPR2 units will be built and operated by EDF.

While awaiting a decision on the EPR2, EDF was authorised by its Board of Directors on 31 March 2022 to continue development work until the end of 2023 with a budget extension of approximately €0.6 billion, bringing the total development budget for the EPR2 project to €1,805 million.

On 29 June 2023, EDF announced that it was making the applications for approval to launch construction of the first pair of EPR 2 reactors at Penly, and starting other administrative procedures required for their completion and connection to the electricity transmission network. EDF is proposing to build three pairs of EPR 2 reactors, at Penly (Normandy), Gravelines (Hauts de France) and Bugey (Auvergne Rhône-Alpes) in that order (see the press release by the French President's Office of 19 July 2023).

Work on the competitiveness plan, the technical maturity review and programme consolidation is in process and should finish in 2024. The final conclusions of the State's financial audit will then be issued.

An appropriate plan for financing, and where relevant regulation, is currently being drafted for implementation of this programme. Revision of the completion cost for the project has begun and will continue during 2024. So far, no final investment decision has been made.

NUWARD, France's Small Modular Reactor (SMR) project

Development of the NUWARD SMR continued in 2023, with the end of the Conceptual Design phase, and the start in early April of the Basic Design phase which is due to be completed at the end of 2026. NUWARD SMR is a third-generation model pressurised water plant consisting of two 170MW units, designed to be built in large numbers and exportable. Its main target is to provide a replacement for fossil-fired plants in the next few decades. Sales will be backed up by a model plant in France, due to start construction by 2030.

The design of the NUWARD SMR is being preassessed by the ASN in collaboration with the Czech and Finnish safety authorities SUJB and STUK. The purpose of this assessment, which will continue with the participation of more safety authorities (from Poland, Sweden and the Netherlands), is to accelerate the granting of international licences for SMRs while also giving a new impetus to regulatory harmonisation.

Another milestone in 2023 was the formation of the new subsidiary NUWARD, dedicated to development of the NUWARD SMR.

EDF received an initial €50 million subsidy from the French State in December 2022, granted under the "France 2030" plan. In June 2023, another subsidy of €300 million was attributed to finance the Basic Design phase, subject to European Commission approval which is expected to be given in 2024.

Property, plant and equipment used in generation and other tangible assets

At 31 December 2023, property, plant and equipment in progress used in generation and mainly comprise:

- investments for the **Flamanville 3** EPR amounting to €15,485 million, including capitalised interim interest of €3,471 million (€15,245 million at 31 December 2022, including capitalised interim interest of €3,471 million). The total amount capitalised for the Flamanville 3 project in the financial statements at 31 December 2023 is €15,703 million, which also includes €210 million[1] for assets that have been commissioned, of which €22 million is interim interest.

  This capitalised amount of €15,703 million including capitalised interim interest, includes, in addition to the construction cost:

  > an inventory of spare parts and capitalised amounts totalling €740 million for related projects (notably the initial comprehensive inspection and North Area development),

  > €984 million of pre-operating expenses and other property, plant and equipment related to the Flamanville project,

  > and the elimination of internal balances on balance sheet items and margins between Framatome and EDF SA in connection with the Flamanville 3 EPR project (€408 million, essentially consisting of advances and progress payments),

  On 16 December 2022, EDF announced an adjustment to the schedule for the Flamanville 3 project, and the estimated cost to completion was raised from €12.7 billion to €13.2 billion in 2015 euros (see the Group press release of 16 December 2022)

  The non-recurring additional costs resulting from the necessary repairs to the main secondary circuit welds and the costs of the associated stress-relieving heat treatment on the repaired welds (see the press release of 16 December 2022) are recorded in other income and expenses at the amount of €499 million in 2023 (€638 million in 2022) (see note 7).
- investments relating to **Hinkley Point C**, amounting to €27,425 million including capitalised interim interest of €1,682 million (€21,647 million at 31 December 2022 including capitalised interim interest of €1,110 million). Impairment totalling €11,702 million has been recorded against these assets (€11,151 million of this amount was recognised in 2023, see note 10.8). Investments in this project in 2023 amounted to €4,424 million (€3,890 million in 2022) excluding interim interest.
- studies concerning **Sizewell C** amounting to €1,483 million (€808 million in 2022).

The balance of property, plant and equipment in progress (excluding assets operated under concessions), *i.e.* €13,622 million, principally concerns EDF SA's existing nuclear plants (68%) in line with the *Grand Carénage* programme (replacement of major components, particularly steam generators; work in connection with periodic reviews and 10 - year inspections), and to a lesser extent (around 18%) EDF Renewables (power plants in development in Europe, North America and emerging countries).

Despite the higher investments during the year, amounting to €8,035 million (see note 10.3), property, plant and equipment in progress for generation decreased by €(2,965) million as a result of the €(11,151)million of impairment recognised for the HPC project in 2023.

(1) €346 million in gross value, less €136 million of depreciation.

Principal projects in progress and investments during the year

Investment programme for the existing nuclear fleet in France: *Grand Carénage*

Since 2014 EDF has been implementing its *Grand Carénage* industrial refurbishment programme for the French nuclear fleet, designed to enhance reactor safety and extend their operating lifetimes significantly beyond 40 years. On 31 March 2022, EDF's Board of Directors validated a new roadmap for the period 2022–2028, incorporating information gained from current ASN inspections, particularly the fourth 10-year inspections of 900MW and 130MW plants, and including the start of the research phase for the fifth 10-year inspections of 900MW plants, for an estimated total investment of €33 billion in current euros, *i.e.* €31.2 billion in 2021 euros. Investments made under the programme in 2023 totalled €4.4 billion.

Stress corrosion

In late 2021, during preventive maintenance checks on reactor 1 at the Civaux nuclear power plant, scheduled as part of its ten-year inspection, defects were detected close to welds on the pipes of the safety injection system (SIS) circuit. Preventive checks were then carried out on the Civaux 2, Chooz 1 and Chooz 2 reactors, which also belong to the N4 series, and similar defects were identified. Preventive maintenance checks conducted during the ten-year inspection of reactor 1 at the Penly nuclear power plant also found similar defects on the SIS circuit.

Through expert assessments and analyses conducted during 2022, EDF identified the reactors where the SIS circuit pipes are the most susceptible to stress corrosion. They are the 16 most recent reactors: the four N4 reactors, and twelve P'4 1300MW reactors.

The ASN declared its position on 26 July 2022 regarding EDF's proposed inspection strategy for the stress corrosion affecting its reactors. The ASN considered EDF's strategy appropriate given the knowledge learned about this phenomenon, and the related safety issues.

On 10 March 2023, following the results of an expert assessment of a weld at the Penly 1 reactor that was repaired twice during reactor construction, EDF sent the ASN a proposed update to its strategy aiming to accelerate the pace of inspections of welds repaired at the time of construction, which will take place during scheduled reactor outages for maintenance in 2023, 2024 and 2025.

In mid-March 2023 the ASN indicated that it had taken note of the updated strategy and would continue technical discussions with EDF to ensure that the intended timetable was appropriate[1]. In a bulletin published on 25 April 2023, the ASN validated EDF's proposed timetable.

EDF has completed the planned 2023 programme of inspections of the repaired welds identified as high-priority because of the conditions in which they were repaired during construction, and has begun the 2024 programme validated by the ASN. These inspections will be carried out during maintenance outages that are already scheduled, and EDF does not expect any additional or *ad hoc* outages.

The welds on the N4 series have been repaired, and the N4 reactors were brought back online during the first half of 2023.

Preventive repairs have been completed at eleven of the twelve P'4 1300MW reactors (Penly 1, Penly 2, Cattenom 1, Cattenom 2, Cattenom 3, Golfech 1, Golfech 2, Belleville 1, Belleville 2, Nogent 1 and Nogent 2), and will be carried out on the last one (Cattenom 4) during the 10-year inspection scheduled for February 2024.

EDF's nuclear power output totalled 320.4TWh in 2023, an increase of +42 TWh compared to 2022).

Flamanville 3 EPR project

In accordance with the schedule announced on 16 December 2022, EDF continued work in 2023 to complete the installation, and finalise preparations for fuel loading, which is due to take place in the first quarter of 2024. EDF expects to receive approval from the ASN for fuel loading during the first quarter of 2024.

Once the nuclear fuel is loaded in the reactor, start-up operations will continue, principally checks of all safety systems, equipment testing and qualification throughout the duration of the temperature and pressure increases in the nuclear steam supply system, and afterwards during the reactor ramp-up. On reaching 25% nominal power, the reactor will be connected to France's national grid.

The estimated cost to completion is unchanged at €13.2 billion[2].

Other developments on the Flamanville project in 2023 were as follows:

- The ASN and IRSN finalised their technical examination of the outstanding topics (SIS filtration function, pressuriser relief valves, etc.).
- Work on the main secondary circuit welds was completed, with more than 120 welds repaired and 200 subjected to stress-relieving heat treatment. The ASN will issue its final opinion on the main secondary circuit's compliance in its Compliance Declaration for the nuclear steam supply systems.
- The "Overall Requalification Tests" on the plant were finalised on 10 December 2023: 4,000 pieces of equipment were verified.
- The ASN issued a decision on 16 May 2023 authorising use of Flamanville's current reactor vessel head until "the reactor shutdown during which the first complete requalification of the primary circuit takes place". As a result, the reference scenario for EDF now assumes that the vessel head will be replaced during the first scheduled shutdown for a full inspection, which should begin in mid-2025 at the end of the reactor's first operating cycle.

Following an ASN inspection in May 2023 in preparation for commissioning, the ASN is to conduct an additional inspection in February 2024 to verify implementation of the action set out in its follow-up letter published in July 2023.

Hinkley Point C

Following the final investment decision (FID) made by EDF's Board of Directors on 28 July 2016, EDF and China General Nuclear Power Corporation (CGN) signed contracts with the UK government for the construction and operation of two EPR reactors at the Hinkley Point site in Somerset (the "Hinkley Point C" or "HPC" project).

The Contract for Difference signed on 29 September 2016 aims to provide security in the revenues generated from electricity produced and sold by HPC over a period of 35 years from commissioning of Unit 2. From the plant's start date, if the reference price at which HPC sells electricity on the market is lower than the strike price defined in the contract, *i.e.* £92.50/MWh (in 2012 sterling), index-linked to UK inflation through the Consumer Price Index, HPC will receive an additional payment. If the reference price is higher than the strike price, HPC must pay the difference.

Over recent months, Hinkley Point C project has achieved a series of big milestones:

- On 15 December 2023, the dome was lifted and installed on Unit 1,
- The detailed design for the next phase of electromechanical (MEH) work was finalised,
- 70% of the equipment to be installed on Unit 1 has been delivered,
- The steam generators have been built and are ready for delivery,
- Testing of the UK instrumentation and control system is underway.

(1) See ASN press release of 16 March 2023
(2) In 2015 euros, excluding interim interest

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Regarding the schedule, the aim of the project is now to bring Unit 1 into service around the end of the decade. Several scenarios have been analysed:

- The first scenario around which the project is organised is targeting becoming operational in 2029. This schedule is based on a target productivity for the electromechanical work, which action plans are being drawn up to achieve.
- A second scenario (base case), which assumes certain risks inherent in the ramp-up of the electromechanical work and the testing schedule do materialise, would see Unit 1 operational in 2030.
- Finally, given the complexity of the project, an unfavourable scenario assuming a further 12-month risk materialises could lead to Unit 1 being operational in 2031.

In the first two scenarios, the costs of completing the project are now estimated at between £31 billion and £34 billion in 2015 values. The cost of civil engineering and the longer duration of the electromechanical phase (and its impact on other work) are the two main reasons for this cost revision. If the risk of an additional delay of 12 months mentioned above in the final scenario does materialise it would result in an estimated additional cost of around £1 billion in 2015 values.

As a reminder, the Group announced on 19 May 2022 that the start of electricity production was scheduled for June 2027. At that time, the risk of further delay in the delivery of the two units was estimated at 15 months, and the cost of completion of the project at between £25 and £26 billion[1].

Based on these new fundamental assumptions and updates to other key assumptions, the Group recognised impairment of €(11,151) million on the HPC assets in progress at 31 December 2023 (see note 10.8).

Regarding funding of the project:

- the agreements signed by EDF Energy and CGN include a mechanism for coverage by EDF of certain additional costs in the event of initial budget overruns or delays. This mechanism was activated in January 2023 and led to EDF making a contribution of funding for the project that is recognised as an issue premium and has no impact on its ownership percentage. No further contribution is anticipated in view of current contract clauses;
- the shareholders' funding commitments have been fully honoured, and in accordance with the agreements, since the fourth quarter of 2023 construction of the project has been financed on a voluntary basis by the shareholders. Only EDF has provided additional equity.

At 31 December 2023, EDF's share in HPC is 67.7%, with CGN owning the remaining 32.3%.

Sizewell C

Sizewell C is a project to build a 3.26GW two-EPR nuclear power plant at Sizewell in Suffolk, England, to supply electricity for 6 million households for around 60 years. The project is founded on a strategy of replication of HPC, as far as possible copying the design of the HPC project and using the same suppliers. EDF will supply the Sizewell C project with the British EPR design, some of the key nuclear equipment *via* Framatome, the steam turbines (through EDF's future acquisition of GE Steam Power's nuclear activities), fuel assemblies for at least the first cycles, and related services.

The Sizewell C project was designated in November 2022 as eligible to benefit from the Regulated Asset Base (RAB) funding model.

On 29 November 2022, the UK government announced its decision to make a direct investment of about £700 million in Sizewell C, to support the project's ongoing development. In 2023, the UK Government committed to invest a further £511m to speed up preparations for construction. It gradually increased its shareholding during 2023 and is expected to continue to increase its investment in the project in 2024 until the Final Investment Decision.

At 31 December 2023, the UK government owned 50,6% of the project and EDF owned the other 49,4%. Sizewell C is still fully consolidated in the Group's accounts, despite the fact that it now holds only a minority stake, as EDF has retained its rights in key project decisions. This situation could change between now and the final investment decision as a result, for example, of modifications to the project's governance in 2024, the outcome of the current equity funding processes, offers received from investors, and Sizewell C's growing independence of EDF for completion of the project.

The project has transitioned, in 2023, from early works to delivery and is actively preparing the start of construction.

The financing terms of the construction are being discussed with the UK Government and the agreements are expected to be set out in 2024.

In September 2023, an equity raise process was therefore launched to seek additional funding from private investors for the construction of Sizewell C.

No later than the date of the FID, EDF plans to reduce its shareholding in Sizewell C to 19.99%, and to cease its control of the project.

Like other Group investments, EDF's commitment to contribute to the funding of the Sizewell C build at the Final Investment Decision date is subject to fulfilment of certain criteria selected by the Group.

At the date of this report, a Final Investment Decision (FID) is expected in 2024.

10.7 Investments in intangible assets and property, plant and equipment

The table below provides a breakdown of the investments in intangible assets and property, plant and equipment presented in the cash flow statement:

(In millions of euros)	2023	2022
Acquisitions of intangible assets	(2,183)	(1,720)
Acquisitions of property, plant and equipment	(19,667)	(16,923)
Change in payables to suppliers of fixed assets	829	319
INVESTMENTS IN INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT	**(21,021)**	**(18,324)**

Investments in intangible assets and property, plant and equipment during 2023 mainly concern:

- the France – Generation and Supply segment: €6,584 million, primarily the investments in the nuclear fleet currently in operation, essentially made under the "Grand Carénage" programme and including €570 million for work to address the stress corrosion phenomenon, investments for the Flamanville 3 EPR, and investments in hydropower generation;

(1) See the Group press release of 24 January 2024

- the France – Regulated activities segment: €5,217 million, essentially investments related to connections for customers and producers, but also investments for network renewal and modernisation, and quality;
- the United Kingdom segment: €5,529 million, mainly concerning investments made for the Hinkley Point C project;
- the EDF Renewables segment: €2,124 million, mainly due to wind and solar capacities under construction, principally in North America, Brazil and the United Kingdom.

10.8 Impairment/reversals

ACCOUNTING PRINCIPLES AND METHODS

At the year-end and at each interim reporting date, in application of IAS 36, the Group assesses whether there is an indication that an asset could have been significantly impaired. An impairment test is also carried out at least once a year on cash-generating units (CGUs) or groups of CGUs including an intangible asset with an indefinite useful life, or to which goodwill has been partly or totally allocated.

Impairment tests are carried out as follows:

- the Group measures any long-term asset impairment by comparing the carrying value of these assets and goodwill, grouped into CGUs where necessary, and their recoverable amount;
- CGUs are groups of homogeneous assets that generate identifiable independent cash flows. They reflect the way activities are managed in the Group: they may be subgroups when the activity is optimised across the whole subgroup, or CGUs formed by parts of subgroups corresponding to different types of activity that are managed separately (thermal generation, renewable energy production, services), or single assets;
- the recoverable value of these CGUs is the higher of fair value net of disposal costs, and value in use. When this recoverable value is lower than the carrying amount in the balance sheet, an amount equal to the difference is booked under the heading "Impairment". The loss is allocated first to goodwill, and any surplus to the other assets of the CGU concerned; impairment booked on goodwill is irreversible;
- fair value is the asset's potential sale price in a normal transaction between economic actors;
- value in use is calculated based on projected future cash flows:
  - > over a horizon that is coherent with the asset's useful life and/or operating life,
  - > for certain intangible assets with an indefinite useful life (such as brands), beyond the horizon that can be observed or modelled, a terminal value is determined by discounting to infinity a normative cash flow,
  - > excluding development projects other than those that have been decided at the valuation date, and
  - > discounted at a rate that reflects the risk profile of the asset or CGU;
- the discount rates used are based on the weighted average cost of capital (WACC) for each asset or group of assets concerned, determined by geographical area and by business segment under the CAPM. WACC is calculated after taxes;
- future cash flows are calculated on the basis of the best available information at the closing date:
  - > for the first few years, cash flows correspond to the budget, then the Medium-Term Plan (MTP). Over this horizon, energy and commodity prices are determined based on available forward prices, taking hedges into consideration,
  - > beyond the MTP horizon, cash flows are estimated based on long-term assumptions prepared for each country where the Group controls industrial assets, using a financial trajectory and scenario-building process that is updated annually. Long-term electricity prices are constructed analytically based on a set of assumptions concerning factors such as economic growth, commodity (oil, gas, coal) and CO_2 prices, demand for electricity, interconnections, changes in the energy mix (rise of renewable energies, installed nuclear capacity, etc.) and fundamental models of supply-demand balance. The Group compares each principal component of assumptions with analyses by external bodies (for example, for commodities and CO_2, which are primary influences on electricity prices). The scenarios used are also based on the objectives of public energy and climate policies such as Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie Nationale Bas Carbone*) in France, and the Group compares its own scenarios with scenarios developed by organisations such as the IEA, IHS, Wood Mackenzie or Aurora, bearing in mind that each of these analysts itself proposes a cone of scenarios. Additionally, in constructing these long-term prices, the impact of climate contingencies is incorporated into assumptions concerning demand (particularly energy requirements for heating, and summer comfort), generation of renewable energies (onshore and offshore wind power, solar power) for all European countries, the contribution of hydropower, and environmental cuts for nuclear power generation in France. Climate time series analyses are based on the European EUROCORDEX model and include the impact of climate change. A deliberately prudent approach is adopted to avoid any bias towards underestimation of the practical effects of climate change on the relevant physical quantities as such as temperatures, cloud coverage or wind speeds and ultimately on the European electricity system between 2028 and 2050;
- income from capacity market mechanisms is also taken into consideration in valuing generation assets, provided the countries concerned have introduced or announced the future introduction of a capacity revenue mechanism.

These calculations may be influenced by several variables:

- changes in discount rates;
- changes in market prices for energy and commodities and tariff regulations;
- changes in demand and the Group's market shares, and the attrition rate on customer portfolios;
- the useful life of facilities, or the duration of concession agreements where relevant;
- the growth rates used beyond the medium-term plans and where relevant the terminal values taken into consideration.

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10.8.1 Impairment by category of asset

Details of impairment recognised and reversed are as follows:

(in millions of euros)	Notes	2023	2022
Impairment of goodwill	10.1	(1,779)	(1,178)
Impairment of other intangible assets	10.2	(44)	(65)
Impairment of tangible assets	10.3-10.5	(11,188)	(519)
IMPAIRMENT NET OF REVERSALS		**(13,011)**	**(1,762)**

Impairment recognised in 2023 amounts to €(13,011) million. Details are given below.

As a reminder, impairment recognised in 2022 amounted to €(1,762) million and concerned:

- the goodwill of EDF Energy (€(1,176) million);
- nuclear power plants in operation and under construction in the United Kingdom (€(271) million);
- wind farms and various CGUs of EDF Renewables, principally in the United States and Mexico (€(129) million);
- Energy Service assets and goodwill in Italy (€(68) million);
- and other assets (total impairment €(118) million).

10.8.2 Impairment tests on goodwill, intangible assets and property, plant and equipment

The following tables present the results of impairment tests carried out on the main goodwill, intangible assets with indefinite useful lives and other Group assets at 31 December 2023, and some of the key assumptions used.

Impairment of goodwill and intangible assets with indefinite useful lives

€(1,779) million of new impairment was recorded on the Group's goodwill at 31 December 2023.

Operating segment	Cash-Generating Unit or asset	Net book value (in millions of euros)	WACC after tax	Growth rate to infinity	Impairment recognised in 2023 (in millions of euros)
United Kingdom (EDF Energy)[1]	Goodwill	4,901	6.9%	-	(1,773)
	Including Pod Point	*37*			*(35)*
Italy (Edison)	Goodwill (energy services)	150	<8.2%	-	(4)
	Edison brand	945	-9.2%>	1.5%	-
Framatome	Goodwill	1,475	7.7%	1.5%	-
	Framatome brand	151	7.7%	1.5%	-
Dalkia	Goodwill	626	6.0%	2.0%	-
	Dalkia brand	130	6.0%	2.0%	-
Other impairment		-	-	-	(2)
IMPAIRMENT OF GOODWILL AND INTANGIBLE ASSETS WITH INDEFINITE USEFUL LIVES					**(1,779)**

(1) The impairment test of EDF Energy goodwill covers the useful life of industrial assets, currently in operation or under construction, with no projection to infinity. The WACC determined for goodwill takes account of the WACC applicable to each of EDF Energy's CGUs, including the WACC applicable to the HPC CGU, which benefits from a regulated model.

Impairment of other intangible assets and property, plant and equipment

Impairment of €(11,232) million was recorded in respect of other intangible assets and property, plant and equipment at 31 December 2023.

Operating segment	Cash-Generating Unit or concerned asset	Impairment indicators	WACC after tax	Impairment recognised in 2023 (in millions of euros)
United Kingdom (EDF Energy)	Nuclear assets currently under construction	Adjustment of Hinkley Point (HPC) project schedule and costs	6.8%	(11,151)
	Other assets	Higher prospects for appreciation of value		53
EDF Renewables	Wind power and solar assets	USA, France: lower profitability on projects in development / non-renewal of PPAs	From 5.7% to 6.4%	(50)
	Other	China : subsidies not received		(34)
Other impairment				(50)
IMPAIRMENT OF OTHER INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT				**(11,232)**

€(240) million of impairment net of reversals was also recognised in respect of associates at 31 December 2023. This impairment mainly concerned assets owned by EDF Renewables (see note 12.3). Impairment of associates totalling €(141) million was recognised at 31 December 2022.

General assumptions

At 31 December 2023, the Group applied its usual method for impairment testing, updating the annual tests for goodwill and intangible assets.

As in 2022, particular attention was paid to the determination of WACC in an environment of rising and volatile interest rates (see the section on the Discount rates), given the sensitivity of certain tests to variations in this parameter. For both impairment and sensitivity tests, the effects of scenarios concerning prices and measures announced or introduced by the authorities in countries where the Group does business were subjected to specific monitoring.

Electricity prices

Over the market horizon (generally three years), the forward prices used in the impairment tests concerning all geographical areas are the market prices observed at 31 December, including hedged positions. The assumptions used thus take account of the current market environment, in which forward electricity prices have decreased significantly compared to the 2022 year-end, partly due to relatively lower pressure on gas prices, and better nuclear fleet availability.

Over the long-term horizon, these tests use analytically constructed price curves founded on assumptions and fundamental models of the supply-demand balance, in an annually updated scenario-building process that is subject to specific internal governance.

The scenarios used are closely linked to the objectives of public energy and climate policies in the various countries where the Group has operations. In particular, they include high CO_2 prices supporting the move to carbon-free electricity generation in Europe, and more generally to a carbon-free economy through electrification of uses. For example, the CO_2 price scenario at 31 December 2023 is €130/t for 2030, €165/t for 2040, and €200/t in 2050 (all expressed in 2022 euros).

The long-term price curves (from 2028 onwards) in the 2023 scenario are higher than the 2022 scenario in the early part of the horizon. An increase of approximately +€5/MWh (in 2022 euros) is observed in the average baseload power price in the four core countries (France, the United Kingdom, Italy and Belgium).

This development is explained by several factors:

- to reflect the reinforcement in European ambitions for decarbonisation and cutting greenhouse gas emissions, CO_2 quota prices follow a rising trajectory and are higher than in 2022 over the horizon 2028-2050. At the start of the horizon, the impact of CO_2 prices on electricity price levels is very important. Regarding sensitivity to this parameter, it should be noted that from 2028, a +/-€1/t variation in CO_2 prices would result in a change of approximately +/-€0.4/MWh in electricity prices in France, an effect that would gradually recede as electricity generation becomes increasingly decarbonised;
- pressures on gas supplies following the Russian invasion of Ukraine were partly relieved through diversified sourcing (notably LNG), and the option of joint purchasing contracts with EU member states, providing access to larger volumes. Consequently, the scenario includes more relaxed gas prices, with relatively lower trajectories than in 2022, although they remain similar over the long term;
- at the end of the horizon, the increase in CO_2 prices combines with accelerated development of low-carbon generation facilities (nuclear power and renewable energy) to result in relatively stable electricity prices compared to the projections in the 2022 scenarios.

Demand for electricity is rising across all timescales in Europe due to the electrification of uses, particularly in transport and industry, reinforced by a greater need for electrolytic hydrogen. These developments, in addition to the RePowerEU plan to accelerate energy independence in Europe, have driven a rise in requirements for electricity.

As these assumptions are key for the determination of the recoverable value of the Group's assets, sensitivity analyses are carried out on long-term price curves as part of the impairment tests.

Discount rates

The discount rates used in impairment testing were revised upwards for 2023 in all Euro zone countries. In the United Kingdom, the increase was moderate, since the specific situation of UK sovereign rates had already been taken into account at 31 December 2022.

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This revision is due in general to upward trends in risk-free rates (despite a stabilisation observed at the end of the year), partly offset by a readjustment of the equity market risk premium in a total return approach. The EDF spread was also adjusted upwards.

The increase since 2022 in the principal WACCs used in impairment tests was thus 70-80 base points for France and Belgium, and 110 base points for Italy.

The impairment test results are analysed for sensitivity to the discount rate (+/-30bp and +/-50bp). With the exception of the United Kingdom zone, which is sensitive to any new increase, these tests did not indicate any risk of impairment on the Group's other geographical zones.

United Kingdom – EDF Energy (Goodwill and tangible and intangible assets: €26,494 million – see note 4.1.1)

Thermal assets

Following closure of both Cottam and West Burton A power plants, both continue to undergo decommissioning work.

As the result of a strategic decision made in late 2023, the gas storage business was classified (and recognised in the financial statements) as an asset held for sale.

The net book value of the remaining assets is close to nil.

Sales and Supply segment

The Sales and Supply operating segment was affected by the UK's energy market crisis in 2022, but 2023 saw the return to a more favourable situation thanks to a good sales performance in the medium and large BtoB segments, which helped to strengthen margins and market share. The restoration of margins in the BtoC segment was also supported by a tariff effect that allowed suppliers to recuperate some of the costs incurred at the height of the energy crisis.

Prices nonetheless remained high in the United Kingdom, eroding demand. Market shares remained stable, with a low attrition rate compared to 2022. The taxation mechanisms applicable to energy producers (to protect consumers) continued in 2023 and will remain in force until 2028.

The recoverable value of the Sales and Supply segment is lower than in 2022: this is principally due to the passage-of-time effect as 2023 was a year of substantial cash inflows corresponding to past losses, and an exceptional gain on optimisation of nuclear power generation. These one-off effects were partly counterbalanced by a 50bp improvement in margins in the BtoC segment, over the whole duration of the test, reflecting the regulator's stance on guaranteeing sustainable performance in the energy market. The Sales and Supply segment remains relatively insensitive to price scenarios as wholesale energy costs are generally passed on to consumers over time.

Sensitivity analysis:

Sensitivity tests were conducted, based on major reductions in long-term margin rates and losses of market share in both segments. These tests did not identify any risk of impairment for this operating segment, which has few fixed assets (mainly information systems).

Nuclear assets (plants in operation)

The recoverable value of EDF Energy's nuclear assets in operation is determined by discounting future cash flows over the assets' useful life. At 31 December 2023, this operating segment is comprised of Sizewell B PWR plant, assuming that it will remain in operation until 2055, Torness and Heysham 2 AGR plants until March 2028, and Hartlepool and Heysham 1 AGR plants, where the end of operations has been extended by two years to March 2026 (see the EDF Energy press release of 9 March 2023).

The short term forward market prices have decreased since the 2022 impairment review. This decrease is partly mitigated by the effect on the Electricity Generator Levy on low-carbon electricity producers (45% on revenues above £75/MWh between January 2023 and March 2028). In addition to this unfavourable effect, the discount rate has increased from 6.9% to 7.7%, partly offset by an increase in long-term prices and the favourable impact of the 2-year extension to the operating lifetimes of Hartlepool and Heysham 1. The test result showed a small decline in the headroom, which remains high.

Sensitivity analysis:

Sensitivity tests were conducted on the assumptions to which this operating segment is particularly sensitive, *i.e.* a -5% downturn in electricity prices or nuclear power output across the whole horizon or a 50bp increase in the discount rate. These sensitivities are not likely to generate any risk of impairment, individually or in combination, all other things being equal.

Goodwill and the HPC Project

EDF Energy's gross goodwill amounted to €7.8 billion including Pod Point (or £6.8 billion including Pod Point) at 31 December 2023 and mainly results from the takeover of British Energy in 2009. At 31 December 2022, the updated impairment test led to recognition of partial impairment amounting to €(1.2) billion.

On 23 January 2024, the Group announced that the schedule and cost for construction of the two nuclear reactors at Hinkley Point C had been revised, to update assumptions regarding the cost of civil engineering work and extension of the electromechanical work (MEH) phase, and the resulting consequences for the other islands. Three scenarios have been analysed (see the Group press release of 23 January 2024, and note 10.6). The completion cost for the project is estimated at £31-34 billion[1] (in 2015 sterling), including the risk of a one-year deferral with an estimated cost of approximately £1 billion (in 2015 sterling), as opposed to the previous estimate of £25-26 billion (in 2015 sterling).

An unfavourable scenario assuming a further 12-month risk materialises could lead to an additional delay of 12 months and would result in an estimated additional cost of around £1 billion in 2015 values.

Scenarios were weighted for the test, such that they converge towards the baseline scenario which assumes that electricity generation by HPC Unit 1 will now start in 2030 instead of June 2027 as previously (and 2031 in the case of Unit 2 instead of June 2028 previously). This scenario incorporates the risk of an additional one-year deferral compared to the 120-month timetable scenario used for organisation and management of the project.

The recoverable value of EDF Energy is determined by discounting future cash flows over the assets' useful life, taking into consideration the two reactors with a 60-year operating lifetime currently under construction at the Hinkley Point site. Future cash flows from these plants are determined by reference to the Contract for Difference (CfD) between the Group and the UK government. The CfD sets stable, predictable prices for EDF Energy for an initial period of 35 years from the date the two EPRs are first commissioned (this duration has been shortened by around 18 months due to the revised schedule): if market prices fall below the CfD exercise price, EDF Energy will receive an additional payment. The CfD exercise price for HPC is set at £92.50/MWh (in 2012 sterling) and is indexed on UK inflation *via* the consumer price index (CPI) (£126/MWh in current sterling based on inflation rates available at 31 March 2023). Thus, for the operation period under the CfD, future cash flows include a long-term inflation assumption (initially 2.2%, then an average of 2.1% from 2050). For the 25 years of operation after the CfD period, for which no forecasts exist for long-term UK electricity market prices, future cash flows include a very long-term inflation assumption of 2.10% and a price assumption based on the CfD exercise price of £92.50/MWh (in 2012 sterling), which is the best estimate of market price levels over this horizon in the absence of corresponding price scenarios.

(1) £41.6-46.5 billion in current currency based on inflation rates available at 30 June 2023.

The WACC determined for HPC is a hybrid rate that reflects the specificity of the cash flows being first regulated by the CfD, then exposed to market prices in subsequent years. The rate applicable to the project is 6.8% at 31 December 2023, 10bp higher than the 6.7% used in 2022. The WACC used to test EDF Energy goodwill takes account of the WACC applicable to each of the company's parts of the business (HPC, Nuclear assets (plants in operation), Sales and Supply). Given the respective importance of cash flows from each CGU, the overall WACC for EDF Energy goodwill is 6.9% at 31 December 2023, compared to 6.7% at 31 December 2022.

Based on these new fundamental assumptions and updates to other key assumptions such as the 10bp increase in WACC and the most recent foreign exchange and inflation data, the impairment test of the HPC project at 31 December 2023 identified impairment of €(11,151) million at that date. This impairment is reversible if there is evidence of a significant recovery in the value of the asset, other than the effect of the passage of time on discounted cash flows.

Regarding the value of EDF Energy's goodwill, although EDF Energy's other parts of the business (Nuclear plants in operation, Sales and Supply) still show substantial headroom, it was lower than the previous year due to a market environment that was less favourable to their business. These effects therefore led to recognition of partial additional impairment of €(1,738) million on EDF Energy's goodwill at 31 December 2023. This impairment is irreversible by nature.

Sensitivity analysis:

The book value of the HPC project, like the book value of EDF Energy's goodwill, remains sensitive to any unfavourable variation in assumptions.

A 30bp increase in discount rates would have a negative impact of £(2) billion on recoverable value, while an equivalent decrease would have a favourable impact of £2.3 billion.

A 20bp decrease in inflation rates after 2030 would have a negative impact of £(1.2) billion on recoverable value, while an equivalent increase would have a favourable impact of £1.3 billion.

Other assets in the new nuclear category

Capitalised costs for the Sizewell C project (note 10.6) amount to €1,483 million and are included at net book value in the impairment test of EDF Energy's goodwill, without considering their prospects for appreciation in value, notably in view of the Regulated Asset Base (RAB) funding model.

Italy – Edison (Goodwill and tangible and intangible assets: €5,871 million – see note 4.1.1)

As an intangible asset with an indefinite useful life, the impairment test of the Edison brand, first recognised at the value of €945 million when Edison was taken over in 2012, is updated annually using the royalty relief method and a 100bp risk premium in determining the discount rate. The test was updated at 31 December 2023, and showed that there had been a decrease in the brand's recoverable value, principally as a result of a further increase of more than 100bp in the WACC, and downward revision of short-term price scenarios.

Sensitivity analysis:

Sensitivity tests based on an additional 50bp increase in the WACC, and a -5% decrease in royalties, did not indicate any risk of impairment.

The same trend is observed in Edison's other generation CGUs (Thermal assets, Wind power, Solar power, Gas).

For the Thermal assets CGU, the headroom indicated by the impairment test remains clearly positive despite the unfavourable impact of a narrowing of clean spark spreads in the short and medium term, and the higher discount rate. This headroom essentially relates to the two new-generation CCGT plants at Marghera and Presenzano (carbon emissions 40% below the national average, NOx emissions reduced by 70%) which will benefit from capacity revenue and commissioned in 2023.

For the Hydropower CGU, the recoverable value increased as future cash flows include an improvement in post- Medium term Plan price scenarios, notably due to discontinuation of the windfall tax in 2024. No risk of impairment was therefore observed for this CGU.

Sensitivity analysis:

Sensitivity tests based on an additional 50bp increase in the WACC, and a 10% decrease in clean spark spreads would not affect the test conclusions.

Framatome (Goodwill and tangible and intangible assets: €4,428 million – see note 4.1.1)

The recoverable value of Framatome is determined on the basis of a 10 - year business plan and a terminal value. This business plan is sensitive to assumptions concerning the completion of major construction projects that are incorporated into the reactor scenario, market share assumptions concerning services to the installed base, and assumptions concerning fuel deliveries to customers' reactors. The baseline scenario includes expansion of the EPR2 programme in France and realisation of the Sizewell C project in the United Kingdom, but does not include realisation of other EPR projects, particularly in India and the Czech Republic.

The long-term growth rate used in impairment testing was stable (at 1.5%).

The WACC used to discount future cash flows is weighted according to Framatome's different businesses and their risk profiles. The headroom indicated by the impairment test on goodwill (amounting €1,475 million) remains very significant although lower than at 31 December 2022, principally due to the increase of over 70bp in the WACC (from 7% to 7.7%).

Framatome's intangible assets recognised at the time of its acquisition (technologies, including the EPR, which are depreciated over an average 15 to 20 years; customer relations amortised over an average period of 11 years; and the brand) were tested, and no risk of impairment was identified.

Sensitivity analysis:

Sensitivity tests based on a 50bp increase in discount rates or a 50bp decrease in growth rate to infinity did not indicate any risk of impairment.

EDF Renewables (Goodwill and tangible and intangible assets: €13,257 million – see note 4.1.1)

EDF Renewables' assets mainly consist of CGUs that benefit from Power Purchase Agreements (PPAs) providing contractually defined revenues over most of the assets' useful lives, and consequently have low market risk exposure.

Impairment tests conducted at 30 June 2023 led to recognition of €(34) million of impairment concerning two wind farms in China commissioned in 2021, for which the confirmed risk of non-reception of subsidies had a substantial impact on the projects' profitability.

During the second half of 2023, other impairment totalling €(50) million was identified on specific assets in France and the United States, mainly concerning wind farms in development for which future profitability was assessed as insufficient.

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€(54) million of impairment of associates (see note 12.3) was also recognised on the Neart na Gaoithe (NnG) wind farm off the shore of Scotland due to the risk of delays of commissioning and the increase of over 100bp in the discount rate.

Dalkia (Goodwill and tangible and intangible assets: €3,055 million – see note 4.1.1)

At 31 December 2023, Dalkia's goodwill amounts to €626 million, principally resulting from acquisition of the Dalkia group in France in 2014.

The recoverable value of Dalkia is based on future cash flows projected over a medium-term horizon, and a terminal value that represents cash flow projections to infinity. The test update at 31 December 2023 found that the recoverable value had decreased, principally due to the 80bp increase in the WACC (from 5.2% to 6%), which was partly mitigated by an increase in the long-term growth rate (to 2%) in line with inflation. The headroom for this operating segment nonetheless remains positive.

The Dalkia brand, which was recognised as an asset when the Group took control of Dalkia in 2014 at the value of €130 million, is valued by the royalty relief method. The updated impairment test at 31 December 2023 did not call into question the value recorded in the financial statements.

Sensitivity analysis:

Sensitivity tests based on an additional 50bp increase in the WACC, and a 20bp decrease in the growth rate to infinity, did not indicate any risk of impairment.

France – Generation and Supply (Goodwill and tangible and intangible assets: €64,629 million – see note 4.1.1)

In terms of asset value, this segment consists almost entirely of the generation fleet in mainland France. Due to the integrated management and interdependence of the different generation facilities that make up the French fleet (nuclear, thermal and hydropower plants), independently of their maximum technical capacities, the Group considers the entire fleet as a single CGU. It includes the Flamanville 3 plant, with net book value of €15,703 million (see note 10.6). It does not include any goodwill.

No indication of impairment was identified in 2023 for the CGU consisting of the French generation fleet.

However, in view of the rise in discount rates, the variations in electricity prices and the announcement of post-ARENH mechanisms in the electricity market, the recoverable value was updated.

The recoverable value is estimated by discounting future cash flows by the Group's usual methodology, described in the accounting policies, over the assets' useful life, using an after-tax WACC of 7% at 31 December 2023 (up by 70bp from the 6.3% at 31 December 2022). For nuclear assets, the Group's benchmark model assumes an operating lifetime of 50 years for 900MW and 1300MW-series plants and 40 years for N4-series plants, consistent with the depreciation periods used in the consolidated financial statements at 31 December 2023, although it is the Group's strategy to keep plants in operation well beyond 50 years. The recoverable value also incorporates the most recent forecasts concerning Flamanville 3 (which will have a 60-year operating lifetime, see note 10.6).

For the period 2024 - 2025, the key assumptions concerning price and regulation take account of forward prices (significantly lower over this horizon than at the 2022 year-end) and hedges already contractualised, an ARENH volume of 100TWh and price of €42/MWh, a tariff cap for final consumers that will be funded by the French State budget in accordance with the current Finance Law, and the best estimate of the inframarginal revenue cap, considering the loss reported for 2022 (see note 5.4). These assumptions are consistent with the 2024 budget approved by the Board of Directors.

France's proposed law on national energy sovereignty(1) plans to introduce a new mechanism to replace the ARENH (Regulated access to historic nuclear power) scheme from 1 January 2026. Under these proposals EDF would pay a contribution consisting of a share of the nuclear plants' net energy revenues above certain thresholds, for redistribution to consumers.

At the press conference held on 14 November 2023 by France's Finance Minister Bruno Le Maire and Energy Transition Minister Agnès Pannier-Runacher, and in the document for the public consultation launched on 23 November 2023 concerning the future consumer protection mechanism, the following thresholds were stated: above €78-80/MWh and €110/MWh (both in 2022 euros), 50% and 90% respectively of revenues from nuclear generation would be payable to the State. This information was taken into account as key assumptions in estimating recoverable value at 31 December 2023.

The new market organisation aims to develop medium and long-term products in addition to the short-term products and renewable energy PPAs currently available on the wholesale electricity markets: medium-term 4 or 5-year annual baseload supply contracts allowing EDF and all electricity suppliers in France to offer supply contracts that provide customers with visibility and stability over horizons of up to 5 years.

EDF also offers certain electro-intensive customers long-term industrial partnership contracts relating to the historic nuclear fleet (Nuclear Generation Allocation Contracts).

The recoverable value resulting from the test decreases but remains well above the net book value. The key assumptions in the test still concern:

- the operating lifetimes of nuclear assets;
- the long-term market price scenario (after the end of the ARENH scheme) and to a lesser degree the changes in forward prices over the medium-term horizon;
- the volume of nuclear power output;
- the discount rate; and
- to a lesser extent, changes in costs and investments, and the assumed capacity revenue.

Sensitivity analysis:

These key assumptions were subjected to individual sensitivity analyses (a 50bp increase in the WACC; a 10TWh annual decrease in nuclear power output over the whole period; an 5% increase in investments or operating expenses over the whole period; a decline in capacity prices, and post-2026 market prices 10% below the baseline scenario price for a sustained period) and the results did not call into question the existence of a positive difference between the book value and the recoverable value.

For example, a decrease of 10TWh a year over the whole generation period would have a negative impact of €(14.5) billion on recoverable value.

A 50bp increase in the discount rate would have a negative impact of €(4.3) billion on the recoverable value.

A +10% increase in investments over the whole period would have a negative impact of €(4) billion on the recoverable value.

(1) Proposed law on France's energy sovereignty as submitted to the National Ecological Transition Council in a rectified referral of 17 January 2024.

Other International – Belgium (Goodwill and tangible and intangible assets of the whole Other International segment: €2,546 million – see note 4.1.1)

The impairment test update for Luminus confirmed the substantial headroom in this operating segment. The headroom was bigger than in 2022, mainly driven by the favourable effect of the passage of time (large cash outflows in the year 2023 which was penalised by windfall taxes, the investments in the new thermal CCGT plant at Seraing, and the costs of the three-year review of nuclear provisions) and the update of price assumptions for a commissioning date expected in 2025, which will benefit from capacity revenue. This improvement was slightly counterbalanced by the 80bp increase in the WACC (from 6.4% to 7.2%).

Impairment tests of the nuclear plants operated by the Engie Group in which Luminus owns a 10.2% share (419MW) now take account of the possible 10-year extension for the Doel 4 and Tihange 3 reactors, following the final agreement signed by Engie and the Belgian government on 13 December 2023.

following the agreement in principle between the Belgian government and Engie announced on 13 December 2023.

Sensitivity analysis:

The sensitivity tests conducted based on an additional 50bp increase in the WACC, or the risk that hydropower concessions may be shortened, did not show any risk of impairment.

Note 11 French public electricity distribution concessions

ACCOUNTING PRINCIPLES AND METHODS

The accounting treatment of public distribution electricity concessions in France is determined by the concession agreements, with particular reference to their special clauses. It takes into consideration the possibility that the EDF group, particularly Enedis, may one day lose its status as the sole authorised State concession operator.

In application of the concession agreements, the concession operator manages the facilities at its own risk for the entire term of the concession, and bears substantially all the risks and benefits (both technical and economic) over the useful life of the network infrastructure. Under IAS 16, the assets are controlled by the operator and the grantors have no decisive characteristics of control over the infrastructures as defined by IFRIC 12.

All concession assets are consequently carried in the balance sheet, regardless of their origin (facilities constructed or purchased by the concession operators, and facilities provided by the concession grantors) and the source of financing, while the contractual obligations to the grantor are recognised in the liabilities.

Public electricity distribution facilities that are constructed or purchased by the concession operator are carried at production or acquisition cost:

- purchased facilities are initially recognised at acquisition cost including directly attributable expenses incurred to make the asset ready for use;
- the production cost of facilities developed in-house includes all labour and materials costs, and all other production costs attributable to the construction of the asset, whether incurred directly by the company or invoiced by third parties.

New facilities provided by the concession grantors are carried at the value of the cost the Group would have borne if it had constructed them itself.

In the specific case of rising mains transferred for no consideration to the public distribution network in application of article 176 of French law 2018 - 1021 of 2 November 2018 on housing, development and digital affairs (the "ELAN" law), these assets are carried at their market value under article 213 of France's national chart of accounts.

Balance sheet liabilities are recognised in respect of new facilities provided for no consideration by the concession grantors and the rising mains transferred under the ELAN law are included in "Special French public electricity distribution concession liabilities" in the balance sheet liabilities.

Distribution assets (pipes, substations, connections) are depreciated over periods of 30 to 60 years, meters and metering equipment over periods of 20 to 30 years. The Group regularly checks the relevance of the main accounting parameters for concession assets (depreciation periods, replacement values, management levels).

Regulations governing distribution concessions in France

Since the enactment of the French Law of 8 April 1946, EDF, and subsequently Enedis, has been the concession operator of most of the public distribution networks in France.

SEI is the concession operator for distribution network zones that are not interconnected with the network in mainland France, under identical concession regulations to Enedis.

Électricité de Strasbourg is the concession operator for public distribution networks in a limited zone depending on a non-nationalised distributor, in application of the Law of 8 April 1946.

In accordance with France's Energy Code and Local Authorities Code, the public distribution of electricity is principally operated under the public service concessions system. The authorities granting the concessions (local authorities or public establishments for cooperation invested with the relevant competence) organise the public electricity distribution service through concession agreements with specifications that define the respective rights and obligations of the parties. Enedis distributes electricity to 95% of the population of mainland France under such concessions, with 376 concession agreements at 31 December 2023. The other 5% are served by Local Distribution Companies (including Électricité de Strasbourg).

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2017 concession agreement model

On 21 December 2017, the FNCCR, France Urbaine, EDF and Enedis signed a framework agreement for a new concession agreement model. This new model modernises the relationship between Enedis and concession-granting authorities in the long term and reflects the parties' attachment to the principles of French concessions for electricity distribution: public service, regional solidarity and national optimisation. The FNCCR and France Urbaine represent the concession-granting authorities, particularly towns, syndicated municipalities, boroughs and major cities when they are the authorities with competence to grant public electricity distribution concessions.

At the effective date of a new agreement, the existing special concession liabilities recorded in application of the previous concession agreement (corresponding to the 1992 model) to represent the concession-granting authority's rights in the concession assets remain in the accounts. Like earlier concession agreements signed since 2011, the contractual obligation to establish provisions for replacement no longer exists, and the governance of investments is different.

To provide an effective public service, the distribution network operator and the concession-granting authority now agree to jointly set up a governance system to oversee investments in the public electricity distribution network over the area covered by the concession, including replacement of infrastructures. This system mainly takes the form of a master plan taking a long-term view of developments in the network over the concession area, and multi-year investment plans (programmes pluriannuels d'investissements - PPIs) for 4 and 5-year periods that are medium-term applications of the master plan.

PPIs contain detailed objectives for each investment purpose, concerning a selection of quantified, localised investments with financial valuations for the duration of the plan.

PPIs are revised when necessary, after consulting with Enedis and the authority granting the concession, to take account of changes in each party's investment priorities and financial resources.

If it were observed at the end of a PPI that any investment concerned by Enedis' financial commitment had not been made, the concession-granting authority could oblige Enedis to deposit a sum equal to 7% of the investments still to be made. This deposit would then be returned or retained after a two-year period, depending on the investments made by that time.

11.1 Property, plant and equipment operated under French public electricity distribution concessions

(in millions of euros)	31/12/2022	Increases[1]	Decreases	Other movements[2]	31/12/2023
Land and buildings	3,517	152	(24)	(1)	3,644
Networks	108,544	4,399	(482)	2	112,463
Other installations, plant, machinery, equipment & other	5,023	508	(276)	(1)	5,254
Assets in progress[3]	2,204	511	(14)	(3)	2,698
Gross value	**119,288**	**5,570**	**(796)**	**(3)**	**124,059**
Land and buildings	(1,730)	(88)	23	(8)	(1,803)
Networks	(50,490)	(188)	322	(2,504)	(52,860)
Other installations, plant, machinery, equipment & other	(3,102)	(300)	274	(140)	(3,268)
Depreciation and impairment	**(55,322)**	**(576)**	**619**	**(2,652)**	**(57,931)**
NET VALUE	**63,966**	**4,994**	**(177)**	**(2,655)**	**66,128**

(1) Increases also include facilities provided by the concession-granting authorities.
(2) Other movements mainly concern depreciation of assets operated under concessions, booked against a reversal in the special concession liability accounts.
(3) Increases in assets in progress are stated net of the effects of newly-commissioned assets.

11.2 Special French public electricity distribution concession liabilities

ACCOUNTING PRINCIPLES AND METHODS

Concession liabilities represent the contractual obligations specific to the concession rules for public electricity distribution concessions in France, and comprise the following:

- the concession-granting authority's rights in existing assets (its right to recover all the concession assets):
  - > the value in kind of the facilities (the net book value of assets operated under concessions),
  - > less any as yet unamortised financing provided by the operator;
- the concession-granting authority's rights in assets to be replaced (the operator's obligations relating to assets due for replacement):
  - > amortisation of financing by the grantor: this is a liability owed by the concession operator to the grantor and is recognised progressively as the asset is used,
  - > provision for replacement: this provision exclusively concerns assets due for replacement before the end of concessions using the 1992 concession agreement model, except for the rising mains transferred in application of the ELAN law. It is accrued over the asset's useful life, based on the difference between the asset's replacement value for identical capacity and functions, and the original value. In application of the 2017 concession model, used in almost all current concession agreements, no provision for renewal is now established for concession assets. The balance of provisions at the end of the previous concession agreement have been transferred to the new concession and the provisions for renewal continue to be used for their intended purpose.

When assets are replaced, amortisation recognised on the portion of assets considered to be financed by the grantor, and the provision for replacement established for the relevant asset, are cancelled and transferred to rights in existing assets. Any excess provision is taken to income.

During the concession, the grantor's rights in assets to be replaced are thus transferred upon the asset's replacement to become the grantor's rights in existing assets, with no outflow of cash to the benefit of the grantor.

The Group considers that the obligations related to assets to be replaced are to be valued on the basis of the special clauses contained in the concession agreements. Under this approach, these obligations are stated at the value of the contractual obligations as calculated and reported annually in the reports to the grantors. This contractual value also reflects the eventuality that the EDF group may one day lose its status as the mandatory concession operator.

The changes in special concession liabilities for existing assets and assets to be replaced are as follows:

(in millions of euros)	31/12/2023	31/12/2022
Value in kind of assets[1]	57,300	55,788
Unamortised financing by the operator	(33,176)	(31,681)
Rights in existing assets – net value	**24,124**	**24,107**
Amortisation of financing by the grantor	17,007	16,331
Provisions for replacement	8,879	9,021
Rights in assets to be replaced	**25,886**	**25,352**
SPECIAL FRENCH PUBLIC ELECTRICITY DISTRIBUTION CONCESSION LIABILITIES	**50,010**	**49,459**

(1) Including contributions received to finance concession assets, amounting to €144 million (€127 million in 2022).

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Note 12 Investments in associates and joint ventures

Investments in associates and joint ventures are as follows:

		31/12/2023			31/12/2022	
(in millions of euros)	Notes	Ownership%	Share of net equity	Share of net income	Share of net equity	Share of net income
CTE	12.1	50.10	1,793	190	1,766	250
Other investments (dedicated assets) of EDF SA	15.1.2	n.a.	1,850	(48)	1,944	79
Investments held by EDF Renewables	12.3	n.a.	2,509	(61)	2,519	(52)
Taishan (TNPJVC)	12.2	30.00	n.c.	n.c.	1,084	(102)
Investments in EDF Trading	12.3	n.a.	867	255	955	516
Other investments	12.3	n.a.	n.c.	n.c.	1,153	68
TOTAL			**9,037**	**257**	**9,421**	**759**

n.a. = not applicable.
n.c. = not communicated.

12.1 Coentreprise de Transport d'Électricité (CTE)

The key financial indicators for the CTE subgroup (on a 100% basis) are as follows:

(in millions of euros)	31/12/2023	31/12/2022
Non-current assets	21,528	20,484
Current assets	3,946	6,241
TOTAL ASSETS	**25,474**	**26,725**
Equity	3,579	3,525
Non-current liabilities	15,571	15,017
Current liabilities	6,324	8,183
TOTAL EQUITY AND LIABILITIES	**25,474**	**26,725**
Sales	6,131	4,928
Operating profit before depreciation and amortisation	1,891	1,841
Net income	***380***	***498***
Net indebtedness	13,287	10,831
Gains and losses recorded directly in equity	(39)	433
Dividends paid	287	356

CTE's affiliate, RTE (Réseau de Transport d'Électricité), is responsible for managing the high voltage and very high voltage public electricity transmission network in France. Enedis uses RTE's network to convey energy to the distribution network.

EDF's investment in CTE (50.1%) is accounted for by the equity method due to RTE's specific governance arrangements, and is entirely allocated to dedicated assets.

12.2 Taishan

12.2.1 Taishan financial indicators

As CGN (Taishan's parent company) publishes its consolidated financial statements later than the Group, the following table presents financial information for Taishan at 31 December 2022.

The key financial indicators published for Taishan (on a 100% basis) are as follows:

(in millions of euros)	31/12/2022	31/12/2021
Non-current assets	11,838	12,265
Current assets	884	900
TOTAL ASSETS	**12,722**	**13,165**
Equity	3,606	4,036
Non-current liabilities	7,457	6,680
Current liabilities	1,659	2,449
TOTAL EQUITY AND LIABILITIES	**12,722**	**13,165**
Sales	640	919
Net income	***(327)***	***(131)***
Dividends paid	-	-

12.2.2 Transactions between the EDF group and Taishan

EDF owns 30% of Taishan Nuclear Power Joint Venture Company Limited (TNPJVC), which was set up to build and operate two EPR nuclear reactors in Taishan, in the province of Guangdong in China. Comprising two 1750MW EPR reactors, Taishan nuclear power plant is the biggest cooperation project between China and France in the energy sector. CGN holds a 51% stake and Guangdong Energy Group a 19% stake.

Following the start of commercial operation by the first reactor on 13 December 2018, the second reactor began commercial operation on 7 September 2019.

On 20 March 2019, the NDRC (National Development and Reform Commission) attributed regulated tariffs to the first three third-generation nuclear projects in China, one of which is Taishan. The tariff attributed to Taishan was set at RMB435/MWh until the end of 2021, with retroactive effect to the date the first unit was commissioned (13 December 2018). The indexing mechanisms applicable from 2022 were not set out in this decision and are still currently unknown. The NDRC announced that the current tariffs would be extended to 3rd generation plants (including Taishan).

A provision has been established in consideration of the persistent uncertainties regarding the level of tariff changes that could threaten the recoverable value of the investment accounted for by the equity method (this provision is included in "Provisions for contingencies related to subsidiaries and investments" in note 17.2).

On 14 June 2021, during its second cycle of operation, a build-up of noble gases was detected in the primary circuit of reactor 1 at the Taishan plant. The Chinese ministry for ecology and the environment stated that this was due to a few unsealed fuel rods. Following an initial analysis of the situation, on 30 July 2021 the operator of the Taishan plant decided to shut down reactor 1 to assess the situation in more detail, prevent it from progressing, and take remedial action. Defueling operations were completed on 22 August 2021. Inspections carried out on the fuel assemblies of Taishan reactor 1 following the technical issue encountered during its second operating cycle showed mechanical wear on certain assembly components. This phenomenon has already been encountered in several reactors in the French nuclear fleet. During the first half of 2022, EDF and Framatome contributed to drawing up the documentation to safely restart Taishan reactor 1, and supported TNPJVC for its examination by the Chinese authorities. On 15 August 2022, Taishan reactor 1 was reconnected to the Chinese electricity network after the final inspection by the competent Chinese authorities at the end of July 2022.

During the first quarter of 2023, Taishan reactor 1 was taken offline for a scheduled refuelling outage. As CGN stated in a press release of 9 June 2023, during that outage TNPJVC added some inspections and tests to collect data and experience for the unit's stable long-term operation. Reactor 1 was safely recoupled to the network on 27 November 2023.

Under the TNPJVC shareholder pact, EDF began an "interpretation" arbitration procedure in January 2021 in the Singapore International Chamber of Commerce against its partner CGN. The disagreement concerns the accounting policy for the power plant, particularly its depreciation period. EDF recommends a 60-year period in line with the plant's operating lifetime, while CGN considers it should be 41 years, ending at the same time as the entity TNPJVC. This accounting policy could influence the remuneration received by the EDF group through this partnership, particularly the residual interest when it ends. The Singapore International Chamber of Commerce gave its verdict in June 2023, and EDF began discussions with its partner regarding its implementation. On 6 June 2023, the Arbitration Tribunal ruled in favour of EDF. The final deadline for appeals passed on 19 September 2023.

12.3 Other investments in associates and joint ventures

The other investments held by EDF SA are included in dedicated assets (see note 15.1.2).

The other investments held by EDF Renewables are mainly located in North America, and to a lesser degree in Europe, China and Brazil.

Other investments in associates and joint ventures principally concern:

- JERA Global Markets (JERA GM), 33%-owned by EDF Trading, a company specializing in trading and optimization activities, particularly for liquified natural gas (LNG);
- the supercritical coal-fired plant owned by Jiangxi Datang International Fuzhou Power Generation Company Ltd. in China, 49% - owned by the Group;
- the dam owned by Compagnie Énergétique de Sinop (CES) in Brazil, 51% - owned by the Group;
- the Nachtigal dam in Cameroon, 40%-owned by the Group: reservoir impoundment was completed in the second half of 2023 and the whole power plant will be commissioned in the second half of 2024.

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During 2023, €(240) million of impairment was booked in respect of investments in associates and joint ventures, principally concerning dedicated assets (€(86) million), the Jiangxi Datang International Fuzhou Power Generation Company Ltd. supercritical coal-fired plant in China (€(79) million), the Neart na Gaoithe (NNG) project in the United Kingdom (€(54) million), and wind farms in Mexico (€(16) million).

In 2022, €(141) million of impairment was booked in respect of investments in associates and joint ventures, principally concerning associates of EDF Renewables (a net amount of €(121) million). €(139) million of this impairment (see note 10.8) concerns wind power assets in Texas, due to congestion problems on the electricity network. Some impairment was also booked in respect of unlisted assets held by EDF SA (EDF Invest) that are included in dedicated assets.

Principal developments in investments accounted for by the equity method in 2023

EDF Renewables won the contract for a 500MW solar power plant project in Oman

EDF Renewables and its partner Korea Western Power Corporation (KOWEPO) have signed financing agreements for the 500MW Manah 1 solar project. The consortium won the project and signed the power purchase agreement (PPA) on March 23, 2023. It will develop, finance, build and operate the new solar power plant, which is expected to be commissioned in the first quarter of 2025.

EDF group and Maple Power were awarded a 1GW offshore wind farm project off the coast of Normandy, France

Following the fourth offshore wind power tender launched in January 2021, the French Ministry for the Energy Transition selected Eoliennes en Mer Manche Normandie, the project company owned by the EDF Renewables (a subsidiary of EDF group) and Maple Power consortium, to design, build, operate and decommission the future "Centre Manche 1" offshore wind farm (off the coast of Normandy). With an installed capacity of approximately 1GW, this facility should produce power equivalent to the annual consumption of over 1.5 million people, or around half of the electricity requirements of the Normandy region's inhabitants.

EDF and its partners laid the first stone of a biomass power plant in Ivory Coast

On July 2023, EDF launched the construction of BIOVEA, a 46MW biomass power plant that will use agricultural waste to produce enough electricity for the equivalent of 1.7 million people a year. The project is owned 40% by the Group and will avoid 4.5 million tonnes of CO2 emissions over the 25 years of its operation.

EDF Renewables and its partners won the tender for a 1.1GW solar project in Saudi Arabia

The consortium of Masdar, EDF Renewables (30%) and Nesma Company signed the Power Purchase Agreement and was selected to develop, build and operate the 1.1GW Al Henakiyah solar power plant. Once commissioned, this plant will produce the equivalent of the annual electricity consumption of around 190,000 homes, avoiding the emission of more than 1.8 million tonnes of CO2 each year.

Commissioning of the 2.1GW Al Dhafra plant in the United Arab Emirates

In November 2023, the Al Dhafra solar power plant in the United Arab Emirates was commissioned. This plant is owned 20% by the Group and has a capacity of 2GW, enough to supply 160,000 households and avoid around 2 million tonnes of CO2 emissions a year.

Signature of a joint development agreement for a 1.5GW hydropower project in Mozambique

In December 2023, the consortium formed by EDF (40%), TotalEnergies (30%) and Sumitomo Corporation (30%) was selected by the Government of Mozambique to develop the 1.5GW Mphanda Nkuwa (MNK) hydropower project. The Consortium will develop MNK jointly with local partners who will own 30% of the project while the consortium owns 70%. This project is expected to increase Mozambique's electricity production capacity by more than 50%, and could supply power for over 3 million households in Mozambique and neighbouring countries.

6.

Note 13 Working capital

13.1 Working capital: composition and change

Changes in working capital during 2023 are as follows:

(in millions of euros)	Notes	31/12/2022	Monetary changes	Non-monetary changes	31/12/2023
Inventories and work-in-process	13.2	(17,661)	(381)	(50)	(18,092)
Trade receivables net of provisions	13.3	(24,844)	(2,198)	209	(26,833)
Trade payables	13.4	23,284	(3,595)	(2)	19,687
Compensation receivable for Public Energy Service charges (CSPE payable)	13.5.4	6,074	(4,044)	-	2,030
Other receivables and payables[1]	13.3.4 and 13.5	9,006	2,339	1,123	12,468
Other components of working capital[2]	(117)	95	(606)		(628)
NET WORKING CAPITAL	**(4,257)**	**(7,785)**	**674**		**(11,368)**

(1) Excluding receivables and payables on acquisition/disposal of assets and investment subsidies.

(2) Other components of working capital include CO2 emission certificates and green certificates presented in intangible assets in the balance sheet, and operating derivatives.

Monetary changes in working capital were less favourable in 2023 at €(7,785) million, mainly as a result of a €(4,044) million decrease in the CSPE liability (see note 13.5.4), higher net margin calls in the trading activities (€2,814 million), and the €(381) million change in the net inventory position (see note 13.2).

The change in other receivables and payables includes monetary changes in CO_2 emission certificates and green certificates presented in intangible assets in the balance sheet, and operating derivatives.

Non-monetary changes include the effect of changes in the scope of consolidation, foreign exchange effects, changes in fair values and reclassifications. The variation in non-monetary changes in 2023 is mainly explained by the change in fair value of inventories and operating derivatives totalling €(790) million and other effects amounting to €126 million, mainly associated with the adjustment for loaded fuel.

13.2 Inventories

ACCOUNTING PRINCIPLES AND METHODS

Inventories are recognised at the lower of acquisition cost or net realisable value, except for inventories held for trading activities, which are carried at market value. Inventories consumed are generally valued by the weighted average unit cost method.

Cost includes all direct materials costs, labour costs, and a share of indirect production costs.

NUCLEAR FUEL

Inventory accounts include:

- nuclear materials, whatever their form during the fuel production cycle;
- and fuel components in the warehouse or in the reactor.

The stated value of nuclear fuel and materials and work-in-progress is determined based on direct processing costs including materials, labour and subcontracted services (*e.g.* fluoration, enrichment, fabrication, *etc.*).

In accordance with regulatory obligations specific to each country, inventories of fuel (new or not entirely consumed) may also comprise expenses for spent fuel management and long-term radioactive waste management, with corresponding provisions or debts in the liabilities, or full and final payments made when the fuel is loaded.

In France, in application of the concept of "loaded fuel" as defined in article D594-1 of the Environment code, the cost of inventories for fuel loaded in the reactors but not yet irradiated includes expenses for spent fuel management and long-term radioactive waste management. The corresponding amounts are taken into account in the relevant provisions.

In compliance with IAS 23, interest expenses incurred in financing inventories of nuclear fuels are charged to expenses for the period provided these inventories are manufactured in large quantities on a repetitive basis.

Nuclear fuel consumption is determined by component (natural uranium, fluoration, enrichment, fuel assembly fabrication) as a proportion of the expected output when the fuel is loaded in the reactor. These quantities are valued at weighted average cost of inventories. Inventories are periodically corrected in view of forecast spent quantities based on neutronic measurements and physical inventories.

OTHER INVENTORIES

Other inventories comprise:

- other fuels, comprising fossil fuels required for operation of fossil-fired power plants and gas stocks;
- other operating supplies, consisting of operating materials and equipment such as spare parts supplied under a maintenance programme (excluding capitalised strategic safety spare parts);
- goods and services in progress, particularly relating to the businesses of EDF Renewables, Dalkia and Framatome;
- other inventories, mainly consisting of certificates issued under the various environmental schemes (see notes 5.5.4 and 10.2) and capacity obligation mechanisms (capacity guarantees in France – see note 5.1).

Other non-trading operating inventories are generally valued at weighted average cost including direct and indirect purchasing costs.

Impairment of spare parts principally depends on the turnover of these parts.

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The carrying value of inventories, broken down by nature, is as follows:

	31/12/2023			31/12/2022		
(in millions of euros)	Gross value	Provision	Net value	Gross value	Provision	Net value
Nuclear fuel	11,760	(431)	11,329	10,737	(422)	10,315
Other fuel	1,556	(260)	1,296	2,029	(2)	2,027
Other supplies	2,047	(413)	1,634	1,878	(422)	1,456
Work-in-progress for production of goods and services	771	(22)	749	622	(35)	587
Other inventories	3,144	(60)	3,084	3,326	(50)	3,276
TOTAL INVENTORIES	**19,278**	**(1,186)**	**18,092**	**18,592**	**(931)**	**17,661**

The long-term portion (more than one year) mainly concerns nuclear fuel inventories and amounts to €9,235 million at 31 December 2023 (8,557 million at 31 December 2022).

The change in inventories in 2023 is principally explained by the increase in nuclear fuel inventories and higher impairment of the coal and gas inventories presented in "Other fuel".

13.3 Trade receivables

ACCOUNTING PRINCIPLES AND METHODS

Trade receivables are initially recognised at the fair value of the consideration received or receivable, and subsequently carried at amortised cost or at fair value through OCI.

Trade receivables also include the value of unbilled receivables for energy already supplied, which are presented net of advances received from customers who pay in regular monthly instalments.

The Group applies IFRS 9's simplified approach to measure expected credit losses on trade receivables, using provision matrices established on the basis of credit loss histories.

Details of net trade receivables are as follows:

(in millions of euros)	Note	31/12/2023	31/12/2022
Trade receivables, gross value – excluding EDF Trading		24,232	21,568
contract assets	13.3.3	*286*	*441*
Trade receivables, gross value – EDF Trading		4,341	4,598
Impairment		(1,740)	(1,322)
TRADE RECEIVABLES - NET VALUE		**26,833**	**24,844**

Most trade receivables mature within one year.

Advances received from customers in France who pay in regular monthly instalments, amounting to €1,808 million at 31 December 2023 (€7,423 million at 31 December 2022), are deducted from trade receivables.

Trade receivables increased between 31 December 2022 and 31 December 2023 in keeping with the change in sales by the different segments: France – Generation and supply €4.5 billion, Italy €(1.2) billion and Dalkia €(0.4) billion.

13.3.1 Trade receivables due and not yet due

	31/12/2023			31/12/2022		
(in millions of euros)	Gross value	Provision	Net value	Gross value	Provision	Net value
TRADE RECEIVABLES	**28,573**	**(1,740)**	**26,833**	**26,166**	**(1,322)**	**24,844**
overdue by up to 6 months	2,263	(392)	1,871	2,037	(183)	1,854
overdue by 6-12 months	1,100	(401)	699	678	(242)	436
overdue by more than 12 months	1,066	(728)	338	1,117	(551)	566
Trade receivables due	**4,429**	**(1,521)**	**2,908**	**3,832**	**(976)**	**2,856**
Trade receivables not yet due	**24,144**	**(219)**	**23,925**	**22,334**	**(346)**	**21,988**

13.3.2 Assignment of receivables

ACCOUNTING PRINCIPLES AND METHODS

The EDF group manages several factoring and securitisation programmes that are used to assign eligible trade receivables in return for a cash payment.

The trade receivables concerned are derecognised in accordance with IFRS 9 when the Group:

- (i) has transferred its rights to receive payments relating to the asset or fulfilled its obligation to pay cash flows received from a third party (other than a consolidated structured entity) under a transfer agreement, and
- (ii) has transferred substantially all of the risks and rewards attached to the receivables.

Otherwise, the receivables assigned remain in the balance sheet assets, and the financing received is treated as financial liabilities.

In 2023, the Group entered into a securitisation contract through a Securitisation Fund (a special purpose entity). As this entity is consolidated, the receivables concerned have not been derecognised.

(in millions of euros)	31/12/2023	31/12/2022
Trade receivables assigned and retained in the balance sheet	57	324
Trade receivables assigned and derecognised	1,764	2,470

The Group assigned trade receivables for a total of €1,764 million at 31 December 2023, mainly concerning Edison, EDF SA, Dalkia and Luminus (€2,470 million at 31 December 2022).

13.3.3 Contract assets

Contract assets are rights held by an entity to receive a consideration in return for goods or services supplied to customers, when such rights are conditional on something other than the passage of time. Most contract assets mature within one year.

The contract assets included in receivables represent an amount of €286 million at 31 December 2023 and €441 million at 31 December 2022 and mainly concern Framatome, Dalkia, EDF Renewables and the Other International segment.

13.3.4 Other receivables

Details of other receivables are as follows:

(in millions of euros)	31/12/2023	31/12/2022
Prepaid expenses	1,609	1,592
VAT receivables	2,193	1,968
Other tax receivables	315	274
Other operating receivables	7,067	13,496
OTHER RECEIVABLES	**11,184**	**17,330**
Non-current portion	*2,110*	*2,165*
Current portion	*9,074*	*15,165*
Gross value	*11,252*	*17,390*
Impairment	*(68)*	*(60)*

At 31 December 2023, other receivables include €3.1 billion of margin calls made in the trading activity (€5.2 billion in 2022), which decreased essentially as a result of positions taken in 2022 being closed. The amounts of margin calls recognised in assets cannot be netted with the margin calls recognised in liabilities (see note 13.5).

At 31 December 2023, other receivables also include tax receivables of €2,508 million (€2,242 million at 31 December 2022) and prepaid expenses of €1,609 million (€1,592 million at 31 December 2022).

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13.4 Trade payables

(in millions of euros)	31/12/2023	31/12/2022
Trade payables – excluding EDF Trading	14,533	16,001
Trade payables – EDF Trading	5,154	7,283
TRADE PAYABLES	**19,687**	**23,284**

The decrease in trade payables is mainly explained by changes in market prices, and therefore concerns various Group entities.

The Group has a reverse factoring programme allowing suppliers to transfer their receivables on EDF to a factoring company, at their own initiative. For the Group, this programme does not cause any change in the substance and features of the receivables held by suppliers on EDF. In particular it does not affect the sequences of operating cash flows. The associated liabilities are therefore included in "trade payables" in the Group's financial statements.

13.5 Other liabilities

Details of other liabilities are as follows:

(in millions of euros)	31/12/2023	Including contract liabilities	31/12/2022	Including contract liabilities
Advances and progress payments received	4,011	2,099	3,973	2,025
Liabilities related to property, plant and equipment	5,464	-	4,631	-
Tax liabilities	4,740	-	3,488	-
Social charges	6,236	-	5,865	-
Deferred income on long-term contracts	3,548	3,548	3,180	3,144
Other deferred income[1]	1,267	857	1,172	694
Other	7,394	-	16,163	-
OTHER LIABILITIES	**32,660**	**6,504**	**38,472**	**5,863**
Non-current portion	5,685	3,539	4,968	2,929
Current portion	26,975	2,965	33,504	2,934

(1) Including the initial payment made under the Fessenheim compensation protocol received in 2020 (see note 5.5.4).

13.5.1 Advances and progress payments received

Advances and progress payments received comprise €719 million of payments made by the customers in Framatome's long-term contracts (€630 million at 31 December 2022).

13.5.2 Tax liabilities

At 31 December 2023, tax liabilities mainly include an amount of €20 million for the CSPE to be collected by EDF on energy supplied but not yet billed, less the CSPE tax collected on advances from customers who pay in regular monthly instalments (€116 million at 31 December 2022).

13.5.3 Deferred income on long-term contracts

EDF's deferred income on long-term contracts at 31 December 2023 comprises €2,089 million (€1,777 million at 31 December 2022) of partner advances made to EDF under the nuclear plant financing plans.

Deferred income on long-term contracts also includes the remaining balance of the advance of €1.7 billion paid to the EDF group in 2010 under the agreement with the Exeltium consortium. This advance is transferred to the income statement progressively over the term of the contract (24 years).

13.5.4 Other

The final line of the table of other liabilities includes a €2,030 million operating liability payable to the State in connection with the CSPE at 31 December 2023 (€6,074 million at 31 December 2022).

It also includes €0.9 billion of margin calls made in the trading activity (€5.9 billion in 2022). The amounts of margins calls recognised in liabilities cannot be netted with margin calls recognised in assets (see note 13.3.4).

Finally, this item includes investment subsidies received during 2023, amounting to €325 million (€566 million in 2022). Investment subsidies received by Group companies are included in liabilities under the heading "Other liabilities" and transferred to income as and when the economic benefits of the corresponding assets are utilised.

EDF's public service charges

The amount of public service charges to be compensated to EDF for 2023 is €14,126 million, explained as follows:

- an amount of €(2,193) million for purchase obligations in 2023. These expenses are negative because of high market prices, which were above the price of EDF's purchase obligations;
- an amount of €13,992 million for the sales revenue shortfall caused by the cap on sale prices to final customers. The electricity tariff cap gave rise to compensation of €12,446 million and the electricity buffer gave rise to compensation of €1,458 million, while the compensation for the gas tariff cap amounted to €88 million;
- an amount of €2,297 million for surplus generation costs in non-interconnected and solidarity zones.

The amounts received in 2023 out of the State's General Budget totalled €10,010 million, corresponding to the €2,053 million balance outstanding for the year 2022, and payments of €7,957 million for the year 2023.

The compensation mechanism for public energy service charges in France is presented in note 5.5.1.

13.5.5 Contract liabilities

Contract liabilities represent an entity's obligations to provide customers with goods or services for which it has already been paid, or for which payment is due.

Changes in contract liabilities were as follows:

(in millions of euros)	31/12/2022	Amounts recorded during the period	Amounts transferred to sales during the period	Amounts cancelled during the period with no impact on sales	Effect of unwinding the discount	Change in scope of consolidation	Foreign exchange effect	31/12/2023
Advance payments received	2,025	1,472	(1,424)	(28)	-	34	20	2,099
Deferred income on long-term contracts	3,144	949	(591)	-	46	8	(8)	3,548
Other deferred income	694	726	(605)	65	-	(22)	(1)	857

These liabilities comprise the majority of advances and progress payments received, amounting to €2,099 million (principally concerning the Framatome, United Kingdom and France – Regulated Activities segments), and the majority of deferred income (on long-term and other contracts), amounting to €4,405 million (principally concerning the France – Generation and Supply segment). They thus total €6,504 million at 31 December 2023 (€5,863 million at 31 December 2022).

Contracts expiring in more than one year on which obligations are unfulfilled or partially fulfilled at the reporting date (including operating sale commitments, amounting to €7.1 billion, see note 21.2.1) should generate sales revenues of approximately €13,602 million which have not yet been recognised. €892 million of these sales revenues will be recognised progressively until 2034 on the Exeltium contract, and the balance will be recognised over the operating period for contracts relating to jointly-operated power plants, and over the term of the contract for other firm sale contracts (excluding energy sales).

Note 14 Equity

14.1 Share capital

ACCOUNTING PRINCIPLES AND METHODS

Share issue expenses correspond exclusively to external costs expressly related to the capital increase. They are charged against the issue premium at their net-of-tax value.

Other expenses are classified as expenses of the period.

At 31 December 2023, EDF's share capital amounts to €2,084,365,041 comprising 4,168,730,082 fully subscribed and paid-up shares with nominal value of €0.50, owned 100% by the French State since 8 June 2023.

At the end of 2023, all of the 218,696,799 OCEANE bonds outstanding at 31 December 2022 had been converted, leading to successive capital increases totalling €140,950,086.50 after the issuance of 281,900,173 new shares (see note 14.4).

On 31 July 2023, the 888,511 treasury shares were cancelled for the net value of €7,230,061.14, leading to a non-loss-driven capital reduction of €444,255.50 and a decrease of €6,875,805.64 in reserves.

14.2 Dividends

At the General Shareholders' Meeting of 28 June 2023 it was decided not to pay out any dividend in 2023 in respect of 2022.

No interim dividend was paid for 2023.

14.3 Perpetual subordinated bonds

ACCOUNTING PRINCIPLES AND METHODS

The perpetual subordinated bonds issued by the Group ("hybrid" bond issue) incorporate options for redemption at the initiative of EDF. These options may be exercised after a minimum period that depends on the specific terms of each issue, and subsequently at each coupon date or in the event of highly specific circumstances. The annual yield is fixed and reviewable based on contractual clauses that vary according to the specific terms of the issuance. There is no obligation for EDF to make any payment, due to the existence of contractual clauses entitling it to defer payment indefinitely.

However, those clauses stipulate that any deferred payments must be made in the event of a dividend distribution. All these features give EDF an unconditional right to avoid paying out cash or another financial asset for the principal or interest. Consequently, in compliance with IAS 32, these bonds are recorded as equity instruments and any payment made is treated in the same way as dividends.

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At 31 December 2023, perpetual subordinated bonds carried in equity amounted to €12,009 million (less net-of-tax transaction costs) (€11,722 million at 31 December 2022).

On 8 June 2023, the Group issued hybrid notes that were recognised in equity at the value of €1,377 million. In parallel, EDF launched a contractual cash redemption offer for the outstanding bonds of the $1,500 million perpetual subordinated bond issue of January 2014, that were included in equity at the value of €1,093 million at 31 December 2022. On 20 June 2023 and 7 July 2023, EDF redeemed bonds for a total US$904 million (US$901 million and US$3 million respectively), the equivalent of €823 million.

On 14 December 2023, EDF announced its intent to exercise the option to redeem the outstanding hybrid notes, which totalled $596 million and were recorded in equity at the value of €546 million at 31 December 2023. These notes were redeemed at the First Call Date (22 January 2024) and were reclassified as financial liabilities at 31 December 2023 at a value that includes the corresponding foreign exchange effects.

Interest paid by EDF to the bearers of perpetual subordinated bonds issued totalled €630 million in 2023 (€606 million in 2022). The resulting cash payout is reflected in a corresponding reduction in Group equity.

In January 2024, EDF paid interest of around €187 million to the bearers of perpetual subordinated bonds.

Perpetual subordinated bonds in the accounts of EDF

(in millions of currency units)

Entity	Issue[1]	Nominal amount	Currency	Redemption option	Coupon
EDF	01/2013	1,250	GBP	13 years	6.00%
EDF	01/2013	1,250	EUR	12 years	5.38%
EDF	01/2014	1,000	EUR	12 years	5.00%
EDF	01/2014	750	GBP	15 years	5.88%
EDF	10/2018	1,250	EUR	6 years	4.00%
EDF	12/2019	500	EUR	8 years	3.00%
EDF	09/2020	850	EUR	6.5 years	2.88%
EDF	09/2020	1,250	EUR	10 years	3.38%
EDF	06/2021	1,250	EUR	7 years	2.63%
EDF	12/2022	1,000	EUR	6 years	7.50%
EDF	06/2023	1,500	USD	10 years	9.13%

(1) Date funds were received.

14.4 Convertible green bonds (OCEANEs)

ACCOUNTING PRINCIPLES AND METHODS

OCEANE bonds, which are convertible by remittal of a fixed number of shares in exchange for a fixed amount of cash (the "fixed-for-fixed" rule) give rise to recognition of a debt component and an equity component, in accordance with IAS 32.

On 8 September 2020, EDF made an issuance of Green Bonds convertible into new shares and/or exchangeable for existing shares (*OCEANEs Vertes*) with the nominal amount of €2,400 million and an issue value of €2,569 million.

882,340 OCEANE bonds were converted into new shares during 2022, giving rise to creation of 1,137,336 shares and a €9.65 million increase in the Group's equity, including €0.57 million of share capital.

Through its Simplified Public Tender offer (see note 2), the French government acquired 127,147,355 OCEANE bonds, with the result that it held 214,979,011 OCEANE bonds or 98.30% of the total portfolio of OCEANEs at 31 December 2022.

Following the squeeze-out on 8 June 2023, the remaining OCEANE bonds were transferred to the State, giving rise to conversion of all those bonds on 13 June 2013, and delisting of EDF's OCEANE bonds from Euronext Access.

During 2023, all of the 218,696,799 OCEANE bonds existing at 31 December 2022 were converted into 281,900,173 new shares.

These operations of 2023 caused an increase of €2,390 million in the Group's equity, including a €141 million increase in the share capital.

14.5 Non-controlling interests (minority interests)

The following table presents details of the principal non-controlling interests:

		31/12/2023		31/12/2022	
(in millions of euros)	Ownership %	Equity (non-controlling interests)	Net income attributable to non-controlling interests	Equity (non-controlling interests)	Net income attributable to non-controlling interests
Principal non-controlling interests:					
EDF Energy Nuclear Generation Ltd.	20.00%	2,014	136	2,198	142
NNB Holding Company (HPC) Ltd.	32.28%	5,349	(2,703)	6,778	(514)
NNB Holding Company (SZC) Ltd.	50.56%	1,475	-	719	-
EDF Investissements Groupe SA	7.54%	520	13	519	11
Luminus SA	31.37%	698	25	538	(49)
Framatome	24.50%	218	(34)	63	(12)
Other non-controlling interests		**1,677**	**158**	**1,457**	**137**
TOTAL		**11,951**	**(2,404)**	**12,272**	**(285)**

Non-controlling interests in EDF Energy Nuclear Generation Ltd., which is owned 80% by the Group *via* EDF Energy, correspond to Centrica's share.

Non-controlling interests in NNB Holding Company (HPC) Ltd, the holding company for the Hinkley Point C project, which is owned 67.7% by the Group *via* EDF Energy, correspond to CGN's share.

Non-controlling interests in NNB Holding Company (SZC) Ltd, the holding company for the Sizewell C project, which is owned 49.4% by the Group *via* EDF Energy, correspond to His Majesty's Government's share in the project at 31 December 2023 after its investment made on 30 November 2022 and the withdrawal at the same date of CGN, which held a 20.00% share (see note 10.6).

Non-controlling interests in EDF Investissements Groupe correspond to the investment held by Natixis Belgique Investissements.

Non-controlling interests in Luminus correspond principally to the investments held by Belgian local authorities, and partner contributions to the Seraing CCGT project.

Non-controlling interests in Framatome, which is owned 75.5% by the Group *via* EDF SA, correspond to the 19.5% share held by Mitsubishi Heavy Industries and the 5% share held by Assystem. On 25 January 2024, EDF acquired Assystem's 5% share, and thus raised its investment in the Framatome Group to 80.5% (see note 23).

Other non-controlling interests principally consist of the minority interests in subsidiaries of the Edison and EDF Renewables subgroups.

Other non-controlling interests also include instruments in the form of bonds convertible into shares, issued by the Dalkia group and subscribed by minority interests, amounting to a total €96 million at 31 December 2023 (€129 million in 2022).

Note 15 Provisions related to nuclear generation and dedicated assets

ACCOUNTING PRINCIPLES AND METHODS

The Group recognises provisions when it has a present obligation (legal or constructive) arising from a past event, an outflow of resources will probably be required to settle the obligation, and the obligation amount can be estimated reliably.

If it is anticipated that all or part of the expenses covered by a provision will be reimbursed, the reimbursement is recognised under receivables if and only if the Group is reasonably certain of receiving it.

Provisions are determined based on the Group's expectation of the cost necessary to settle the obligation. Estimates are based on management data from the information system, assumptions adopted by the Group, and if necessary, experience of similar transactions or operations, based on independent expert reports, or contractor quotes. The various assumptions are reviewed for each closing of the accounts.

In the case of decommissioning provisions for power plants in operation, adjustments are recorded *via* fixed assets.

The discount effect generated at each closing to reflect the passage of time is recorded under "Discount effect" in financial expenses.

Changes in provisions resulting from a change in discount rates, a change in the disbursement schedule or a change in contractor quote are recorded:

- as an increase or decrease in the corresponding assets, up to the net book value, if the provision was initially covered by balance sheet assets;
- in the income statement in all other cases.

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Provisions related to nuclear generation mainly cover the following:

- back-end nuclear cycle expenses: provisions for spent fuel management, for waste removal and conditioning and long-term radioactive waste management are established in accordance with the obligations and final contributions specific to each country;
- costs for decommissioning power plants;
- costs relating to fuel in the reactor when the reactor is shut down (*provisions for last cores*). These correspond to the cost of the fuel stock in the reactor that is not totally spent at the time of the final reactor shutdown and cannot be reused due to technical and regulatory constraints, the cost of processing for that fuel, and the cost of removal and storage of the resulting waste.

Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved.

The breakdown between current and non-current provisions related to nuclear generation is as follows:

	31/12/2023			31/12/2022		
(in millions of euros)	Current	Non-current	Total	Current	Non-current	Total
Provisions for the back-end of the nuclear cycle	2,069	28,193	30,262	1,602	24,982	26,584
Provisions for decommissioning and last cores	1,269	32,013	33,282	1,539	31,039	32,578
Provisions related to nuclear generation	**3,338**	**60,206**	**63,544**	**3,141**	**56,021**	**59,162**

The breakdown of provisions by company is shown below:

	EDF	EDF Energy	Belgium	Total
(in millions of euros)	Note 15.1	Note 15.2	Note 15.3	
Provisions for spent fuel management	13,876	1,238	-	15,114
Provisions for waste removal and conditioning	-	406	-	406
Provisions for long-term radioactive waste management	13,205	1,173	364	14,742
PROVISIONS FOR THE BACK-END OF THE NUCLEAR CYCLE AT 31/12/2023	**27,081**	**2,817**	**364**	**30,262**
Provisions for the back-end of the nuclear cycle at 31/12/2022	**23,854**	**2,723**	**7**	**26,584**
Provisions for nuclear plant decommissioning	18,419	10,277	596	29,291
Provisions for last cores	2,720	1,271	-	3,991
PROVISIONS FOR DECOMMISSIONING AND LAST CORES AT 31/12/2023	**21,139**	**11,548**	**596**	**33,282**
Provisions for decommissioning and last cores at 31/12/2022	**19,528**	**12,425**	**625**	**32,578**
PROVISIONS RELATED TO NUCLEAR GENERATION AT 31/12/2023	**48,220**	**14,365**	**960**	**63,544**
Provisions related to nuclear generation at 31/12/2022	**43,382**	**15,148**	**632**	**59,162**

The movement in provisions for the back-end of the nuclear cycle, provisions for decommissioning and provisions for last cores break down as follows:

(In millions of euros)	31/12/2022	Increases	Decreases	Discount effect	Translation adjustments	Other movements	31/12/2023
Provisions for spent fuel management	12,663	2,490	(1,050)	698	26	287	15,114
Provisions for waste removal and conditioning	373	-	-	25	8	-	406
Provisions for long-term radioactive waste management	13,548	372	(324)	892	22	232	14,742
Provisions for the back-end of the nuclear cycle	**26,584**	**2,862**	**(1,374)**	**1,615**	**56**	**519**	**30,262**
Provisions for nuclear plant decommissioning	29,015	294	(904)	1,724	231	(1,069)	29,291
Provisions for last cores	3,563	-	-	179	23	226	3,991
Provisions for decommissioning and last cores	**32,578**	**294**	**(904)**	**1,903**	**254**	**(843)**	**33,282**
PROVISIONS RELATED TO NUCLEAR GENERATION	**59,162**	**3,156**	**(2,278)**	**3,518**	**310**	**(324)**	**63,544**
Current portion	3,141						3,338
Non-current portion	56,021						60,206
EDF SA	43,382						48,220
Provisions within the scope of the law of 28 June 2006	*42,187*						*47,001*
United Kingdom	15,148						14,365
Belgium	632						960

The change in provisions related to nuclear generation in 2023 is mainly due to:

- the signature in France of an agreement on the principles of future amendments for the period 2024-2026 to the 2008-2040 framework agreement with Orano Recyclage concerning removal, processing and recycling of spent fuel, leading to a €2,216 million increase in provisions for spent fuel management (€1,926million presented in "Increases" and €290 million in "Other movements") and the €2,109 million cost of unwinding the discount, presented in the "discount effect" (see note 15.1.1.1);
- an update to the cost estimate base on Integrated Plan 24, approved by the Non-Nuclear Liabilities Assurance team (NLA), and a release from the provision following cost underspend within the year, resulting in a €(664) million decrease in provisions for the back-end of the nuclear cycle and decommissioning, and a €(406) million increase in the real discount rate resulting in a €(406) million decrease in provisions in the United Kingdom (see note 15.2);
- a €367 million increase mainly concerning Luminus and EDF Belgium, resulting from the final agreement reached between Engie and the Belgian State on all their nuclear waste-related obligations (see note 15.3).

15.1 Provisions related to nuclear generation and dedicated assets in France

15.1.1 Nuclear provisions

In France, the provisions established by EDF SA for the nuclear generation fleet result principally from the Law of 28 June 2006 on long-term management of radioactive materials and waste, and the associated implementing provisions concerning secure financing of nuclear expenses.

In compliance with the accounting principles described above:

- EDF books provisions to cover all obligations related to the nuclear facilities it operates;
- EDF also holds dedicated assets for secure financing of long-term obligations (see note 15.1.2).

The calculation of provisions incorporates a level of risks and uncertainties as appropriate to the operations concerned. It also includes uncertainty factors as described in note 1.3.4.2.

Details of changes in provisions for the back-end of the nuclear cycle, decommissioning and last cores in France are as follows:

(In millions of euros)	Notes	31/12/2022	Increases	Decreases	Discount effect	Other movements	31/12/2023
Provisions for spent fuel management	15.1.1.1	11,379	2,475	(913)	603	332	13,876
amount unrelated to the operating cycle		*1,607*	*77*	*(21)*	*102*	*(5)*	*1,760*
amount outside the scope of the Law of 28 June 2006		*1,195*	*9*	*(45)*	*60*	*-*	*1,219*
Provisions for long-term radioactive waste management	15.1.1.2	12,475	21	(325)	814	220	13,205
Provisions for the back-end of the nuclear cycle		**23,854**	**2,496**	**(1,238)**	**1,417**	**552**	**27,081**
Provisions for nuclear plant decommissioning	15.1.1.3	17,094	294	(224)	954	301	18,419
Provisions for last cores	15.1.1.4	2,434	-	-	118	168	2,720
Provisions for decommissioning and last cores		**19,528**	**294**	**(224)**	**1,072**	**469**	**21,139**
PROVISIONS RELATED TO NUCLEAR GENERATION		**43,382**	**2,790**	**(1,462)**	**2,489**	**1,021**	**48,220**
Provisions related to nuclear generation within the scope of the Law of 28 June 2006[1]		42,187	2,781	(1,417)	2,429	1,021	47,001
Provisions related to nuclear generation outside the scope of the Law of 28 June 2006[1]		1,195	9	(45)	60	-	1,219

(1) Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations (see below).

The change in EDF SA's provisions related to nuclear generation is mainly explained by signature of an agreement on the principles of the future 2024-2026 amendment to the framework agreement with Orano Recyclage for the period 2008-2040, concerning the removal, processing and recycling of spent fuel. This resulted in an increase of €2,216 million in provisions for spent fuel management in 2023 (see note 15.1.1.1), recorded as follows:

- €1,926 million in "Increases", corresponding to provisions adjusted *via* profit and loss;
- €290 million in "Other movements", corresponding to changes in provisions backed by assets.

The discount effect comprises the €2,109 million cost of unwinding the discount, and the effect of adjusting cost estimates to 2023 economic conditions (see note 15.1.1.5), which were recorded in the income statement for provisions not backed by assets at the value of €396 million.

"Other movements" include the €405 million effect of adjusting cost estimates to 2023 economic conditions (see note 15.1.1.5) for provisions backed by assets.

Concerning non-EDF installations:

- EDF, Orano Recyclage and the French Atomic Energy Commission (Commissariat a l'Energie Atomique or CEA) signed an agreement in December 2004 which transferred the management and financing of final shutdown, decommissioning and waste recovery and reconditioning for the UP1 reprocessing facility at Marcoule to the CEA. In return, EDF paid the CEA a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs;

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- EDF and Orano Recyclage signed two agreements in December 2008 and July 2010 defining the legal and financial terms for the transfer to Orano Recyclage of EDF's contractual obligations regarding its financial contribution to the dismantling of La Hague installations and the recovery and conditioning of waste. In application of those agreements, EDF paid Orano Recyclage a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs.

15.1.1.1 Provisions for spent fuel management

EDF's currently adopted strategy with regards to the fuel cycle, in agreement with the French State, is to process spent fuel, to recycle the separated plutonium in the form of MOX fuel (Mixed OXide of plutonium and uranium), and to recycle the reprocessed uranium.

The nominal quantities to be processed by Orano Recyclage at the request of EDF, totalling approximately 1,100 tonnes per year, are determined based on the quantity of recyclable plutonium in the reactors that are authorised to load MOX fuel (currently, 24 reactors under the authorisation for creation).

Consequently, provisions for spent fuel management (€13,876 million) mainly cover the following services to be provided by Orano Recyclage:

- removal of spent fuel from EDF's generation centres, and its reception and interim storage;
- processing, including conditioning and storage of recyclable matter.

The processing expenses included in these provisions concern spent fuel that can be recycled in existing facilities, including the portion in reactors but not yet irradiated.

Expenses are mainly measured based on forecast physical flows at the closing date, with reference to the contracts with Orano Recyclage which define the terms of application of the framework agreement for the period 2008-2040. The most recent contract, signed on 5 February 2016, covered the period 2016 - 2023. These contracts contain price indexes that are revised annually.

Negotiations with Orano Recyclage concerning the amendment for the period 2024-2026 began in September 2020 and EDF recognised a related provision for contingencies and losses of €854 million at 31 December 2022. A further exceptional allocation of €1,026 million was made during the first half of 2023, bringing the total provision to €1,880 million. This was EDF's best assessment at that date of how the outcome of the negotiations would affect its provisions, based on EDF's latest counter-proposal to Orano Recyclage made in April 2023.

In September 2023, the negotiations achieved convergence and an agreement was notably signed laying down the principles for the future contract (2024-2026 amendment to the master agreement), leading to a €2,216 million increase in provisions for spent fuel management (replacing the provision for contingencies and losses).

This agreement notably increases average contract fees by 39% (in 2024 euros) compared to the average defined for the period 2016-2023 (in 2020 euros). It takes account of changes in the economic conditions underlying the contract and the requirements expressed by Orano Recyclage regarding the necessary operating costs to enhance its plants' performance.

Furthermore, the provisions for spent fuel management incorporate specific provisions for the interim storage of spent fuel, which is a key issue for the back-end of the nuclear cycle because usage forecasts for Orano's interim storage facilities at La Hague for spent fuel from EDF's generation fleet suggest that the pools at La Hague could be saturated by 2030. To prevent saturation, the long-term storage capacity for spent fuel is to be increased by construction of a centralised fuel storage pool under EDF's supervision.

Commissioning of the new pool is scheduled for 2034 and it will be operated by EDF. The following measures will also be taken to address storage needs.

For the period until the centralised storage pool is built, studies of transitional solutions were launched by Orano in 2019 in association with EDF and the Nuclear Safety Authority (*Autorité de Sûreté Nucléaire* - ASN). The preferred solution is densification of the existing pools at Orano's La Hague site. A supplementary solution would be to use a dry storage facility for plutonium (MOX) fuel and reprocessed uranium (RepU). The need for interim storage is accentuated by production issues over the last few years at Orano's Melox plant, which are gradually receding but affect the pace of processing in the short and medium term, with the result that the pre-recycling quantities to be stored are temporarily increased.

Studies of the transitional solutions continued, notably on densification of the existing pools at Orano's La Hague site with the submission in December 2022 to the ASN of the application file for a notable modification. Development studies regarding this solution are expected to continue until 2024.

The provisions for spent fuel management also cover long-term storage of spent fuel that cannot currently be recycled in industrial facilities that already exist or are under construction: plutonium fuel (spent MOX fuel) or uranium fuel derived from processing (spent RepU), and fuel from Creys-Malville and Brennilis until fourth-generation reactors become available. Dedicated assets are held in association with these provisions, which are unrelated to the operating cycle as defined by the law of 2006 (see note 15.1.2). The provision is founded on a scenario assuming construction of a centralised storage pool at La Hague, to be managed by EDF as nuclear operator. This project was presented during the public debate on the National Plan for Managing Radioactive Matter and Waste (PNGMDR) in 2019-2020, and was subject to a specific public consultation organised by France's National Public Debate Commission (CNDP) that began on 22 November 2021 and ended on 8 July 2022. On 7 October 2022 EDF published a document on the lessons of the consultation and the company's responses, entitled "*Enseignements de la concertation préalable et suites données par EDF*".

In 2023 EDF set up a formal structure for continuous exchanges and dialogue, under the supervision of guarantors appointed by the CNDP. EDF also stated that at this stage, it is moving ahead with the project. More than 30 meetings with the public were held during 2023. This consultation procedure is continuing, ahead of a public inquiry that is expected to take place in 2025. The application for authorisation to create the installation is due to be filed at the end of the first quarter of 2024. In September 2023, EDF and Orano also concluded an agreement defining the terms on which Orano will make land available for the project.

In total, provisions for specific storage solutions for spent fuel amount to €219 million for the cost of densification of Orano's pools at La Hague, and €1,760 million for interim storage of spent MOX fuel and spent RepU, first at La Hague then in the centralised storage pool (these fuels cannot be recycled in existing facilities or facilities currently under construction).

Finally, in 2018, the Board of Directors approved resumption of reprocessed uranium recycling, which had been suspended in 2013 pending availability of a new industrial schema. The corresponding contracts were signed with the respective suppliers in the second quarter of 2018. The first assemblies were made at the Framatome plant in Romans sur Isère and loaded in 2023 into a 900MW reactor that is already authorised. Subject to completion of technical modifications and issuance of the necessary authorisations by the safety authority, other 900MW reactors and certain 1300MW reactors will be loaded with assemblies based on reprocessed uranium by 2027. Since 2021, the provision for storage of reprocessed uranium included in the provisions for spent fuel management (€439 million) has been based on a 50-year operating lifetime for nuclear plants for the considered series, following the extension of the depreciation period of 1300MW-series plants from 40 to 50 years.

15.1.1.2 Provisions for long-term radioactive waste management

Provisions for long-term radioactive waste management concern the following future expenses:

- interim storage, removal and storage of radioactive waste packages resulting from spent fuel processing;
- direct storage, after long-term interim storage where relevant, of spent fuel that cannot be recycled in existing installations: specifically plutonium (MOX) fuel or uranium fuel derived from processing, and fuel from Creys-Malville and Brennilis;
- characterisation, processing, conditioning and interim storage of radioactive waste resulting from decommissioning and certain operating waste, and removal and final storage of this radioactive waste;
- EDF's share of the costs of studies, construction, operation and maintenance, shutdown and surveillance of existing and future storage centres.

The volumes of waste concerned by provisions include existing packages of waste and all waste to be conditioned, resulting in particular from plant decommissioning or spent fuel processing at La Hague (comprising all fuel in reactors at 31 December, irradiated or otherwise). These volumes are regularly reviewed, in keeping with the data declared for the purposes of the national waste inventory undertaken by ANDRA.

The provisions for long-term radioactive waste management break down as follows:

(in millions of euros)	Storage centre	31/12/2023	31/12/2022
Very low-level and low and medium-level waste	Very low-level waste: CIRES -Morvilliers (ANDRA) Low and medium-level waste: CSA - Soulaines (ANDRA)	3,176	2,958
Long-lived low-level waste	Project under examination: Soulaines (ANDRA)	369	363
Long-lived medium and high-level waste	Geological storage centre (Cigéo project) / ICEDA conditioning and interim storage facility	9,660	9,154
PROVISIONS FOR LONG-TERM RADIOACTIVE WASTE MANAGEMENT		**13,205**	**12,475**

Very low-level and low and medium-level waste

Basis for estimation

Very low-level waste and low and medium-level waste come from nuclear facilities in operation or in the process of being decommissioned:

- very low-level waste mainly comes from nuclear plant decommissioning, and generally takes the form of metals (large components, piping, support structures, *etc.*) or rubble (concrete, earth, *etc.*). This type of waste is stored at surface level at the Morvilliers storage centre managed by ANDRA, commissioned in 2003;
- low and medium-level waste (gloves, filters, resins, materials, *etc.*) is stored at surface level at the Soulaines storage centre managed by ANDRA, commissioned in 1992.

The cost of removing, processing and storing short-lived waste (very low-level and low and medium-level) is assessed on the basis of:

- current contracts with transporters, and ANDRA for operation of the existing storage centres;
- the costs of the plant run by the subsidiary Cyclife France (the Centraco site at Marcoule, commissioned in 1999) for processing some of this waste that can be melted or incinerated prior to storage in the ANDRA's centres;
- an estimate of the cost of a centralised facility for interim storage, segmentation and conditioning of major components such as steam generators.

For the management of very low-level waste, the regulations (decrees issued by the Ministry for the Ecological Transition) governing recycling of very low-level metallic waste in France were published in the *Journal Officiel* of 15 February 2022. EDF is thus continuing with the development of a segmentation and fusing facility to process and recycle the very low-level metallic waste resulting from decommissioning of nuclear plants. This project, called Technocentre, is led by EDF in collaboration with Orano, with a target commissioning date of 2031. In line with France's 5th National Plan for Managing Radioactive Matter and Waste, a roadmap setting out the objectives and timetable for the Technocentre project was sent to the DGEC in early 2023. Referral of the project to the National Commission of Public Debate was realised in mid-January 2024.

Developments in 2022

In 2022, the annual review of cost estimates incorporated the most recent assumptions regarding management of this waste. This had no significant impact on provisions.

Developments in 2023

As in 2022, the 2023 annual review of cost estimates incorporated the most recent assumptions regarding management of this waste, and had no significant impact on provisions. It should be noted that this review took account of the effects of France's Finance Law for 2024, which introduces a general tax on polluting activities in order to encourage recycling of very low-level metallic waste, and reduces the INB tax on storage centres once they are permanently shut down. These steps will modify the storage costs invoiced by ANDRA.

Long-lived low-level waste

Long-lived low-level waste belonging to EDF essentially consists of graphite waste from the ongoing decommissioning of the former UNGG (natural uranium graphite gas-cooled) nuclear plants.

As this waste has a long lifetime but is lower-level than long-lived medium and high-level waste, specific subsurface storage requirements apply under the French Law of 28 June 2006.

Following the initial geological investigations, in July 2015 ANDRA remitted a report on a proposed storage centre for long-lived low-level waste on a site located in the Soulaines region (Aube) in France. This report was submitted to the ASN for its opinion. Uncertainties remain about the site's capacity to accommodate all of the waste included in the baseline inventory of the long-lived low-level waste storage facility.

Further studies were planned under the 2016 - 2018 period of the National Plan for Managing Radioactive Matter and Waste (PNGMDR), concerning both the feasibility of this storage centre and the search for additional waste management solutions. The ASN's opinion on management of this waste, issued on 6 August 2020, and the 5th PNGMDR for 2022-2026 (decree 2022-1547 and the implementation decision were published in the *Journal Officiel* of 10 December 2022) set ANDRA the deadline of 2023 to produce a file presenting the technical and safety options selected for storage of long-lived low-level waste at the Vendeuvre-Soulaines site. The file is currently being finalised by ANDRA, to be sent to the ASN in early 2024.

The initial results of the studies conducted by EDF to characterise the radiological inventory of graphite waste in more detail suggest that it should be possible to store the graphite resulting from decommissioning of the first UNGG reactor to be dismantled (Chinon A2) not at the proposed Vendeuvre-Soulaines centre, but at the Aube storage centre for short-lived low-level waste. ANDRA has issued a preliminary opinion declaring that graphite waste falls within the scope of this centre's radiological specifications. Analyses of the nature of packages and waste concerned are continuing.

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Long-lived medium and high-level waste

Long-lived medium and high-level waste essentially comes from processing of spent fuel, and to a lesser extent waste resulting from nuclear plant decommissioning (metallic components that have been inside the reactor).

The Cigéo project for an industrial geological storage centre

The French Law of 28 June 2006 requires reversible storage in deep geological layers for long-lived medium and high-level waste.

On 15 January 2016 the Ministry of Ecology, Sustainable Development and Energy issued a ministerial order setting the target cost for the Cigéo storage project at €25 billion under 2011 year-end economic conditions. The cost as defined constitutes an objective to be met by ANDRA, in compliance with safety standards set by the ASN, working in close cooperation with the operators of nuclear installations. This cost is expected to be updated by 2025.

The provisions for storage of long-lived medium and high-level waste, totalling €8,805 million (including preliminary interim storage of radioactive waste resulting from spent fuel processing, removal to the storage site, and direct storage of spent fuel that cannot be recycled in existing installations), are based on the cost objective for storage, taking account of producers' shares that depend on the volumes and characteristics of the waste.

In application of this ministerial order, the cost of the Cigéo project will be regularly updated, at least at each key milestone in the course of the project's development (authorisation to create the facility, commissioning, end of the "pilot industrial phase", safety reviews) in accordance with the opinion of the ASN.

This project has seen the following developments since 2016:

- 2016: in April 2016, ANDRA sent the ASN a safety option report (DOS), and the law of 11 July 2016 clarified the concept of reversibility.
- 2018: in January 2018, the ASN issued its opinion on the DOS. It considered that the Cigéo project had reached satisfactory overall technological maturity at that stage. This opinion included a requirement for examination of alternatives to the proposal to store bituminous waste at Cigéo with no processing.
- 2019: in September 2019, a group of experts appointed by the DGEC to draw up a report on current bituminous waste management concluded that various options were feasible (storage or neutralisation) but stressed the importance of continuing the studies in order to identify the most appropriate option. A quadripartite research programme involving producers and ANDRA was started, to support the application for authorisation to create the facility. The research will continue while the application is being examined for the Decree authorising creation.
- 2020: A detailed design review by a group of independent experts, organised at the request of the DGEC, reported its conclusions. While issuing a generally favourable opinion for ANDRA's submission, the experts made a certain number of recommendations for finalisation of the detailed design studies and the application for authorisation to create the centre, calling for closer involvement of EDF, Orano and the CEA on these matters.

  Also in 2020, the French Finance Law for 2021, published in the *Journal officiel* of 30 December 2020, included a change to the tax treatment of this project (based on storage tax instead of the standard tax regime). At the 2023 year-end, the measures related to this law still remain to be defined and supervised by the French government to prevent any related cost increase for the Cigeo project.
- 2021: After its filing by ANDRA in August 2020, its examination by the government departments and a public inquiry from 15 September to 23 October 2021, the application for a *Déclaration d'utilité publique* (DUP) officially recognising the public utility of the Cigéo storage centre received a favourable opinion from the inquiry commissioners on 20 December 2021.
- 2022: On 8 July 2022, the DUP decree was published.

The delivery horizon for the first waste packages was also clarified. It should begin between 2035 and 2040 according to the ANDRA report of October 2022 summarising the consultations on the pilot industrial phase and governance of the Cigéo project, whereas at the end of 2021, producers were working on the hypothesis that the first waste packages would be received in 2031. Consequently, the provision was updated in 2022 to reflect this deferred reception date for the first packages, with no significant impact.

ANDRA filed an application to the Ministry for the Energy Transition in January 2023 for authorisation to create the Cigeo centre, and on 22 June 2023 the ASN published an announcement confirming that the application was admissible. This made it possible to begin technical examination of the application: the first meeting of the Permanent Group of experts is scheduled to take place in April 2024, the second in late 2024 and the third in mid-2025, with the ASN opinion expected in September 2025. In October 2023, following a request from the Council of State for a ruling, France's Constitutional Council confirmed that the project is constitutional and preserves the rights of future generations.

The decree authorising creation is expected in 2027.

ICEDA

The provision established for long-lived medium and high-level waste also includes €855 million to cover the conditioning and interim storage of long-lived medium-level waste, principally at the ICEDA conditioning and storage facility *(Installation de Conditionnement et d'Entreposage des Déchets Activés)*.

This facility, constructed at the Bugey power plant, received its first waste packages in September 2020 after the ASN authorised its commissioning on 28 July 2020. The ASN's decision approving and governing the conditioning of long-lived medium-level waste into packages at the ICEDA facility was formally received on 19 July 2021. Since then, the facility has completed five waste conditioning operations, including packaging of active operating waste from Fessenheim which arrived in September 2023.

15.1.1.3 Provisions for nuclear plant decommissioning

EDF bears full technical and financial responsibility for decommissioning of the basic nuclear facilities (*Installations Nucléaires de Base*, INB) it operates. The final shutdown and decommissioning process is governed by legal provisions and regulations set out in Articles L. 593-20 to L 593-25 and R.593-65 to R.593-74 of the environmental code. It involves the following operations for each INB:

- a definitive shutdown declaration, to be made at least two years prior to the planned shutdown date: since the Energy Transition Law of 17 August 2015, the final shutdown of the INB, which takes place during its operating phase, is considered separately from its dismantling, as a significant modification of lesser importance (simply requiring a declaration by the operator to the Minister and the ASN);
- a dismantling plan compiled by the operator and sent to the minister in charge of nuclear safety, which after examination by the authorities and a public inquiry, leads to a decree prescribing dismantling that authorises the start of dismantling operations;
- key-stage progress reviews submitted for the ASN's approval, with a safety file specific to the dismantling operations to be performed;
- an internal control process concerning significant modifications introduced by the operator in the case of operations that must be declared to or approved by the ASN;
- finally, once these operations are complete, declassification of the facility, which removes it from the scope of the laws governing basic nuclear facilities.

The decommissioning scenario adopted by EDF complies with France's Environmental Code, which requires as short a period as possible to elapse between final shutdown and dismantling in economically acceptable conditions and in compliance with the principles laid down in Article L. 1333 - 1 of the Public Health Code (radioprotection) and section II of Article L. 110 - 1 of the Environmental Code (protection of the environment). The intended end-state is industrial use: the sites will be restored to their original condition and will be reusable for industrial purposes.

The ongoing dismantling operations concern plants that were constructed and operated before the nuclear fleet currently in operation, known as "first-generation" plants, the Superphenix plant, and the Irradiated Materials Workshop in Chinon. These operations cover four different technologies: a heavy water reactor (Brennilis), a sodium-cooled fast-neutron reactor (the Superphenix at Creys-Malville), natural uranium graphite gas-cooled (UNGG) reactors (at Chinon, Saint-Laurent and Bugey) and a pressurised water reactor (PWR, at Chooz).

For the Fessenheim PWR plant, the dismantling application is currently under examination by the ASN, and the operations completed concern the pre-dismantling phase.

Each of these operations is a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no international experience. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists. Decommissioning of the PWR is benefiting from past experience (essentially in the US and limited). The Chooz plant also has the specificity of being partly located in a cave: this means it is also a unique operation, generating experience that is not immediately transposable and involves specific challenges.

Based on the ongoing decommissioning operations at permanently shut-down plants (particularly the experience gained from the Chooz PWR), the studies conducted for the Summary Preliminary Plan for the two 900MW reactors at Fessenheim, and the preparatory work for dismantling of Fessenheim, it was possible at the end of 2021 to establish a detailed reference estimate of future decommissioning costs for the nuclear fleet currently in operation ("second-generation" plants). However, neither EDF nor any other operator has yet begun a decommissioning programme on a scale comparable to the current PWR fleet, and as a result the estimates include both opportunities and risks, especially associated with the scale effect.

The decommissioning provisions cover future decommissioning expenses as described above (excluding the cost of removing waste from the site and storing it, which is covered by the provisions for long-term waste management).

Details of changes in provisions for nuclear plant decommissioning are as follows:

(in millions of euros)	31/12/2022	Increases	Decreases	Discount effect	Other movements	31/12/2023
Provisions for decommissioning nuclear plants in operation	12,125	-	(9)	585	301	13,002
Provisions for decommissioning permanently shut-down nuclear plants	4,969	294	(215)	369	-	5,417
PROVISIONS FOR NUCLEAR PLANT DECOMMISSIONING	**17,094**	**294**	**(224)**	**954**	**301**	**18,419**

"Other movements" in provisions for decommissioning nuclear plants in operation principally include the effects of adjusting the cost estimates to 2023 economic conditions (see note 15.1.1.5), as well as the effects of the other changes in cost estimates detailed below, for provisions backed by assets.

"Decreases" reflect decommissioning expenses paid in 2023. "Increases" essentially correspond to improvements made during the year to the cost estimation methodology for provisions not backed by assets, detailed below.

For nuclear power plants currently in operation (PWR pressurized water reactor plants with 900MW, 1300MW and N4 reactors)

History of the calculation of provisions and the 2014-2015 Audit commissioned by the DGEC (*Direction Générale de l'Énergie et du Climat*)

Until 2013, provisions were estimated based on a 1991 study by the French Ministry of Trade and Industry, which set an estimated *benchmark cost for decommissioning expressed in €/MW*, confirming the assumptions defined in 1979 by the PEON commission. These estimates were confirmed from 2009 by a detailed study of decommissioning costs conducted by EDF at the representative site of Dampierre (four 900MW units), and the results of that study were corroborated by an intercomparison with the study carried out by consultants La Guardia, based mainly on the Maine Yankee reactor in the United States.

In 2014 the Dampierre study was reviewed by EDF to make sure that the previous calculations were still valid in view of recent developments and experience, both internationally and internally, which called the past estimates into question. For this review, the decommissioning provisions for plants in operation were based on costs resulting from the Dampierre study, in order to incorporate the company's best estimates and experience from inside and outside France. This change of estimate had no significant impact on the level of provisions at 31 December 2014.

Between June 2014 and July 2015, an audit of decommissioning costs for EDF's nuclear fleet currently in operation was conducted by specialised consulting firms, at the request of the French Department for Energy and Climate (*Direction Générale de l'Énergie et du Climat* or DGEC). On 15 January 2016 the DGEC published a summary of the audit report. It stated that although estimating the cost of decommissioning nuclear reactors is a demanding exercise due to relatively limited past experience, the prospects of changes in techniques and the distant timing of the expenditure, overall, the audit confirmed EDF's estimate of decommissioning costs for its nuclear fleet currently in operation. The DGEC also made a number of recommendations to EDF following this audit.

Revision in 2016 and current basis for estimation

In 2016, EDF revised the decommissioning estimate, in order to incorporate the recommendations resulting from the audit commissioned by the DGEC, and past experience gained from dismantling operations for first-generation reactors (particularly Chooz A).

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A detailed analytical approach was used to revise this estimate, identifying all costs for the engineering, construction work, operation and waste processing involved in future decommissioning of reactors currently in operation. This led to figures based on detailed timetables for plant decommissioning. The approach adopted provided a more thorough assessment of costs specific to the first-of-their-kind units, estimated for each series based on transposition coefficients applied to the baseline costs for the initial 900MW unit, and the series and mutualisation effects, as these costs and effects are inherent to the fleet's size and configuration. In 2021, the reference estimate of decommissioning costs for the first 900MW unit was updated based on preliminary studies conducted in preparation for the decommissioning of Fessenheim, and experience gained at the beginning of the pre-dismantling phase.

The natures of the principal series and mutualisation effects used to arrive at the estimate are explained below.

Series effects (effects of work at a first-of-a-kind site on the following sites of the same series) are mainly of two types:

- first, in a fleet using the same technology, many studies do not need to be repeated each time;
- second, in a fleet using the same technology, robots and tooling can be largely reused from one site to another.

Mutualisation effects (effects between units on the same site, whether in operation or being decommissioned) are of several different types:

- some of them relate to the fact that several reactors may share common buildings and facilities on the same site, and these buildings and facilities will not have to be dismantled twice;
- certain costs are not higher when two or four reactors are dismantled on the same site. This is usually the case for surveillance costs, common equipment, and the cost of maintaining safe operating conditions on the site.

Due to mutualisation effects, dismantling a pair of reactors on the same site costs less than dismantling two standalone reactors on two different sites. In France, unlike other countries, there are no single reactors but sites with two or four, and in one case six reactors.

Series and mutualisation effects reduce the estimated decommissioning cost by 9% and 7% respectively compared to an estimate for the PWR fleet currently in operation that ignores these effects. Series and mutualisation effects vary depending on the series: they are greater when there are more units in a series (series effect) and more units on a site (mutualisation effect), leading to a combined effect (series and mutualisation effect) of over 16% for the 900MW series.

In particular, series and mutualisation effects explain why it is not appropriate simply to compare the average dismantling cost per reactor between the French fleet and other countries' nuclear fleets.

Conversely, the estimates only marginally reflect changes in productivity and the learning effect. The DGEC-ordered external audit of the decommissioning cost for the fleet currently in operation considered that this approach resulted in a prudent estimation method.

For reasons of prudence, the estimate also includes an assessment of risks and uncertainties as follows:

- incorporation of uncertainties relating to each "elementary" block of costs, the schedule, series effects, mutualisation effects, transposition coefficients and fleet expenses;
- incorporation of risks, corresponding to the completion risks (which are identifiable and quantifiable, but only contingent). From the 2023 year-end, the financial consequences of these risks are based on valuation of a register of identified risks that incorporates the schedule impact (referring notably to an adapted version of the Fessenheim project risk register, rather than applying a flat-rate increase as previously).

The above method for assessing risks and uncertainties led to an overall margin of some 19.3% for the whole fleet currently in operation (22.4% for the reference Fessenheim cost estimate).

Since its in-depth revision in 2016 this cost estimate has been reviewed annually. The reviews have led to non-significant annual adjustments.

EDF also confirms its analyses through an international intercomparison, taking care to identify and characterise a number of factors that could distort direct comparisons, for example differences in the scope concerned by the cost estimate, or national and regulatory contexts.

Developments in 2022

The annual review of the estimate did not lead to any significant impact on provisions.

Developments in 2023

The annual review of the estimate in 2023 took into consideration methodological changes and experience acquired from Fessenheim, principally:

- methodological changes (which also apply to provisions for decommissioning permanently shut-down power plants and long-term waste management) regarding the assessment of requirements for research and engineering, a first reference[1] to the risk of obsolescence in existing equipment that is needed for dismantling, and the implementation of an analytical method for assessment of scheduling risks that was already applied in 2022 to most decommissioning projects for permanently shut-down power plants;
- inclusion of an assumption that decommissioning of the 900MW series will begin with pairs of reactors (as opposed to the previous assumption of independent start dates for each reactor), following experience gained from preparations for the Fessenheim decommissioning;
- an update to property costs (covering general operation and maintenance of the non-industrial sections of the plants), particularly by reference to the most recent cost figures for the Fessenheim site;
- reference to a register of risks identified in the PWR fleet (instead of the previous practice of assigning standard values to risks), applying the valuation methods used for other plants being decommissioned (based in particular on an adapted version of the Fessenheim project risk register);
- revised extrapolation coefficients (transposition and mutualisation) for operating purchase costs, based on historical data for the currently active fleet.

Overall, the above factors in the annual cost estimate review had a non-significant impact on provisions for decommissioning of nuclear power plants currently in operation.

Based on the estimates of the different types of cost, the cost to completion (in 2023 euros) amounts to approximately €0.56 billion for one reactor at Fessenheim, compared to an average cost of €0.42 billion per unit for the entire PWR fleet when the series and mutualisation effects described above are taken into account.

For permanently shut-down nuclear power plants

Decommissioning of shut-down reactors involves pilot operations corresponding to four different technologies, each with clear specificities: a PWR reactor at Chooz A located in a cave, UNGG (natural uranium graphite gas-cooled) reactors at Bugey, Saint-Laurent and Chinon, a heavy water reactor at Brennilis, a sodium-cooled fast neutron reactor at Creys-Malville, and the first-of-a-kind second-generation PWR reactor at Fessenheim.

(1) Following an initial survey, 3 major families of equipment to prioritise were identified and are being modernised: lifting equipment, fire detection equipment, and instrumentation and control equipment. A further general study of obsolescence, based on systematic screening of machines and equipment, is in process and will continue in 2024.

Basis for estimation

The decommissioning costs are based on estimates that take account of accumulated industrial experience, unforeseeable and regulatory developments, and the latest available figures. They have been revised annually since 2015.

The industrial scenario for dismantling of the UNGG reactors was reviewed in depth in late 2015, leading in particular to a switch from "underwater" to "in-air" dismantling, which involves:

- an essentially remote-controlled dismantling process;
- qualification of tools and the remote operation platform on an "industrial demonstrator", which was inaugurated in 2022;
- dismantling of the initial first-of-a-kind reactor (Chinon A2), and putting the 5 other reactors into a safe storage configuration.

Under this strategy, dismantling operations for the reactor caissons (including the site decontamination and rehabilitation phase) should be completed between 2063 and 2093, depending on the reactors.

Updating the industrial decommissioning scenario for first-generation power plants, particularly UNGG plants, led to a €590 million increase in the provision at 31 December 2015.

From 2016 to 2021:

The amendment made in 2015 to the industrial scenario for dismantling of the UNGG reactors was presented to the ASN's commissioners on 29 March 2016, and examined by the ASN until 2019. It was reviewed by international experts, examined by the IRSN, and was the subject of three hearings before the ASN's commissioners, before the ASN issued two decisions dated 3 March 2020. These decisions and the discussions prior to their adoption by the ASN showed that there was convergence on most major technical questions: the dismantling technique ("in-air"), the usefulness of setting up an industrial demonstrator to develop the tools required for these complex operations, the timetable for dismantling the Chinon A2 reactor, and the need to gain experience from operations on a first reactor.

Regarding the timetable of operations, in draft decisions issued for public consultation in 2019, the ASN asked for this work to be brought forward compared to EDF's proposed schedule, so that dismantling operations on the five reactors after Chinon A2 would begin "no later than 31 December 2055".

In view of this request for a shorter timescale, the nuclear provisions were increased in 2019 by a total €108 million: €77 million for decommissioning provisions for permanently shut-down nuclear power plants and €31 million for provisions for long-term radioactive waste management (for long-lived low-level waste, very low-level and low and medium-level waste).

The ASN's decisions concerning dismantling of the UNGG reactors were published in March 2020 and did not contradict the principles of the draft decisions of 2019. Consequently, the nuclear provisions for decommissioning of UNGG plants were not subjected to any particular reestimation in 2020, and reflect the best estimate of the industrial and technical scenario.

Finally, in accordance with its powers under Article 594-4 of the Environment Code, in June 2020 the DGEC commissioned an external audit of the estimated cost of dismantling operations for EDF's permanently shut-down nuclear facilities (the UNGG plants and management of its long-lived low-level waste, Superphenix and Brennilis), conducted by a consortium of specialist firms. This audit took place from December 2020 to July 2021, and the audit report was posted on the Ministry for the Ecological Transition website in November 2021. Its conclusions (confirming the ASN's observations during its inspection of complex project management, the conclusions of which were released in the first quarter of 2021) highlight "an organisation with a structural focus on execution of dismantling projects", an "annual estimation and revision process [that] is robust, and provides good traceability for the assumptions used and the original data", and "a long-term industrial approach to overcome the small number of technological challenges that remain". Finally, the report states that apart from a non-significant correction (taken into account in the 2021 provisions), "the provisions are coherent with the basic scenarios of the projects and cover the full scope of expenses for the scope audited", and were found to be of "adequate scale" through testing the scale of EDF's expenses and provisions.

Developments in 2022

In 2022, following the recommendations made by the DGEC-commissioned audit to confirm scheduling risk assessments and the uncertainty levels concerning estimates, an analytical methodology for assessment of scheduling risks and uncertainties (applied to most of decommissioning projects currently in process) and an additional level of uncertainty for estimates "based on expert assessment" (used in provisions for decommissioning and radioactive waste management) were introduced. This led to an increase of €116 million to decommissioning provisions for permanently shut-down nuclear plants.

The provision for decommissioning of Chooz A was also increased by €37 million to take account of confirmed experience, regarding unforeseen events and delays observed during the dismantling of the reactor vessel (slower segmentation, and unavailability of the bridge crane). As a result of this experience, the vessel dismantling work has been prolonged by 18 months, and a risk of a further 14-month delay on the overall timetable has been identified.

For UNGG plants, the annual review of cost estimates took into consideration delays in obtaining the dismantling decrees (which are now expected in late 2026 rather than late 2025 as previously). This did not have a significant impact on the provisions.

Over a short-term horizon, the provisions take into account expectations that the rises in certain commodity, energy and transport prices will exceed forecast inflation, particularly given the types of purchases relating to decommissioning expenses. This had an impact of €33 million on provisions for decommissioning of permanently shut-down nuclear plants.

Developments in 2023

The annual review in 2023 of the cost estimate for decommissioning of permanently shut-down power plants took into consideration methodological changes regarding the assessment of requirements for research and engineering, the risk of obsolescence in existing equipment that is needed for dismantling (such as maintenance and lifting equipment), and the general application of an analytical method for estimating schedule risks and uncertainties that was already applied in 2022 to most current decommissioning projects. These factors led to an €182 million increase in provisions.

It should also be noted that provisions for decommissioning of permanently shut-down power plants were increased by €41 million to reflect property costs (covering general operation and maintenance of the non-industrial sections of the plants), after the estimate for those costs was updated.

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At 31 December 2023, the gross amounts estimated under year-end economic conditions (amounts still to be spent) and the present value of those amounts are as follows, presented by type of reactor technology:

	31/12/2023	
(In millions of euros)	Costs based on year-end economic conditions	Amounts in provisions at present value
Pressurised water reactor - PWR - Chooz A	340	297
Pressurised water reactor - PWR – Fessenheim[(1)]	994	825
Natural uranium graphite gas-cooled reactors – UNGG - Bugey, Saint Laurent, Chinon	6,172	3,196
Heavy water reactor – Brennilis	392	341
Sodium-cooled fast neutron reactor – Superphenix at Creys Malville	637	561

(1) Excluding interim storage and processing of steam generators.

Provisions for decommissioning of permanently shut-down nuclear plants also cover dismantling costs for related facilities such as the APEC Fuel Storage Workshop at Creys-Malville and the BCOT Operational Hot Unit at Tricastin.

Compared to decommissioning costs for the PWR technology, the cost at completion (all costs both settled and remaining) for decommissioning of the other reactors is higher, to different extents depending on their specific characteristics:

- costs are around twice as high for Brennilis (completion cost of approximately €1.0 billion for one reactor) due to its compactness, the fact that the core is encased in concrete and thus difficult to access, the absence of a fuel pool, which complicates remote-controlled segmentation, and the presence of zircaloy (a fire hazard), meaning that segmentation work takes longer and must be more closely supervised;
- costs are around twice as high for UNGG reactors (completion cost of approximately €7.3 billion for six reactors), because they require removal of 20 times more material than a PWR due to their size, and contain graphite which is hard to access and requires special handling such that specific remote-controlled equipment must be developed;
- costs are around four times as high for Superphenix (completion cost of approximately €2.1 billion for one reactor), due to processing of sodium for which elimination is very sensitive, and the size of the facilities, especially the reactor (with a vessel 20 times bigger than the vessel of the 1300MW PWR).

The following progress has been made on permanently shut-down plants:

- Chooz A: the reactor was shut down in 1991 and nuclear dismantling began in 2007 after the dismantling decree was issued. The final stage of dismantling began in 2016 and involves segmentation, conditioning and removal of reactor vessel internals, to be followed by dismantling of the vessel itself. Difficulties were encountered on the site until 2022 (the Covid crisis, unavailability of the bridge crane), but work has now progressed and the reactor building pool was fully emptied by the summer of 2023. Segmentation of the vessel itself will begin in 2025 and end in 2026. A partnership agreement with the French national research agency CNRS was signed on 7 September 2022 for reuse of the caverns for research on neutrinos. Reconfiguration of the cavern is due to be completed in 2033 with a view to transferring it to the CNRS. The plant should be declassified by the end of 2035;
- Fessenheim: the two pressurised water reactors were shut down definitively on 22 February 2020 and 30 June 2020 respectively, in accordance with the law and before the end of their technical operating lifetime. The dismantling plan was sent to the Minister for the Ecological Transition and the ASN in December 2020. In early 2022, the *Mission de la Sûreté Nucléaire et de la Radioprotection* (MSNR) and the ASN formally acknowledged reception of an expanded version of this plan. The IRSN issued its opinion on 1 June 2023. Its report does not note any evidence of divergence of technical matters or approach in either the safety demonstration or the impact study. Based on EDF's commitments and the IRSN report, the Permanent Group of experts, at its meeting of 22 June 2023, only made one recommendation: "the Permanent Group of experts recommends that EDF should, before implementing dismantling operations for the vessels and their internals, present a file justifying the technical and organisational design and operation measures chosen to control the risks of dissemination of radioactive substances and exposure of workers to ionising rays associated with these operations". According to the ongoing schedule, the dismantling decree for the Fessenheim installations is expected to be issued in early 2026. Issuance of the decree prescribing the dismantling operations will mark the start of Fessenheim's dismantling phase. At 31 December 2023, progress on the pre-dismantling operations (including full defueling and total chemical decontamination of both primary circuit reactors) was in line with the provisional schedule.
- UNGG reactors: these six reactors were shut down between 1973 and 1994 and received their dismantling decrees between 2008 and 2010 (except for Chinon A1 and A2). Defuelling and circuit draining have been completed for all these reactors, and dismantling operations are in process for the conventional and nuclear buildings in the periphery of the "reactor caissons". Following the ASN's decision of 2020, applications for dismantling permits were submitted for all these reactors in December 2022, to obtain new decrees allowing continuation of dismantling operations under an "in-air" strategy (these are expected for the end of 2026 at the earliest). Opening of the top part of the first UNGG reactor caisson – Chinon A2 – is expected in 2034: the initial extractions of vessel internals and graphite blocks are due to start in 2041 and last 14 years. In parallel, the other UNGG sites are finalising work to put the sites into a safe storage configuration (by 2037). A safe storage configuration state means that 80% of surfaces have been dismantled and the reactor caissons are safe while awaiting the full benefit of experience on dismantling the caisson of the Chinon A2 first-of-a-kind unit. Opening of subsequent caissons is scheduled to begin from 2056;
- Superphenix: this plant was shut down in 1998 and received its dismantling decree in 2006. The following key stages have been completed: defuelling, dismantling of the turbine hall, drainage of the circuits, processing and elimination of the sodium used for cooling in all circuits, filling the reactor vessel, opening and extracting the vessel caps, and the start of dismantling of the core vessel cap (which weighs several hundred tonnes). The next stages are dismantling the vessel internals (due to be completed in 2026), electromechanical dismantling in the reactor building, then decontamination (the plant is expected to be declassified in 2034);

- Brennilis: this plant was shut down in 1985 and received a partial dismantling decree in 2011 allowing dismantling of all installations peripheral to the "reactor block". The following key stages have been completed: defuelling, dismantling of the turbine hall, the fuel building, auxiliary buildings, heat exchangers and the effluent treatment station. On 26 September 2023 the Brennilis plant received its "full dismantling" decree allowing work to begin on dismantling the reactor block and demolition of the containment building, with site rehabilitation expected in 2040.

15.1.1.4 Provisions for last cores

These provisions cover the future expenses resulting from scrapping fuel that will only be partially irradiated when the reactor is shut down. They are estimated based on:

- the cost of the loss on fuel in the reactor that is not totally spent at the time of final reactor shutdown and cannot be reused due to technical and regulatory constraints ("front-end" expenses);
- the cost of fuel processing, and waste removal and storage operations ("back-end" expenses). These costs are estimated in a similar way to provisions for spent fuel management and long-term radioactive waste management.

These unavoidable costs are components of the cost of nuclear generating unit shutdown and decommissioning. As such, they are fully covered by provisions from the commissioning date and an asset associated with the provision is recognised. In a decision of 11 December 2020, France's Council of State challenged the tax-deductibility of the consequences of immediate recognition of a provision for dismantling of the last core ("front-end" last core expenses). In a ruling of 31 March 2023, the Council of State definitively confirmed that this nuclear provision is not tax-deductible (see note 17.3.1).

In 2022, provisions for last cores were adjusted after experience with core management at Fessenheim and its optimisation was finalised. The main consequence was an update to the masses of unused heavy metals included in the calculation of the last core provisions for the entire fleet, resulting in a €(145) million decrease in provisions.

In 2023, provisions for last cores were increased by €103 million after the costs of processing operations were updated (see note 15.1.1.1).

15.1.1.5 Discount rate, inflation and sensitivity analyses

Calculation of the discount rate and inflation rate

The discount rate is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (OAT bond 0-20 year curve) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) - with yields that become close to the UFR after 50 years – plus a curve of the spread of corporate bonds rated A to BBB. Based on the disbursement outflows expected to meet nuclear obligations, a single equivalent discount rate is deduced by applying the discount rates from the interest rate curve constructed in this way to each flow as appropriate to its maturity. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions.

The UFR was defined by the European Insurance and Occupational Pensions Authority (EIOPA) for very long-term insurance liabilities that will involve disbursements beyond market horizons. The UFR calculated for 2023 (taking into account a 2% inflation rate) is 3.35%. This is used in the calculation methodology, in compliance with the decision by the French authorities, which in the ministerial order of 1 July 2020 amending the order of 21 March 2007 on secure financing of nuclear expenses (see below) changed the formula of the regulatory ceiling for the discount rate, such that it now refers to the UFR instead of the arithmetic 48-month average of the TEC 30-year rate. The UFR is considered more relevant for nuclear provisions in view of the very long-term maturities. The sovereign yield curve at 31 December 2023 indicates rates in a range of [2.2%; 3%] ([2.7%; 3.3%] in 2022) for outflows between 0 and 20 years, ([3%; 3.2%] [3.3%; 3.4%] in 2022) for outflows between 20 and 50 years, and a rate moving towards 3.35% (3.43% in 2022) for outflows after 50 years.

This calculation methodology for the discount rate provides the best assessment of the time value of money with regard to nuclear provisions, which are characterised by very long-term disbursement outflows, well beyond market horizons. This assessment is largely achieved through:

- use of an interest rate curve based on observed year-end market data with liquid horizons, converging over nonliquid horizons towards a very long-term rate with no cycle effect, *i.e.* yield data for all the maturities associated with nuclear provisions;
- use of a very long-term rate (calculated UFR) produced by an independent body and now adopted by the French authorities in setting the formula for the regulatory ceiling, to take account of long trends in yield movements, in coherence with the distant disbursement horizon;
- references to spreads on corporate bonds rated A to BBB by ratings agencies, in order to construct a robust spread curve since there are few AA-rated bonds, particularly on long maturities, whereas most "Investment Grade" bonds are BBB-rated and the great majority of them have longer maturities.

The inflation assumption is based on an inflation curve constructed by reference to inflation-indexed market products and economic forecasts, in long-term coherence with the inflation assumption underlying the UFR (2%).

The discount rate determined is thus 4.5% at 31 December 2023 (4.8% at 31 December 2022), assuming inflation of 2.0% (2.3% at 31 December 2022), *i.e.* a real discount rate of 2.5% at 31 December 2023 (2.5% at 31 December 2022).

The decrease in the discount rate reflects the observed decrease in OAT bond rates at the very end of 2023, and to a lesser degree the narrower corporate bond spreads compared to 31 December 2022, as the markets anticipated the incipient downturn in inflation.

The decrease in the inflation rate assumption reflects the lower inflation forecasts in France. A 2% long-term inflation rate is still used given the ECB's target level, consistent with the inflation assumption underlying the UFR (Ultimate Forward Rate).

Furthermore, as inflation in 2023 was much higher than long-term inflation and the actual inflation rate consequently exceeded the initial inflation forecast (corresponding to long-term inflation), cost estimates were adjusted to 2023 year-end economic conditions, with a total impact of €801 million on provisions for decommissioning, spent fuel management and waste management.

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Regulatory discount rate limit

The discount rate must comply with two regulatory limits. Under article D594-4 of the Environmental Code and the ministerial order of 1 July 2020 on secure financing for nuclear expenses (which amended the initial ministerial order of 21 March 2007), it must be lower than:

- a regulatory maximum, expressed in real value, *i.e.* net of inflation; this value is equal to the unrounded value representative of expectations concerning the real long-term interest rate, as used for the calculation of the Ultimate Forward Rate (UFR) applicable at the date concerned published by the European Insurance and Occupational Pensions Authority (EIOPA), plus 150bp. In compliance with the ministerial order of 27 December 2023 amending the order of 1 July 2020, this limit is applicable from 2023 (before this order was issued, it was to be calculated under a transitional formula until 2023 and the target formula was only due to apply from 2024);
- and the expected rate of return on assets covering the liability (dedicated assets).

The maximum discount rate calculated by reference to the UFR in application of the order that took effect on 27 December 2023 is 2.85% at 31 December 2023 (2.85% at 31 December 2022).

The real discount rate used in the financial statements at 31 December 2023, calculated by the method presented above, is 2.5%.

Analyses of sensitivity to macro-economic assumptions

Sensitivity to assumptions concerning costs, inflation rate, long-term discount rate, and disbursement schedules can be estimated through comparison of the gross amount estimated under year-end economic conditions with the present value of the amount.

Provisions related to nuclear generation within the scope of the Law of 28 June 2006 (in millions of euros)	31/12/2023 Costs based on year-end economic conditions	31/12/2023 Amounts in provisions at present value	31/12/2022 Costs based on year-end economic conditions	31/12/2022 Amounts in provisions at present value
Spent fuel management	18,998	12,657	16,194	10,184
- amount unrelated to the operating cycle	*3,658*	*1,760*	*3,417*	*1,607*
Long-term radioactive waste management	38,467	13,205	36,996	12,475
BACK-END NUCLEAR CYCLE EXPENSES	**57,465**	**25,862**	**53,190**	**22,659**
Decommissioning of nuclear plants in operation	23,335	13,002	21,381	12,125
Decommissioning of shut-down nuclear plants	8,832	5,417	8,219	4,969
Last cores	4,668	2,720	4,189	2,434
DECOMMISSIONING AND LAST CORE EXPENSES	**36,835**	**21,139**	**33,789**	**19,528**
PROVISIONS RELATED TO NUCLEAR GENERATION within the scope of the law of 28 June 2006	**-**	**47,001**		**42,187**

The cumulative disbursements of nuclear expenses (based on gross values at year-end economic conditions) are distributed as follows:

Provisions related to nuclear generation within the scope of the Law of 28 June 2006 (in millions of euros)	31/12/2023 Costs based on year-end economic conditions Disbursement expected within 10 years	Disbursement expected after 10 years[1]	Total
Spent fuel management	10,117	8,881	18,998
- amount unrelated to the operating cycle	*611*	*3,047*	*3,658*
Long-term radioactive waste management	5,633	32,834	38,467
BACK-END NUCLEAR CYCLE EXPENSES	**15,750**	**41,715**	**57,465**
Decommissioning of nuclear plants in operation	483	22,852	23,335
Decommissioning of shut-down nuclear plants	3,503	5,329	8,832
Last cores	722	3,946	4,668
DECOMMISSIONING AND LAST CORE EXPENSES	**4,708**	**32,127**	**36,835**

(1) Over a 20-year and 50-year horizon, 22% and 43% respectively of cumulative disbursements (at year-end economic conditions) will concern long-term radioactive waste management provisions, and 35% and 96% respectively will concern decommissioning provisions.

For additional information, the table below shows the estimated impact of a +/-20bp change in the discount rate on the present value of provisions for the back-end of the nuclear cycle, decommissioning of nuclear plants and last cores:

At 31 December 2023:

(in millions of euros)	Amounts in provisions at present value	Sensitivity to discount rate			
		Balance sheet provisions		Pre-tax net income	
		+0.20%	-0.20%	+0.20%	-0,20%
Back-end nuclear cycle expenses:					
- spent fuel management	13,876	(232)	246	194	(206)
- long-term radioactive waste management	13,205	(722)	810	565	(642)
Decommissioning and last core expenses:					
- decommissioning of nuclear plants in operation	13,002	(571)	601	-	-
- decommissioning of shut-down nuclear plants	5,417	(163)	174	163	(174)
- last cores	2,720	(93)	99	-	-
TOTAL	**48,220**	**(1,781)**	**1,930**	**922**	**(1,022)**
Amount covered by dedicated assets	*33,989*	*(1,571)*	*1,710*	*801*	*(895)*

The impact of a +/-10 base point variation in discount rates on the present value of provisions for the back-end of the nuclear cycle, decommissioning and last cores is estimated at €(908)/945 million, including €473/(497) million on the pre-tax net income.

15.1.2 EDF's dedicated assets

15.1.2.1 Regulations

Articles L. 594-1 and following of France's Environment Code and their implementing regulations require assets (dedicated assets) to be set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste. These regulations govern the way dedicated assets are built up, and the management and governance of the funds themselves. Dedicated assets are clearly identified and managed separately from the Company's other financial assets and investments. They are also subject to specific monitoring and control by the Board of Directors and the administrative authorities.

The law requires the realisable value of dedicated assets to be higher than the value of the provisions corresponding to the present value of the long-term nuclear expenses defined in France's Environment Code.

The Decree of 1 July 2020 codified the regulatory obligations concerning dedicated assets in articles D594-1 and following of the Environment Code, complemented by the ministerial order of 21 March 2007 amended by the order of 1 July 2020.

The decree of 22 November 2023 updated the rules for investing in dedicated assets. It set certain limits depending on disbursement schedules, and introduced new rules regarding concentration risks. In particular, the shares of CTE, the entity that has held 100% of the capital of RTE since 31 December 2017 (see note 15.1.2.2 below), are no longer subject to any specific restriction. This decree also broadens the options for investing in unlisted assets, such that the ministerial authorisation granted on 31 May 2018 allowing EDF to increase the portion of unlisted assets in its dedicated assets from 10% to 15% subject to conditions is no longer relevant.

Since the decree of 1 July 2020, EDF is no longer obliged to add to dedicated assets when the coverage rate of obligations, determined by the ratio of the assets' realisable value to the amount of the provisions concerned, is above 100%, and withdrawals from assets are not authorised unless that rate is above 120%. The decree also increased the maximum period for allocating funds to dedicated assets in the event of undercoverage, subject to authorisation by the administrative authority, to 5 years (instead of 3 years previously).

15.1.2.2 Strategic allocation and composition of dedicated assets

Given the regulations governing dedicated assets, they form a highly specific category of assets.

Dedicated assets are structured and managed according to a strategic allocation defined by the Board of Directors and reported to the administrative authorities. The strategic allocation is designed to meet the overall objective of long-term coverage of obligations, and determines the structure and management of the portfolio as a whole. It takes into account regulatory constraints concerning the nature and liquidity of the dedicated assets, the financial outlook for the equity and bond markets, and the diversifying contribution of unlisted assets.

Several changes have been made to this strategic allocation in order to pursue the diversification into unlisted assets, particularly in 2010 when the shares in RTE (now held *via* CTE) were allocated to dedicated assets, and in 2013 when an unlisted asset portfolio (consisting of infrastructures, real estate and debt or equity funds) was set up. This portfolio is managed by EDF SA's "EDF Invest" Division.

On 29 June 2018 the Board of Directors validated the principle of strategic allocation for dedicated assets:

- yield assets (target of 30% of dedicated assets), consisting of infrastructure assets, including the shares of CTE, and real estate property;
- growth assets (target of 40% of dedicated assets), consisting of equity funds investing in listed or unlisted equities;
- fixed-income assets (target of 30% of dedicated assets), consisting of listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

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These targets should be reached gradually by 2025.

EDF Invest manages yield assets, but through unlisted investment funds it also manages growth and fixed-income assets.

At 31 December 2023 the total realisable value of assets managed by EDF Invest is €9,482 million, including €8,657 million for yield assets.

Yield assets

The yield assets consist mainly of assets related to investments in infrastructures and real estate, made either directly or by investment funds under delegated management arrangements.

Yield assets particularly include:

- the Group's investments in CTE, Madrileña Red de Gas (MRG), *Aéroports de la Côte d'Azur*, Orange Concessions, Energy Assets Group, Nam Theun Power Company, companies that own wind and solar power plants (in the United States, Canada, and the United Kingdom) and companies that own real estate assets (Central Sicaf, Ecowest, Clariane & Partenaires Immobilier, Issy Shift, 92 France, and LF Memphis), presented in investments in associates in the consolidated balance sheet;
- the Group's investments in Teréga, Porterbrook, Autostrade per l'Italia, Q-Park, Géosel, Norlys Fiber, Databank and companies that own wind farms in the United Kingdom, presented in debt and equity securities in the consolidated balance sheet.

Growth assets and fixed-income assets

Certain growth and fixed-income assets take the form of bonds held directly by EDF. Others consist of specialised collective investment funds on leading international markets and French general-purpose investment funds (FIVGs), managed by independent asset management companies. They take the form of open-end funds and "reserved" funds located in France, established for the company. The reserved funds are owned by EDF and are not consolidated as EDF does not participate in management of these funds and provides no financial support for them.

The value of the assets of the reserved investment funds amounts to €14,579 million at 31 December 2023 (€12,192 million at 31 December 2022). These funds mainly consist of 18 listed funds with total value of €13,298 million (at 31 December 2022, 17 listed funds with total value of €11,000 million).

The listed equity funds consist of international equities (mainly in North America but also in Europe, Asia-Pacific and emerging countries). Listed bonds and listed bond funds consist of sovereign and corporate bonds.

These investments are structured and managed in line with the strategic allocation, which takes into consideration international stock market cycles, for which the statistical inversion generally observed between equity market cycles and bond market cycles – as well as between geographical areas – has led the Group to define a long-term investment policy with appropriate allocation between growth assets and fixed-income assets.

Growth assets also include a small portion of funds invested in unlisted equities, and fixed-income assets also include a small portion of funds invested in unlisted debt. These funds are mainly managed by EDF Invest.

At the year-end, dedicated assets are presented in debt and equity securities in the balance sheet, at their liquidation value.

In the course of operational asset monitoring, the Group applies long-term, specific management rules defined and supervised by its governance bodies (maximum investment ratios, volatility analyses and assessment of individual fund manager quality).

15.1.2.3 · Changes in dedicated assets in 2023

High-risk assets recovered in 2023, partly making up for the ground lost in 2022 due to a favourable economic environment: in the United States particularly, economic growth was very resilient despite tougher financial conditions, and most importantly, the rapid ebb in inflation allowed the central banks to put an end to the cycle of quantitative tightening.

Despite the decline in interest rates observed at the end of the year, equity and bond performances were excellent in 2023.

The listed equities portfolio grew by 18.43% in 2023. In detail, the net performance in euros was 22.69% on North American equities, 14.38% in Europe, 19.20% in Japan and 5.22% in emerging countries.

The bond portfolio grew by more than 8.59% in 2023 despite significantly fluctuating interest rates. The portfolio benefited from tactical management of interest rate sensitivity, and good performances by credit in general. The sovereign bond portfolio registered growth of 8.02%, the Euro investment grade credit portfolio achieved 9.04%, and the short-term high-yield credit portfolio 6.54%.

Positive changes in the fair value of the dedicated asset portfolio (investment funds, equities) amounting to +€2,220 million were recognised in the financial result in 2023 (see note 8.3), compared to negative changes amounting to €(3,096) million in 2022. Positive changes in the fair value of the bonds in the dedicated asset portfolio amounting to +€431 million were also recognised in OCI in 2023 (see note 18.1.2), compared to negative changes amounting to €(875) million in 2022.

EDF Invest continued to extend its portfolio of unlisted assets in 2023, purchasing minority stakes in infrastructures and real estate (logistics, offices), and investing in private equity and private debt funds.

In the second half of 2023, EDF Invest acquired 50% of the Memphis office building in Paris (see the Group press release of 20 December 2023) and completed the purchase of a 50% share of logistics warehouses in Sweden (Nordic Logistic) on 31 January 2024. In October 2023, EDF Invest signed an agreement as part of a consortium to acquire a stake in the Norwegian electric ferry operator Fjord1. This transport infrastructure investment was completed on 8 February 2024.

Withdrawals from dedicated assets in 2023 totalled €465 million, equivalent to payments made in respect of the long-term nuclear obligations to be covered during the year (€416 million in 2022).

15.1.2.4 Valuation of EDF's dedicated assets

EDF's dedicated assets are included in the Group's consolidated financial statements at the following values:

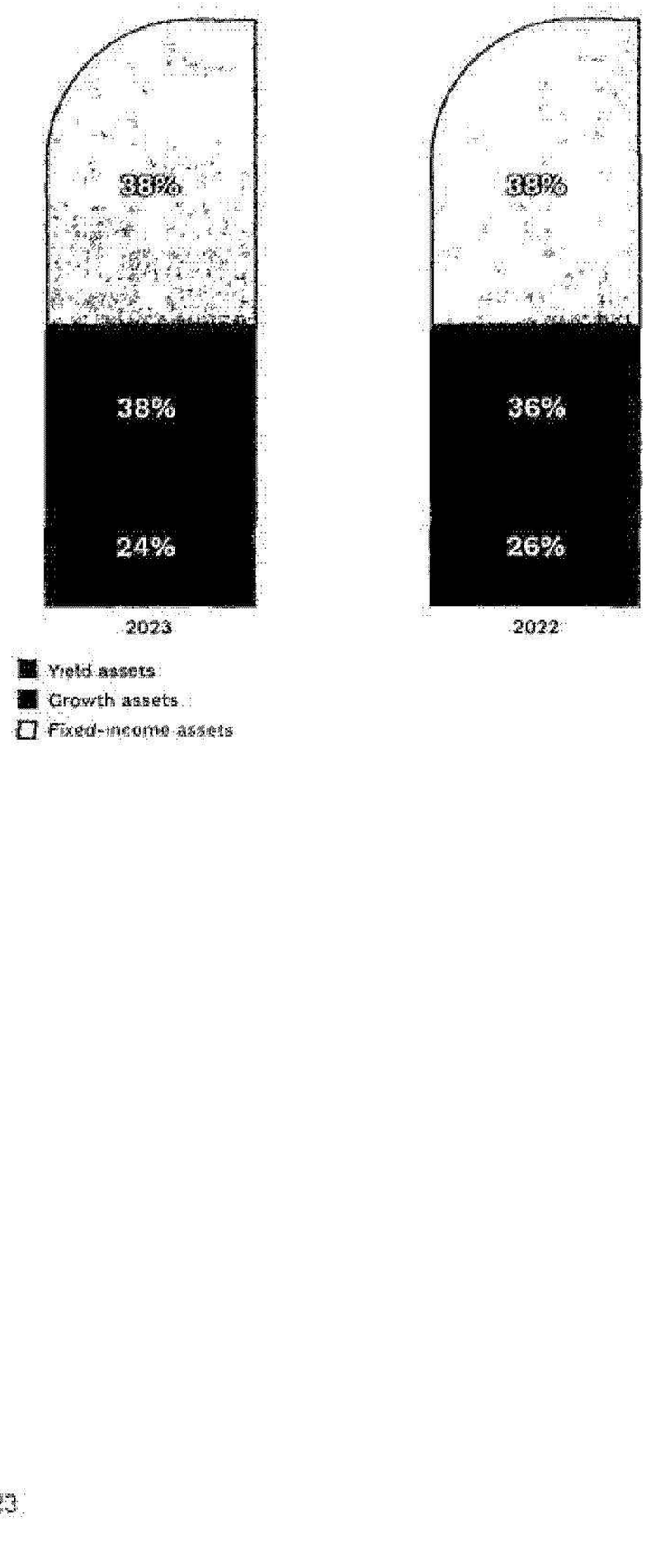
		31/12/2023		31/12/2022	
(in millions of euros)	Consolidated balance sheet presentation	Book value	Realisable value	Book value	Realisable value
YIELD ASSETS (EDF Invest)[1]		**6,196**	**8,657**	**6,477**	**8,772**
Other associates (including CTE)	Investments in associates [1] and [2]	3,834	6,287	4,034	6,286
Other unlisted assets	Debt and equity securities and other net assets[3]	2,359	2,367	2,422	2,465
Derivatives	Fair value of derivatives	3	3	21	21
GROWTH ASSETS (EDF INVEST)		**14,036**	**14,036**	**12,251**	**12,251**
Equities (investment funds)	Debt securities	13,392	13,392	11,625	11,625
Unlisted equity funds (EDF Invest)	*Debt securities*	589	589	553	553
Derivatives	Fair value of derivatives	55	55	73	73
FIXED-INCOME ASSETS (EDF INVEST)		**14,192**	**14,192**	**12,881**	**12,881**
Bonds and negotiable debt instruments	Debt securities	12,488	12,488	11,101	11,101
Unlisted debt funds (EDF Invest)	Debt securities	236	236	215	215
Cash portfolio	Debt securities	1,104	1,104	1,414	1,414
Diversified debt funds	Debt securities	363	363	163	163
Derivatives	Fair value of derivatives	1	1	(12)	(12)
TOTAL DEDICATED ASSETS		**34,424**	**36,885**	**31,609**	**33,904**

(1) Including 50.1% of CTE, the company that holds 100% of the shares in RTE (see note 12). The realisable value of EDF Invest in the above table has been determined by an independent assessor.

(2) Including the value of the share in equity of the controlled companies owning these investments.

(3) Including debt and equity securities amounting to €2,238 million and the value of the share in equity of other controlled companies.

The structure of the dedicated asset portfolio in 2023 and 2022 is as follows (in realisable value):



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15.1.3 Coverage of EDF's long-term nuclear obligations

The Group's long-term nuclear obligations in France concerned by the regulations for dedicated assets related to nuclear generation are included in the EDF group's consolidated financial statements at the following values:

(in millions of euros)	31/12/2023	31/12/2022
Provisions for spent fuel management – portion unrelated to the operating cycle as defined in the regulations	1,760	1,607
Provisions for long-term radioactive waste management	13,205	12,475
Provisions for nuclear plant decommissioning	18,419	17,094
Provisions for last cores – portion for future long-term radioactive waste management	605	473
PRESENT COST OF LONG-TERM NUCLEAR OBLIGATIONS	**33,989**	**31,649**
REALISABLE VALUE OF DEDICATED ASSETS	**36,885**	**33,904**
REGULATORY COVERAGE RATE	**108.5%**	**107.1%**

At 31 December 2023, by the regulatory calculations provisions are 108.5% covered by dedicated assets. The potential regulatory caps on the realisable value of certain investments set in the Environment Code were not applicable at 31 December 2023.

As the coverage of provisions by dedicated assets was above 100%, EDF had no obligation to add to the dedicated asset portfolio in 2023 and no allocation was made during the year.

At 31 December 2022, by the regulatory calculations provisions were 107.1% covered by dedicated assets (and the regulatory caps were again not applicable). No allocation to dedicated assets was made in 2022.

15.2 EDF Energy's nuclear provisions

The specific financing terms for long-term nuclear commitments related to EDF Energy are reflected as follows in the EDF group's financial statements:

- the obligations are reported in liabilities in the form of provisions amounting to €14,365 million at 31 December 2023;
- in the assets, EDF Energy reports receivables corresponding to the amounts payable under the restructuring agreements by the Nuclear Liabilities Fund (NLF), for non-contracted obligations or decommissioning obligations, and by the British Government for contracted obligations (or historical liabilities).

These receivables are discounted at the same real rate as the obligations they are intended to finance. They are included in "Financial assets" in the consolidated balance sheet (see note 18.1.3) at the amount of €13,104 million at 31 December 2023 (€14,000 million at 31 December 2022).

Details of changes in provisions for the back-end of the nuclear cycle and provisions for decommissioning and last cores are as follows:

(in millions of euros)	31/12/2022	Increases	Decreases	Discount effect	Translation adjustments	Other movements	31/12/2023
Provisions for spent fuel management	1,284	15	(137)	96	26	(46)	1,238
Provisions for waste removal and conditioning	373	-	-	25	8	-	406
Provisions for long-term radioactive waste management	1,066	2	-	71	22	12	1,173
Provisions for the back-end of the nuclear cycle	**2,723**	**17**	**(137)**	**192**	**56**	**(34)**	**2,817**
Provisions for nuclear plant decommissioning	11,296	-	(659)	753	231	(1,344)	10,277
Provisions for last core	1,129	-	-	61	23	58	1,271
Provisions for decommissioning and last cores	**12,425**	**-**	**(659)**	**814**	**254**	**(1,286)**	**11,548**
PROVISIONS RELATED TO NUCLEAR GENERATION	**15,148**	**17**	**(796)**	**1,006**	**310**	**(1,320)**	**14,365**

"Other movements" include the changes in nuclear liabilities with a corresponding adjustment in the amount of reimbursements receivable from the NLF and the British government, and the change in the provision for last cores *via* an adjustment to fixed assets.

The overall change in "other movements" is mainly due to:

- an update of the costs estimates based on the Integration plan 24 (IP 24) approved by the Non-Nuclear Liabilities Assurance team (NLA) in December 2023 and a release of the provision following cost underspend within the year (including costs directly related to market prices which have since fallen since IP 23) resulting in a decrease of the provisions for the backend of the cycle and decommissioning for an amount of €(664) million;
- an increase in the real discount rate in the United Kingdom (particularly +20 base point on provisions for the backend of the cycle and decommissioning), resulting in a decrease of the provisions for an amount of €(406) million;
- the new assumptions regarding the closure of Heysham 1 and Hartlepool AGR plants, scheduled for 2026 (previously 2024), resulting in a decrease of the provisions for the backend of the cycle and decommissioning for an amount of €(245) million.

15.2.1 Regulatory and contractual framework

Amendments signed with the Nuclear Liabilities Fund (NLF – an independent trust set up by the UK Government as part of the restructuring of British Energy) following the EDF group's acquisition of British Energy had a limited impact on the contractual financing commitments made to British Energy by the UK Secretary of State and the NLF under the "Restructuring Agreements". These agreements were entered into by British Energy on 14 January 2005 as part of the restructuring led by the UK Government in order to stabilise British Energy's financial position. These agreements were amended and restated on 5 January 2009 as part of the acquisition of the British Energy Generation Limited by the Group. British Energy Generation Limited changed its name to EDF Energy Nuclear Generation Limited on 1 July 2011 and replaced British Energy in these agreements and amendments.

Under the terms of the Restructuring Agreements:

- the NLF agreed to fund, to the extent of its assets: (i) qualifying contingent and/or latent nuclear liabilities (including liabilities for management of spent fuel from the Sizewell B power station); and (ii) qualifying decommissioning costs for EDF Energy's existing nuclear power stations;
- the Secretary of State agreed to fund: (i) qualifying contingent and/or latent nuclear liabilities (including liabilities for the management of spent fuel from the Sizewell B power station) and qualifying decommissioning costs related to EDF Energy's existing nuclear power stations, to the extent that they exceed the assets of the NLF; and (ii) subject to a cap of £2,185 million (in December 2002 monetary values, adjusted accordingly), qualifying known existing liabilities for EDF Energy's spent fuel (including liabilities for management of spent fuel from plants other than Sizewell B loaded in reactors prior to 15 January 2005);
- EDF Energy is responsible for funding certain excluded or disqualified liabilities (*e.g.* those defined as EDF Energy liabilities), and additional liabilities which could be created as a result of failure by EDF Energy to meet minimum performance standards under applicable law. The obligations of EDF Energy to the NLF and the Secretary of State are guaranteed by the assets of the principal members of EDF Energy.

EDF Energy also made commitments to pay:

- annual decommissioning contributions for a period limited to the useful life of the plants as at the date of the "restructuring agreements"; the corresponding provision amounts to €82 million at 31 December 2023;
- £150,000 (indexed to inflation) per tonne of uranium loaded in the Sizewell B reactor after the date of the "restructuring agreements".

Furthermore, EDF Energy entered into a separate contract with the Nuclear Decommissioning Authority (NDA) for management of AGR spent fuel and associated radioactive waste resulting from operation of power plants other than Sizewell B after 15 January 2005, and bears no responsibility for this fuel and waste once it is transferred to the processing site at Sellafield. The corresponding costs of £150,000 (indexed to inflation) per tonne of loaded uranium – plus a rebate or surcharge dependent on market electricity price and electricity generated in the year – are included in inventories.

On 23 June 2021 EDF and the UK government signed an update to the Restructuring Agreements. The changes and clarifications to the Agreements confirm the recovery of qualifying costs and stipulate that once the AGR stations have finished defueling under EDF Energy responsibility, they will transfer to the NDA which will be responsible for subsequent decommissioning activities. These amended agreements had no consequences in the Group financial statements at 31 December 2023.

On an annual basis the cost estimates which form the basis of EDF Energy's Back End Nuclear Cycle and Nuclear Plants Decommissioning provision are updated based on Integrated Plan (IP) assumptions. The IP is submitted to the NLA for approval. The IP23 and the IP24 were approved by the NLA respectively in December 2022 and in December 2023.

15.2.2 Provisions for the back-end of the nuclear cycle

Spent fuel from the Sizewell B PWR (pressurised water reactor) plant is stored on site. Spent fuel from the AGR plants is transferred to Sellafield for storage and reprocessing.

EDF Energy's provisions for the back-end of the nuclear cycle concern obligations for reprocessing and storage of spent fuel and long-term storage of radioactive waste, required by the existing regulations in the UK approved by the Nuclear Decommissioning Authority (NDA). Their amount is based on contractual agreements or if this is not possible, on the most recent technical estimates.

	31/12/20223		31/12/2022	
(in millions of euros)	Costs based on year-end economic conditions[1]	Amounts in provisions at present value	Costs based on year-end economic conditions[1]	Amounts in provisions at present value
Spent fuel management	3,790	1,238	3,695	1,284
Waste removal and conditioning	2,071	406	1,867	373
Long-term radioactive waste management	5,784	1,173	5,158	1,066
BACK-END NUCLEAR CYCLE EXPENSES	**11,645**	**2,817**	**10,720**	**2,723**

(1) The costs based on year-end economic conditions include spent fuel and associated waste management over the operating life of the reactors (including future load fuel for Sizewell B only); the provisions are based on the fuel committed to date.

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15.2.3 Provisions for nuclear plant decommissioning

Provisions for decommissioning of nuclear plants cover the full cost of decommissioning and are measured on the basis of existing techniques and methods that are most likely to be used for application of current regulations.

As explained above, the Restructuring Agreements updated in June 2021 provide that once the AGR power plants have finished defueling that they will transfer to the NDA for subsequent decommissioning activities.

The signature of these agreements has no immediate accounting consequences for decommissioning provisions or the receivable representing reimbursements to be made by the NLF and the UK government. Nuclear decommissioning liabilities and the associated assets will be derecognised during the agreement's operational implementation phase.

(In millions of euros)	31/12/2023 Costs based on year-end economic conditions	31/12/2023 Amounts in provisions at present value	31/12/2022 Costs based on year-end economic conditions	31/12/2022 Amounts in provisions at present value
PLANT DECOMMISSIONING EXPENSES	**20,459**	**10,195**	**20,875**	**11,206**

15.2.4 Discounting of EDF Energy's provisions related to nuclear generation

The method used to determine the discount rate is the following:

- Like the discount rate for nuclear provisions in France, the discount rate for EDF Energy's provisions is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (UK gilt 0-20 year yield) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) plus a curve of the spread of corporate bonds rated A to BBB. Based on expected disbursements corresponding to nuclear obligations, a single equivalent discount rate is deduced from the curve constructed in this way. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions;
- The inflation assumption is based on an inflation curve constructed by reference to economic forecasts and inflation-indexed market products, in long-term coherence with the inflation assumption underlying the UFR (2%).

As a consequence, the real discount rate used to calculate provisions for the back-end of the nuclear cycle and decommissioning of nuclear plants is 3.1% (2.9% as at 31 December 2022).

15.3 Nuclear provisions in Belgium

In Belgium, the law of 11 April 2003 assigned management of provisions concerning the Belgian nuclear plants, and the funds that cover them, to Synatom (a subsidiary of the ENGIE group). Luminus contributes *via* Synatom to these funds, to cover its share of plant decommissioning and back-end nuclear fuel expenses as a co-owner of 4 nuclear plants. These funding mechanisms are reflected through the following items in the consolidated financial statements:

- provisions, amounting to €352 million at 31 December 2023 (€377 million at 31 December 2022);
- a receivable representing the advance payments made to Synatom, recognised as financial assets carried at fair value (see note 18.1.3) at the value of €298 million at 31 December 2023 (€253 million at 31 December 2022). This receivable, which corresponds to the fair value of the share of funds held by Synatom on behalf of Luminus, is reported at present value in Luminus' financial statements, applying the same real discount rate used to determine the obligations these funds will cover.

Other provisions related to nuclear generation in Belgium correspond to provisions that are not part of the mechanisms described above.

At 31 December 2023, nuclear provisions in Belgium include an increase of €367 million mainly resulting from the final agreement between Engie and the Belgian State on 13 December 2023 on all the nuclear waste-related obligations for Luminus and EDF Belgium (the agreement defines a fixed amount for future nuclear waste processing costs), and extension of the operating lifetimes of Tihange 3 and Doel 4.

Note 16 Provisions for employee benefits

ACCOUNTING PRINCIPLES AND METHODS

The Group grants its employees post-employment benefits (pension plans, retirement indemnities, *etc.*) and other long-term benefits (*e.g.* long-service awards) in compliance with the specific laws and measures in force in each country where it does business.

CALCULATION AND RECOGNITION OF EMPLOYEE BENEFIT OBLIGATIONS

Obligations under defined-benefit plans are calculated by the projected unit credit method, which determines the present value of entitlements earned by employees at year-end under all types of plan, taking into consideration the prospects for wage increases and each country's specific economic conditions.

Post-employment benefit obligations are valued mainly using the following methods and assumptions:

- retirement age, determined on the basis of the applicable rules for each plan, and the requirements to qualify for a full pension;
- career-end salary levels, with reference to employee seniority, projected salary levels at the time of retirement based on the expected effects of career advancement, and estimated trends in pension levels;
- forecast numbers of pensioners, determined based on employee turnover rates and mortality data available in each country;
- reversion pensions where relevant, taking into account both the life expectancy of the employee and his/her spouse and the marriage rate;
- a discount rate that depends on the geographical zone and the duration of the obligations, determined at the year-end date by reference to the market yield on high-quality corporate bonds or the rate on government bonds whose duration is coherent with EDF group's commitments to employees.

The amount of the provision corresponds to the value of obligations less the fair value of the fund assets that cover those obligations.

The net expense booked during the year for employee benefit obligations includes:

- in the income statement:
  - > the current service cost, corresponding to additional benefit entitlements earned during the year,
  - > the net interest expense, corresponding to interest on obligations net of the return on fund assets, which is calculated using the same discount rate as for the obligations,
  - > the past service cost, including the income or expense related to amendments or settlements of benefit plans or introduction of new plans,
  - > the actuarial gains and losses relating to other long-term benefits;
- in other components of consolidated comprehensive income:
  - > the actuarial gains and losses relating to post-employment benefits and any return on hedging assets in excess of the discount rates used,
  - > the effect of the limitation to the asset ceiling if any.

POST-EMPLOYMENT BENEFIT OBLIGATIONS

When they retire, Group employees benefit from pensions determined under local rules. They may also be entitled to benefits directly paid by the companies, and additional benefits prescribed by the relevant regulations.

French entities covered by the IEG system

Entities belonging to the specific IEG (electricity and gas sector) system, namely EDF, Enedis, Électricité de Strasbourg and EDF PEI, are Group companies where almost all employees benefit from the IEG statutes, including statutory benefits and, for employees hired before 1 September 2023, the special IEG pension system.

After the financing reform for the IEG system took effect on 1 January 2005 (law of 9 August 2004), pension provisions were recognised by IEG companies to cover entitlements not funded by France's standard systems (CNAV, AGIRC and ARRCO), to which the IEG system is affiliated, or by the CTA (*Contribution Tarifaire d'Acheminement*) levy on gas and electricity transmission and distribution services.

As a result of the system affiliation mechanism, any change (whether favourable or unfavourable to employees) in the standard French pension system that is not passed on to the IEG pension system is likely to cause a variation in the amount of the provisions recorded by the Group to cover its obligations.

The obligations concerned by the pensions and for which a provision is recorded thus include:

- specific benefits of employees in the deregulated or competitive activities;
- specific benefits earned by employees from 1 January 2005 for the regulated activities (transmission and distribution) (benefits earned prior to that date are financed by the CTA levy).

Under the pension reform law of 14 April 2023, the special IEG pension system has been discontinued for employees joining the sector from 1 September 2023. These employees will be affiliated to the standard French pension plans (CNAV, AGIRC-ARRCO) but will still be entitled to other benefits associated with IEG status (energy at preferential prices, family benefits, etc.) (see note 16.1.2 for further details of the reform and its effects on the Group's financial statements at 31 December 2023).

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In addition to pensions, other benefits are granted to retired IEG status employees (including those hired from 1 September 2023), as detailed below:

- benefits in kind (energy): Article 28 of the IEG national statutes entitles such employees and current employees to benefits in kind in the form of supplies of electricity or gas at preferential prices. The obligation for supplies of energy to employees of the EDF and ENGIE groups corresponds to the probable present value of kWh to be supplied to beneficiaries or their dependants during their retirement, valued on the basis of the unit cost (which mainly depends on the marginal production cost and taxes). It also includes the balancing payment made under the energy exchange agreement with ENGIE;
- retirement gratuities: these are paid upon retirement to employees due to receive the statutory old-age pension, or to their dependants if the employee dies before reaching retirement. These obligations are almost totally covered by an insurance policy;
- bereavement benefit: this is paid out upon the death of an inactive or disabled employee, in order to provide financial assistance for the expenses incurred at such a time (Article 26 - § 5 of the National Statutes). It is paid to the deceased's principal dependants (statutory indemnity equal to three months' pension, subject to a ceiling) or to a third party that has paid funeral costs (discretionary indemnity equal to the costs incurred);
- bonus pre-retirement paid leave: all employees eligible to benefit immediately from the statutory old-age pension and aged at least 55 at their retirement date are entitled to 18 days of bonus paid leave during the last twelve months of their employment;
- other benefits include help with the cost of studies, time banking for pre-retirement leave, and pensions for personnel sent on secondment to subsidiaries not covered by the IEG system.

EDF Energy

Regarding pension obligations in the United Kingdom, EDF Energy's three defined-benefit plans (BEGG (*British Energy Generation Group*), EEGSG (EDF Energy Generation and Supply Group), and EEPS (EDF Energy Pension Scheme)) were closed at 31 December 2021, and replaced by a new defined-contribution plan called "myRetirement Plan". The rights vested under the previous plans up to their closing date still exist, and the corresponding obligations are update for changes in discount and inflation rates, but are no longer affected by new members or wage increases. Meanwhile, the closed plans were merged into a single plan called "EDF group of the Electricity Supply Pension Scheme (ESPS)" (EDFG).

OTHER LONG-TERM BENEFIT OBLIGATIONS

These benefits concern employees currently in service, and are earned according to local regulations, particularly the statutory *regulations for the electricity and gas sector for EDF and French subsidiaries covered by the IEG regime. They include:*

- annuities following incapacity, invalidity, industrial accident or work-related illness;
- long-service awards;
- specific benefits for employees who have been in contact with asbestos.

6.

16.1 Group provisions for employee benefits

(in millions of euros)	31/12/2023	31/12/2022
Provisions for employee benefits – current portion	665	790
Provisions for employee benefits – non-current portion	15,895	16,231
PROVISIONS FOR EMPLOYEE BENEFITS	**16,560**	**17,021**

16.1.1 Change in the provision by geographical area: obligations, fund assets, net liability

(in millions of euros)	France[1]	United Kingdom	Other	Total
Obligations at 31/12/2022	**26,054**	**6,401**	**775**	**33,230**
Net expense for 2023	1,850	222	54	2,126
Actuarial gains and losses	(509)	470	30	(9)
Employees' contributions to funds	-	1	-	1
Benefits paid	(1,208)	(315)	(39)	(1,562)
Changes in scope of consolidation	-	-	6	6
Translation adjustment	-	134	(2)	132
Other movements	-	-	(2)	(2)
OBLIGATIONS AT 31/12/2023	**26,187**	**6,913**	**822**	**33,922**

(in millions of euros)	France[1]	United Kingdom	Other	Total
Fund assets at 31/12/2022	**(9,398)**	**(7,039)**	**(447)**	**(16,884)**
Net expense for 2023	(357)	(336)	(15)	(708)
Actuarial gains and losses	(652)	259	(11)	(404)
Employer's contributions to funds	(35)	(78)	(20)	(133)
Employees' contributions to funds	-	(1)	-	(1)
Benefits paid	441	315	16	772
Translation adjustment	-	(153)	8	(145)
Changes in scope of consolidation	-	-	(3)	(3)
Other movements	-	-	2	2
FUND ASSETS AT 31/12/2023	**(10,001)**	**(7,033)**	**(470)**	**(17,504)**

(in millions of euros)	France[1]	United Kingdom	Other	Total
Net employee benefit liability at 31/12/2022[2]	**16,656**	**(638)**	**328**	**16,346**
Net expense for 2023	1,493	(114)	39	1,418
Actuarial gains and losses	(1,161)	729	19	(413)
Employer's contributions to funds	(35)	(78)	(20)	(133)
Benefits paid	(767)	-	(23)	(790)
Changes in scope of consolidation	-	-	3	3
Translation adjustment	-	(19)	6	(13)
Other movements	-	-	-	-
NET EMPLOYEE BENEFIT LIABILITY AT 31/12/2023	**16,186**	**(120)**	**352**	**16,418**
Including:				
Provisions for employee benefits				16,560
Non-current financial assets[2]				(142)

(1) France comprises the two operating segments "France – Generation and Supply" and "France – Regulated activities" (see note 16.2).

(2) The net liability at 31 December 2022 comprised €17,021 million for the provisions for employee benefits and €(675) million of non-current financial assets, giving a net liability amount of €16,346 million.

Actuarial gains and losses on obligations

Actuarial gains and losses on obligations amount to €(9) million for 2023, including:

- €(509) million in France as a result of:
  - > the €2,037 million change in the discount rate,
  - > the €(1,165) million change in the inflation rate,
  - > the €(1,382) million change in experience adjustments; and
- €470 million in the United Kingdom, essentially associated with changes in the discount and inflation rates (€306 million), demographic assumptions (€(119) million) and experience adjustments (€284 million) (see note 16.1.3).

Actuarial gains and losses on obligations amount to €(12,789) million for 2022, including:

- €(9,260) million in France as a result of:
  - > the €(16,997) million change in the discount rate,
  - > the €(145) million change in demographic assumptions,
  - > the €5,045 million change in the inflation rate,
  - > the €2,276 million impact of pay rise measures decided in 2022 for application from January 2023,
  - > the €561 million change in experience adjustments; and
- €(3,386) million in the United Kingdom, essentially associated with changes in the discount and inflation rates (€(4,475) million) and experience adjustments (€1,257 million) (see note 16.1.3).

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Actuarial gains and losses on fund assets in 2023

Actuarial gains and losses on fund assets amount to €(404) million for 2023. They mainly result from a €(652) million change in France (outperforming the expected return on fund assets by 6.9%) due to a decrease in discount rates at the end of the year and a good equity market performance, and a €259 million change in the United Kingdom where the return on fund assets, principally bonds, was lower than the discount rate.

Net employee benefit liability at 31 December 2023

The net liability at 31 December 2023 amounted to €16,418 million, including:

- €16,186 million in France;
- €(120) million in the United Kingdom, reflecting recognition by EDF Energy of surplus funding on its EDFG pension scheme, totalling €134 million compared to €638 million at 31 December 2022. This surplus funding, which has decreased primarily due to lower yields on private company bonds in the United Kingdom compared to the 2022 year-end, is recognised in balance sheet assets under "non-current financial assets".

16.1.2 Pension reform in France

French law 2023-270 amending social security funding for 2023, adopted on 14 April 2023, introduced changes to France's general pension system. The principal measures are a gradual rise in the standard retirement age from 62 to 64, and an increase in the contribution period required to qualify for a full pension.

The implementation decree 2023-692 concerning employees affiliated to the special IEG (electricity and gas sector) regime was published on 28 July 2023. The parametric rules defined in this decree will be applicable from 1 January 2025 for employees born in or after 1963 (whereas the measures of the law applicable to the standard national pension system came into force from 1 September 2023 and apply to employees born in or after 1961).

The new law also discontinues the special IEG pension system for employees joining the sector from 1 September 2023. These employees will still benefit from the regulatory and negotiated measures, and other benefits associated with IEG status (such as the special 'tarif agent' energy price, family benefits, etc.). The only difference is the pension system itself.

Finally, in view of the 2023 pension reform law of 14 April 2023, the national inter-industry agreement of 5 October 2023 took account of the consequences of the reform for the AGIRC-ARRCO complementary pension system by eliminating the temporary 10% bonus/discount which applied to AGIRC-ARRCO pensions when employees retired after/before qualifying for a full pension (solidarity or bonus coefficients). As these bonuses and discounts were funded by the special IEG pension system, their elimination has a favourable impact on the amount of the obligation covered by provisions recognised in the Group's 2023 financial statements due to the system affiliation mechanism.

In application of IAS 19, all the impacts of the pension reform described above are classified as plan amendments. The resulting past service cost amounts to €338 million, recognised in expenses in the income statement for 2023 (in other income and expenses, see note 7).

16.1.3 Actuarial assumptions and sensitivity analyses

The following actuarial assumptions are used:

	France		United Kingdom	
(in %)	31/12/2023	31/12/2022	31/12/2023	31/12/2022
Discount rate/rate of return on assets[1]	3.40%	3.90%	4.50%	4.75%
Inflation rate	2.00%	2.30%	2.90%	2.90%
Wage increase rate[2]	3.10%	3.70%	2.75%	2.65%

(1) The interest income generated by assets is calculated using the discount rate. The difference between this interest income and the real return on assets is recorded in actuarial gains and losses in equity.

(2) Average wage increase rate, including inflation and projected over a full career.

The discount rate used for employee benefit obligations is determined by applying the yield rate on high-quality corporate bonds of appropriate duration to maturities corresponding to the future disbursements resulting from these obligations. For longer durations, the calculation also takes into consideration data from a wider selection of corporate bonds adjusted for comparability with the high-quality bonds, as the panel of bonds with these durations is limited.

In France, changes in the economic and market parameters used have led the Group to set the nominal discount rate at 3.40% at 31 December 2023 (3.90% at 31 December 2022). The decrease in the discount rate essentially relates to the decrease in risk-free rates observed in 2023.

The inflation assumption is based on an inflation curve constructed from economic forecasts and inflation-indexed market products. As a result of changes in the economic and market parameters, the assumed average inflation rate used as the Group's benchmark for Euro zone countries is 2.00% at 31 December 2023 (2.30% at 31 December 2022).

Wage law projections from 2024 onwards are based on average wage increases observed in the IEG sector in recent years (adjusted for non-recurring effects).

The mortality table used to calculate obligations is based on the INSEE 2013-2070 generation table (produced by the French statistics office), corrected for differences in mortality between the general French population and the population covered by the IEG regime.

Sensitivity analyses on the amount of the obligations are as follows:

	31/12/2023	
(in millions of euros)	France	United Kingdom
Impact of a +/- 25bp variation in the discount rate	(1,091) / 1,172	(278) / 290
Impact of a +/- 25bp variation in the inflation rate	1,146 / (1,071)	270 / (259)
Impact of +/- 25bp variation in the wage increase rate	1,180 / (1,108)	n.a

n.a. : not applicable.

16.1.4 Breakdown by geographical area of post-employment and other long-term employee benefits

	2023			
(in millions of euros)	France	United Kingdom	Other	Total
Current service cost	(402)	(16)	(18)	(436)
Past service cost	(338)	92	(5)	(251)
Actuarial gains and losses – other long-term benefits	(102)	-	-	(102)
Net expenses recorded as operating expenses	**(842)**	**76**	**(23)**	**(789)**
Interest expense (discount effect)	(1,008)	(298)	(31)	(1,337)
Return on fund assets	357	336	15	708
Net interest expense included in financial result	**(651)**	**38**	**(16)**	**(629)**
EMPLOYEE BENEFIT EXPENSES RECORDED IN THE INCOME STATEMENT	**(1,493)**	**114**	**(39)**	**(1,418)**
Actuarial gains and losses – post-employment benefits	509	(470)	(30)	9
Actuarial gains and losses on fund assets	652	(259)	11	404
Actuarial gains and losses	**1,161**	**(729)**	**(19)**	**413**
Translation adjustments	**-**	**19**	**(6)**	**13**
GAINS AND LOSSES ON EMPLOYEE BENEFITS RECORDED DIRECTLY IN EQUITY	**1,161**	**(710)**	**(25)**	**426**

	2022			
(in millions of euros)	France	United Kingdom	Other	Total
Current service cost	(779)	(32)	(52)	(863)
Past service cost	-	-	(2)	(2)
Actuarial gains and losses – other long-term benefits	131	-	-	131
Net expenses recorded as operating expenses	**(648)**	**(32)**	**(54)**	**(734)**
Interest expense (discount effect)	(462)	(190)	(11)	(663)
Return on fund assets	171	242	6	419
Net interest expense included in financial result	**(291)**	**52**	**(5)**	**(244)**
EMPLOYEE BENEFIT EXPENSES RECORDED IN THE INCOME STATEMENT	**(939)**	**20**	**(59)**	**(978)**
Actuarial gains and losses – post-employment benefits	9,260	3,386	143	12,789
Actuarial gains and losses on fund assets	(3,737)	(5,505)	(53)	(9,295)
Actuarial gains and losses	**5,523**	**(2,119)**	**90**	**3,494**
Translation adjustments	**-**	**(79)**	**13**	**(66)**
GAINS AND LOSSES ON EMPLOYEE BENEFITS RECORDED DIRECTLY IN EQUITY	**5,523**	**(2,198)**	**103**	**3,428**

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The actuarial gains and losses on obligations in France are as follow:

(in millions of euros)	2023	2022
Experience adjustments	1,308	(767)
Changes in demographic assumptions	-	145
Changes in financial assumptions [1]	(901)	10,013
ACTUARIAL GAINS AND LOSSES ON OBLIGATIONS	**407**	**9,391**
Including:		
Actuarial gains and losses on post-employment benefits	*509*	*9,260*
Actuarial gains and losses on other long-term benefits	*(102)*	*131*

(1) Financial assumptions mainly concern the discount rate, inflation rate and wage increase rate.

16.2 France (regulated activities, and generation and supply)

The two operating segments "France – Generation and Supply" and "France – Regulated activities" (see note 4.1) are combined here into a single subtotal, "France", which primarily includes EDF and Enedis. Almost all of these companies' employees have IEG status, including the special IEG pension and other IEG benefits.

16.2.1 Breakdown of obligations by type of beneficiary

(in millions of euros)	31/12/2023	31/12/2022
Current employees	12,673	12,831
Retirees	13,514	13,223
OBLIGATIONS	**26,187**	**26,054**

16.2.2 Provision for employee benefits by nature

At 31 December 2023:

(in millions of euros)	Obligations	Fund assets	Provisions in the balance sheet
Provisions for post-employment benefits at 31/12/2023	**24,727**	**(10,001)**	**14,726**
Including:			
Pensions	19,667	(9,367)[1]	10,300
Benefits in kind (electricity/gas)	2,968	-	2,968
Retirement gratuities	781	(619)	162
Other	1,311	(15)	1,296
Provisions for other long-term employee benefits at 31/12/2023	**1,460**	**-**	**1,460**
Including:			
Annuities following work-related accident and illness, and invalidity	1,214	-	1,214
Long service awards	221	-	221
Other	25	-	25
PROVISIONS FOR EMPLOYEE BENEFITS AT 31/12/2023	**26,187**	**(10,001)**	**16,186**

(1) Mainly EDF SA's fund assets (52% of pension obligations were covered by funds at 31 December 2023).

At 31 December 2022:

(in millions of euros)	Obligations	Fund assets	Provisions in the balance sheet
Provisions for post-employment benefits at 31/12/2022	**24,650**	**(9,398)**	**15,252**
Including:			
Pensions	19,564	(8,827)[1]	10,737
Benefits in kind (electricity/gas)	3,129	-	3,129
Retirement gratuities	754	(557)	197
Other	1,203	(14)	1,189
Provisions for other long-term employee benefits at 31/12/2022	**1,404**	**-**	**1,404**
Including:			
Annuities following work-related accident and illness, and invalidity	1,191	-	1,191
Long service award	188	-	188
Other	25	-	25
PROVISIONS FOR EMPLOYEE BENEFITS AT 31/12/2022	**26,054**	**(9,398)**	**16,656**

(1) Mainly EDF SA's fund assets (49% of pension obligations were covered by funds at 31 December 2022).

16.2.3 Fund assets

For France, fund assets, managed under an asset/liability model, amount to €10,001 million at 31 December 2023 (€9,398 million at 31 December 2022) and concern the coverage of retirement gratuities and the specific benefits of the special pension system.

They consist of insurance contracts with the following risk profile:

- 67% in a hedging pocket consisting of bonds, designed to replicate variations in the obligation caused by changes in interest rates;
- 31% in a growth asset pocket consisting of international equities.
- 2% in real estate investments

Fund assets break down as follows:

(in millions of euros)	31/12/2023	31/12/2022
FUND ASSETS	**10,001**	**9,398**
Assets funding special pension benefits	**9,367**	**8,827**
Including (%)		
Listed debt instruments (bonds)	67%	65%
Listed equity instruments (shares)	31%	33%
Real estate property	2%	2%
Assets funding retirement gratuities	**619**	**557**
Including (%)		
Listed debt instruments (bonds)	59%	69%
Listed equity instruments (shares)	41%	31%
Other fund assets	**15**	**14**

At 31 December 2023, the bonds held as part of fund assets are distributed as follows:

- approximately 68% of the total are AAA and AA rated bonds;
- approximately 32% of the total are bonds with A, BBB and other ratings.

Around 60% of bonds are sovereign bonds issued by Euro zone countries, and the balance mainly consists of bonds issued by financial and non-financial firms.

At 31 December 2023, the equities held as part of fund assets are distributed as follows:

- approximately 64% of the total are shares in North American companies;
- approximately 19% of the total are shares in European companies;
- approximately 17% of the total are shares in companies in the Asia-Pacific zone and emerging countries.

This distribution is stable compared to the distribution at 31 December 2022.

The performance of pension fund assets in France is 11.1% in 2023.

16.2.4 Future Cash Flows

Cash flows related to future employee benefits are as follows:

(in millions of euros)	Cash flow under year-end economic conditions	Amount covered by provisions (present value)
Less than one year	1,078	1,061
One to five years	4,572	4,118
Five to ten years	5,647	4,330
More than ten years	48,132	16,678
CASH FLOWS RELATED TO EMPLOYEE BENEFITS	**59,429**	**26,187**

At 31 December 2023, the average duration of employee benefit commitments in France is 17 years.

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16.3 United Kingdom

16.3.1 Breakdown of obligations by type of beneficiary

(in millions of euros)	31/12/2023	31/12/2022
Current employees	2,916	2,603
Retirees	3,997	3,798
OBLIGATIONS	**6,913**	**6,401**

16.3.2 Fund assets

The investment strategy applied in these funds is a liability driven investment strategy. The allocation between growth and back-to-back is regularly reviewed by the trustees, at least after every actuarial valuation, to ensure that the funds' overall investment strategy remains coherent in order to achieve the target coverage level required.

These assets break down as follows:

(in millions of euros)	31/12/2023	31/12/2022
FUND ASSETS	**7,033**	**7,039**
Including (%)		
Listed equity instruments (shares)	5%	0%
Listed debt instruments (bonds)	91%	62%
Real estate properties	9%	10%
Cash and cash equivalents	4%	3%
Other (including private equity)[1]	-9%	25%

(1) Including the fair value of derivatives hedging listed instruments

At 31 December 2023, the bonds held as part of fund assets are distributed as follows:

- approximately 84% of the total are AAA and AA-rated bonds;
- approximately 16% of the total are bonds with A, BBB and other ratings.

Around 79% of all these bonds are sovereign bonds, mainly issued by the United Kingdom. The balance mainly consists of bonds issued by financial and non-financial firms.

16.3.3 Future cash flows

Cash flows related to future employee benefits are as follows:

(in millions of euros)	*Cash flow under year-end economic conditions*	*Amount covered by provisions (present value)*
Less than one year	261	255
One to five years	1,115	968
Five to ten years	1,572	1,107
More than ten years	11,654	4,583
CASH FLOWS RELATED TO EMPLOYEE BENEFITS	**14,602**	**6,913**

The average weighted duration of funds in the United Kingdom is 17 years at 31 December 2023.

Note 17 Other provisions and contingent liabilities

(in millions of euros)	Notes	31/12/2023 Current	31/12/2023 Non-current	31/12/2023 Total	31/12/2022 Current	31/12/2022 Non-current	31/12/2022 Total
Other provisions for decommissioning	17.1	116	1,943	2,059	127	2,006	2,133
Other provisions	17.2	3,175	2,935	6,110	3,885	2,665	6,550
OTHER PROVISIONS		**3,291**	**4,878**	**8,169**	**4,012**	**4,671**	**8,683**

17.1 Other provisions for decommissioning

The breakdown of other provisions for decommissioning by company is as follows:

(in millions of euros)	EDF	EDF Energy	Edison	Framatome	Other	Total
31/12/2023	**1,017**	**48**	**127**	**430**	**437**	**2,059**
31/12/2022	987	108	192	418	428	2,133

Other provisions for decommissioning principally concern fossil-fired power plants, installations for the production of nuclear fuel assemblies, and dismantling of wind farms.

The costs of decommissioning fossil-fired power plants are calculated using regularly updated studies based on estimated future costs, measured by reference to the charges recorded on past operations and the most recent estimates for plants still in operation. The provision recorded at 31 December 2023 reflects the most recent known cost estimates and includes rehabilitation costs for generation sites.

Provisions for decommissioning notably include €154 million for Basic nuclear facilities (INB) in France, in the amounts of €112 million for Framatome and €42 million for Cyclife France. Dedicated assets are set aside to cover these provisions as required by the regulations.

Dedicated assets of Framatome and Cyclife France

The dedicated assets of Framatome and Cyclife France relating to Basic nuclear facilities (INB) in France have realisable values of €104 million in Framatome and €60 million in Cyclife France and the degree of coverage of provisions according to the regulations is 93% for Framatome and 142% for Cyclife France. At Framatome, a plan is currently in preparation to reach at least 100% coverage within 5 years, in accordance with decree n°2020-830 of 1 July 2020.

17.2 Other provisions

Details of changes in other provisions are as follows:

(in millions of euros)	31/12/2022	Increases	Decreases: Utilisations	Decreases: Reversals	Changes in scope	Other changes[1]	31/12/2023
Provisions for contingencies related to subsidiaries and investments	605	70	(45)	-	-	8	638
Provisions for tax liabilities (excluding income tax)	49	5	(21)	(7)	-	4	30
Provisions for litigation	321	122	(114)	(98)	-	2	233
Provisions for onerous contracts and losses on completion	638	167	(134)	-	11	(6)	676
Provisions related to environmental schemes	1,926	2,112	(2,350)	-	-	19	1,707
Other provisions for contingencies and losses	3,011	2,408	(2,641)	(89)	3	134	2,826
TOTAL	**6,550**	**4,884**	**(5,305)**	**(194)**	**14**	**161**	**6,110**

(1) Other changes principally concern rehabilitation of leased land

Provisions for onerous contracts

Provisions for onerous contracts mainly related to the Group's LNG activities (a long-term regasification contract with Dunkerque LNG). Losses on these contracts are measured by comparing the costs of fulfilling the contract with the resulting economic benefits, based on market and sales assumptions.

Framatome's long-term contracts are recorded under the percentage-of-completion method. When the estimated result upon completion is negative, the expected loss is immediately recorded in profit and loss, and a provision is booked to cover the portion of the loss not yet recognised.

Provisions related to environmental schemes

Provisions related to environmental schemes include provisions for greenhouse gas emission quota trading, renewable energy certificates and where relevant energy savings certificates (see notes 5.5.4, 10.2, 20.1 and 20.2.1).

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At 31 December 2023, a provision of €1,176 million (€1,117 million at 31 December 2022) was booked in connection with the obligation to surrender **renewable energy certificates** at that date, essentially concerning EDF Energy (United Kingdom) and Luminus (Belgium). For reminder, a large portion of these obligations is covered by purchases of certificates included in intangible assets (see note 10.2).

One of the main features of the fourth period (2021-2030) of the European Union **greenhouse gas emission quota system** (SEQE-EU or EU-ETS) is to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015.

In the EDF group, the entities concerned by this European system are EDF, Edison, Dalkia, PEI and Luminus.

The volume of emissions at 31 December 2023 stood at 14 million tonnes (18 million tonnes for 2022), reflected in the recognition of provisions of €531 million at 31 December 2023 (€799 million at 31 December 2022).

In 2023, the Group surrendered 18 million tonnes in respect of emissions generated in 2022 under the EU ETS (in 2022 it surrendered 17 million tonnes in respect of emissions generated in 2021).

The United Kingdom has set up its own system (UK ETS - Emissions Trading Scheme). The UK ETS, which uses a bidding system, covers the same sectors as the EU ETS and operates under generally similar rules, with comparable accounting treatment.

The volume of EDF Energy's emissions at 31 December 2023 stood at 4 thousand tonnes (0.1 million tonnes for 2022). Actual greenhouse gas emissions amounted to €0.4 million at 31 December 2023 (€9 million at 31 December 2022) and are included in provisions in the balance sheet.

In 2023, EDF Energy surrendered 0.1 million tonnes in respect of emissions generated in 2022 under the UK ETS (in 2022 it surrendered 2 million tonnes in respect of emissions generated in 2021).

Other provisions for contingencies and losses

A provision for contingencies and losses of €864 million was recognised at 31 December 2022 in connection with negotiations with Orano Recyclage concerning the amendment to the recycling agreement for the period 2024-2026. A further allocation of €1,026 million was made during the first half of 2023 in view of the ongoing negotiations, bringing the total provision to €1,880 million at 30 June 2023. Following the signature in September 2023 of an agreement on the principles for the future amendment for 2024-2026, to the master agreement with Orano Recyclage for 2008-2040 concerning removal, processing and recycling of spent fuel, this €1,880 million provision was cancelled and an amount of €2,216 million was allocated to the provision for spent fuel management based on the costs associated with the future 2024-2026 amendment, replacing the provision for contingencies and losses previously booked (see note 15.1.1.1).

These provisions also cover various contingencies and expenses related to operations (employers' matching contributions to employee profit sharing, restructuring operations, contractual maintenance obligations, *etc.*). No individual provision is significant.

In extremely rare cases, specific litigation covered by a provision may be unmentioned in the notes to the financial statements if such disclosure could cause serious prejudice to the Group.

17.3 Contingent liabilities and assets

ACCOUNTING PRINCIPLES AND METHODS

A contingent liability is:

- a potential obligation arising from past events, which will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control, or
- a present obligation arising from past events that is not recognised in the financial statements because an outflow of resources representing economic benefits is unlikely to be necessary to extinguish the obligation, or because the amount of the obligation cannot be measured reliably.

A contingent asset is a potential asset arising from past events, whose existence will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control.

The principal contingent liabilities and assets at 31 December 2023 are the following:

17.3.1 Tax inspections

EDF

For the period 2008 to 2019, the French tax authorities questioned the tax-deductibility of certain long-term nuclear liabilities.

Following several judgements and legal proceedings, the Council of State definitively confirmed in a ruling of 31 March 2023 that these nuclear liabilities are not tax-deductible. The accounting and financial consequences of a first, similar decision by the Council of State had been taken into account in the Company's financial statements since 2020.

For the years 2012 to 2019, the French tax authorities questioned the tax-deductibility of other long-term nuclear provisions. In a ruling of 29 August 2022, Montreuil Administrative Court validated the Company's position for one of the contested provisions, but upheld the tax adjustment for the other. In execution of this decision, the Company filed an appeal against the unfavourable part of the ruling and paid €297 million in 2022. The Minister has also appealed against the part of the ruling that was favourable to the Company.

EDF International

Following the tax inspections of EDF International for the years 2009 to 2014, the French tax authorities questioned the valuation of the bond convertible into shares issued to refinance the acquisition of British Energy. The total amount concerned was approximately €310 million. EDF International contested this reassessment.

In judgements of 2 July 2019 for the period 2009 - 2013 and 30 January 2020 for the year 2014, Montreuil Administrative Court confirmed the tax reassessments. EDF International therefore paid the tax in execution of these decisions, but also appealed against them. In a ruling of 25 January 2022, Versailles Administrative Court found in favour of EDF International and cancelled the first-instance judgements, thus nullifying the notified reassessments. In early 2022, EDF International received a full refund of the amounts it had paid. In a decision of 16 November 2022, the Council of State overturned the Administrative Court's ruling and sent the case back to be rejudged before the same court. In application of this decision, EDF International repaid the full amount previously received.

On 28 November 2023, the Administrative Court dismissed the new arguments put forward by EDF International, which lodged an appeal against this decision before the Council of State in late January 2024.

17.3.2 Labour litigation

EDF and its subsidiaries are party to a number of labour lawsuits. The Group considers that none of these lawsuits, individually, is likely to have a significant impact on its financial results or financial position. However, because they relate to situations that could concern a large number of EDF's employees in France, any increase in such litigations could have a potentially negative impact on the Group's financial position.

Additionally, EDF and its subsidiaries in France regularly undergo inspections by social security bodies such as URSSAF.

17.3.3 Litigation with photovoltaic producers

During 2010, announcements of a cut in purchase tariffs for photovoltaic electricity (the PV purchase tariff) were followed by adoption of the decree of 9 December 2010 (the "moratorium decree") suspending the conclusion of new contracts with purchase obligations for a three-month period for all applications that had not been approved by 2 December 2010. A new tariff decision was then adopted on 4 March 2011 that significantly reduced the PV purchase tariff, and this led to a large series of legal proceedings against Enedis and EDF in late 2011 which continued until 2015.

After a ruling by the Court of Justice of the European Union on 15 March 2017 that the decisions of 10 July 2006 and 12 January 2010 setting the PV purchase tariffs constituted illegal State aid, France's national courts, including the Court of Cassation (in a decision of 18 September 2019) all based their conclusions on this ruling, and considered that the prejudice caused to producers was not reparable because their claims were founded on illegal laws.

To date, the administrative courts, administrative appeal courts and Council of State (in several decisions issued on 27 October 2023) have dismissed the producers' claims.

Around twenty court cases are still pending.

In parallel to the compensation claims before civil courts, EDF and Enedis had sought to apply their Civil Liability insurance policy, but the insurers refused their claim. Enedis and EDF brought action against their insurers in April 2017, applying to the courts for formal recognition of two partial serial claims. A procedural hearing for this matter took place on 24 January 2024.

17.3.4 ARENH dispute – *Force majeure*

In the crisis caused by the Covid-19 pandemic, some suppliers requested total suspension of their ARENH deliveries, or partial suspension to the extent of the decrease in electricity consumption by their customer portfolio during the crisis, citing the force majeure clause contained in the master ARENH agreement signed with EDF.

Seven cases concerning the substance of the matter were brought by suppliers, claiming compensation from EDF for the prejudice caused by its allegedly unlawful refusal to apply the force majeure clause. The suppliers concerned are Hydroption, Vattenfall, Priméo Energie Grands Comptes and Priméo Energie Solutions, Arcelor Mittal Energy, Plüm Energy et Entreprises et Collectivités, TotalEnergies and Ekwateur.

On 13 April 2021, the Paris Commercial Court issued a first judgement on the merits in the Hydroption case, ordering EDF to pay the claimant €5.88 million in damages. The court considered that the conditions for force majeure were fulfilled and concluded that in continuing its ARENH deliveries against Hydroption's wishes EDF had committed a breach of contract for which it could be held liable. On 15 October 2021, the Paris Court of Appeal overturned the Commercial Court's judgement insofar as it held EDF liable and ordered it to pay damages to Hydroption, considering that the exemption clause of force majeure was not established, and that EDF was not obliged to satisfy a request for suspension of the contract. On 2 December 2021, the Toulon Commercial Court placed Hydroption SAS in liquidation. The liquidator filed an appeal before the Court of Cassation on 19 January 2022. In a ruling of 22 March 2023, the Court of Cassation overturned and cancelled all the terms of the Paris Court of Appeal's verdict, solely on procedural grounds, and sent the case back before the Court of Appeal. EDF thus filed a new declaration of appeal at that court where a hearing before a different panel of judges is scheduled for 26 February 2024.

On 30 November 2021 the Paris Commercial Court issued two more judgements on the merits in the cases brought by TotalEnergies et Ekwateur, ordering EDF to pay damages of €53.9 million to TotalEnergies and €1.8 million to Ekwateur. EDF has appealed against these two judgements.

On 6 December 2022, the Paris Commercial Court issued two further judgements on the merits in the cases brought by Priméo Energie Grands Comptes and Priméo Energie Solutions, ordering EDF to pay these two companies damages of €1.7 million and €2.4 million respectively. EDF has appealed against these two judgements and the proceedings are ongoing.

On 27 March 2023, the Commercial Court confirmed Plüm's withdrawal from the litigation with EDF. On 24 May 2023, the same court dismissed Arcelor Mittal's claims. A certificate of non-appeal was received on 8 November 2023 and these two matters are now closed.

On 16 January 2024, the Paris Commercial Court issued a judgement on the merits of the Vattenfall case, ordering EDF to pay the company €5 million in damages. EDF may appeal this judgement within one month of its notification.

17.3.5 Edison

Environmental agreement with ENI

On 31 July 2023 Edison and ENI signed an agreement concerning the industrial sites contributed to Enimont in 1989. A provision of €430 million was therefore booked at 31 December 2023 (see note 17.2) The main purposes of this agreement are: i) to put an end to the litigation cases pending before the Milan Court of Appeal and prevent all further litigation on similar matters that could arise in future; ii) to define a mutual framework for conduct in environmental matters relating to these sites and resolve the environmental issues resulting from past pollution, on a 50/50 basis.

This agreement marks a major turning point in local regeneration and restoration activities for places like the sites it covers, which were significantly affected by the industrialisation processes of the last century.

One of the sites concerned by this Edison-ENI agreement is the industrial site at Mantua which is the subject of currently ongoing administrative and criminal court proceedings, described below.

Mantua - criminal proceedings

The Public Prosecutor's Office of Mantua decided to initiate criminal proceedings on the basis of Legislative Decree 231 of 2001, against certain executive directors working or having worked for Edison since 2015 and some of Edison's representatives for alleged environmental offences claimed to have occurred in certain areas of the Mantua petrochemical plant. These orders of the Province of Mantua were confirmed by the Council of State's ruling of April 2020 as described below. These proceedings are ongoing, with the first court hearing scheduled for 14 February 2024.

The Mantua petrochemical plant - which Edison (as the successor of Montedison) has not owned or managed since 1990 - is subject to a large-scale and complex programme of environmental clean-up and restoration activities which also concerned all of the areas targeted by the proceedings initiated by the Public Prosecutor. The ENI group has begun implementation of the programme. After the clean-up projects were transferred to Edison in June of last year following the above-mentioned ruling of the Council of State, Edison is carrying out many of the activities.

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Mantua - environmental proceedings

Over the past few years, the Italian province of Mantua notified Edison of eight orders to rehabilitate the land and the whole Mantua petrochemical site sold by Montedison to the ENI group in 1990, despite two settlement agreements concerning these environmental issues signed by ENI and the Italian Ministry for the Environment.

Edison appealed against all these orders before the Brescia Division of the Lombardy regional administrative court, but lost its appeal in August 2018. Edison then took the matter to the Italian Council of State, which rejected Edison's appeal in a ruling of 1 April 2020 confirming the first-instance decisions. Edison pursued its appeal before the ECHR, and the proceedings are ongoing. However, as mentioned above, Edison has already begun cleanup work on the site, taking over from the previous operators and conducting a series of tenders.

Sale of Ausimont (site de Bussi)

Several legal actions before the civil, administrative and criminal courts were begun following the sale by Edison of the Ausimont SpA industrial complex to Solvay Solexis SpA in 2002. The following proceedings are still ongoing:

Administrative cases

On 28 February 2018, the Province of Pescara notified Solvay Speciality Polymers Italy SpA (formerly Solvay Solexis SpA) and Edison SpA of the launch of an administrative procedure to determine who was responsible for the pollution of the land outside the industrial complex belonging to Ausimont SpA which had been sold. The Province also ordered Edison to remove waste that was on the land concerned. Edison first appealed against this order before Pescara regional administrative court, and then before the Italian Council of State. In April 2020 the Council of State rejected the claim and Edison, considering the ruling unfair and unlawful, filed applications for its annulment before the Italian Court of Cassation, the Italian Council of State and the European Court of Human Rights (ECHR). The application before the Council of State has been rejected, while the case before the ECHR is still in process.

Edison has nonetheless begun work to make the site safe in agreement with the competent Public Administrations.

Arbitration

In 2012, arbitration proceedings were launched by Solvay SA and Solvay Specialty Polymers Italy SpA (the purchaser of Ausimont) for violation by Edison of the representations and warranties in environmental matters concerning the Bussi and Spinetta Marengo sites contained in the sale agreement.

At the end of June 2021, the Arbitral Tribunal issued a partial award, largely accepting the claims by Solvay Specialty Polymers Italy in relation to the environmental warranties given by Montedison under the Ausimont sale agreement signed in 2001. The Tribunal ordered Edison to pay compensation of €91 million for the period from May 2002 (closing date) to December 2016. This sentence was issued with one dissenting opinion by a member of the Arbitral Tribunal.

Edison's appeal against this award to the Swiss federal court of Lausanne was rejected in January 2022. The enforcement proceedings before the Milan Court of Appel ended on 24 January 2023 when Edison's action was dismissed, making the Arbitral Tribunal award enforceable. Edison has appealed before the Court of Cassation, and no hearing date has yet been set.

The Arbitral Tribunal postponed quantification of the damages suffered by Solvay Specialty Polymers Italy in the period after December 2016 and the legal fees incurred by the parties to a further phase of the arbitration, unless the parties reach an agreement in this respect. A hearing was held in September 2023, and the Tribunal's decision is expected to be given in late 2024 or early 2025.

Two civil cases:

- on 8 April 2019, the Italian Ministry for the Environment brought a civil action against Edison, claiming damages for environmental disaster. These proceedings are ongoing and are currently in the provisional investigation phase.
- in 2023, a similar civil action was brought by the town of Bussi sul Tirino, claiming damages for the prejudice allegedly suffered as a result of pollution in the zone. The debates are so far in the introductory phase.

Arbitration proceedings against Venture Global

In 2017, Edison signed a contract with the American company Venture Global LNG Inc to import liquefied natural gas from the United States. Deliveries were to start in 2023.

In breach of its contractual obligations, Venture Global has still not started to make the agreed volumes available to Edison, having chosen instead to sell this gas to other parties on the short-term wholesale market.

In response to this decision, in May 2023 Edison began arbitration proceedings against the American company, claiming compensation of some $1,500 million. The hearing before the London International Arbitration Court is scheduled for October 2024.

17.3.6 Investigations by France's Competition Authority ("ADLC")

At 31 December 2022 France's Competition Authority (the ADLC) was investigating the EDF group in relation to three separate matters (the referral concerning heat networks, the Plüm complaint, the Xélan complaint).

Following the ex-officio referral to the ADLC on 4 November 2019 concerning the formation of a partnership for heat network operations by EDF, Dalkia, Électricité de Strasbourg, ES Services Energétiques and EDEV, the ADLC issued its decision on 7 December 2023, dismissing the whole of the case.

There were no significant developments in the other ADLC investigations.

17.3.7 Inframarginal revenue cap in Belgium

In Belgium, the inframarginal revenue cap applicable from 1 August 2022 to 30 June 2023 is currently being challenged before the courts, notably regarding the legitimacy of possible retroactive application prior to 1 December 2022. This revenue cap was introduced as part of the European mechanism for capturing inframarginal rents on electricity production, adopted by the European Union on 6 October 2022 (see note 5.4). This challenge is currently under examination by the European authorities.

17.3.8 Litigation with E-Pango

On 14 December 2023 the alternative energy supplier E-Pango filed a claim against EDF, RTE and Enedis before the Paris Commercial Court for full compensation of the prejudice allegedly caused by the termination of its Balance Responsible Entity agreement with RTE. Following that termination E-Pango's authorisation to purchase electricity for resale was suspended, and as a result its customers were switched to a fallback contract with EDF as the temporary supplier.

E-Pango considers that its agreement with RTE was wrongfully terminated, and argues that it was a deliberate exclusion strategy by RTE, with the support of Enedis, for the benefit of EDF.

E-Pango is therefore claiming full compensation for its prejudice, valued at approximately €150 million based particularly on the end of its supply business, and the loss of the economic value of its competitive position.

Given the slightness of E-Pango's case against EDF, the chances that EDF will be cleared of all liability are considered high.

The case has been deferred to 12 February 2024.

Note 18 Financial assets and liabilities

ACCOUNTING PRINCIPLES AND METHODS

Financial assets comprise equity instruments (particularly non-consolidated investments), debt securities, loans and receivables at amortised cost, derivative assets and cash and cash equivalents.

The classification and measurement of financial instruments depend on the business model and the instruments' contractual characteristics. They are carried at amortised cost, fair value through other comprehensive income (OCI), or fair value through profit and loss.

Financial liabilities comprise loans and other financial liabilities, bank credit and derivative liabilities.

Financial assets and liabilities are recorded in the balance sheet as current if they mature within one year and non-current if they mature after one year, apart from derivatives held for trading, which are all classified as current.

DERECOGNITION OF FINANCIAL ASSETS AND LIABILITIES

The Group derecognises a financial asset when:

- the contractual rights to the cash flows generated by the asset expire, or
- the Group transfers the rights to receive contractual cash flows related to the financial asset through the transfer of substantially all of the risks and rewards associated with ownership of the asset.

Any interest created or retained by the Group in transferred financial assets is recorded as a separate asset or liability.

The Group derecognises a financial liability when its contractual obligations are extinguished, cancelled or expire. When a debt is renegotiated with a lender the Group derecognises the debt and recognises a new liability when the new terms are substantially different; otherwise, the book value is recalculated. In either case, the impacts of the debt renegotiation are recorded in profit and loss.

18.1 Financial assets

ACCOUNTING PRINCIPLES AND METHODS

The accounting treatment of financial assets depends on their contractual characteristics and business model

FINANCIAL ASSETS CARRIED AT FAIR VALUE THROUGH OCI WITH OR WITHOUT RECYCLING

Financial assets carried at fair value through OCI comprise:

- non-consolidated investments for which the Group has irrevocably opted to recognise subsequent fair value changes in OCI, with no recycling to profit and loss in the event of sale. Only dividends received from these investments are recognised in the income statement, under "Other financial income";
- debt securities (such as bonds) invested under a mixed "collect and sell" business model for which contractual cash flows consist entirely of principal and interest payments reflecting the time value of money and the credit risk associated with the instrument (the IFRS 9 "SPPI" test – Solely Payment of Principal and Interest). Changes in fair value are recorded directly in OCI with recycling and transferred to profit and loss when the securities are sold. For these debt securities, interest income is calculated at the effective interest rate and credited to the income statement under the heading "Other financial income".

Upon **initial recognition**, these financial assets are recorded at fair value plus transaction costs attributable to their acquisition.

At each reporting date, they are adjusted to fair value based on quoted prices where possible, or using the discounted future cash flow method or by reference to external sources otherwise. Changes in the fair value of these instruments are recorded directly in OCI with recycling (for debt securities) or OCI with no recycling (for equity instruments) in the income statement.

FINANCIAL ASSETS CARRIED AT FAIR VALUE THROUGH PROFIT AND LOSS

Financial assets carried at fair value through profit and loss comprise:

- assets acquired from inception with the intention of resale in the short term;
- derivatives not classified as hedges (derivatives held for trading);
- equity instruments (non-consolidated investments) which the Group has not irrevocably opted to classify as at fair value through OCI with no recycling;

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- debt securities that do not meet the requirements of the SPPI test, regardless of their business model. This chiefly concerns shares in investment funds.

These assets are recorded **at the transaction date** at fair value, which is generally equal to the amount of cash paid out. Transaction costs directly attributable to the acquisition are recorded in the income statement.

At each reporting date, they are adjusted to fair value based on quoted prices where possible, or using recognised valuation techniques such as the discounted cash flow method or reference to external sources otherwise. Changes in the fair value of these instruments are recorded in the income statement under the heading "Other financial income and expenses".

FINANCIAL ASSETS CARRIED AT AMORTISED COST

Loans and financial receivables are carried at amortised cost if the business model involves holding the instrument in order to collect contractual cash flows which consist entirely of principal and interest.

The interest received is calculated under the effective interest rate method and recorded in "Other financial income" in the income statement.

Loans and financial receivables that are not eligible for classification at amortised cost are carried at fair value through profit and loss, and recorded in "Other financial income and expenses" in the income statement.

IMPAIRMENT MODEL

The impairment model is based on expected credit loss (ECL). The Group applies a rating-based approach for counterparties with low credit risk. In application of the risk management policy, the Group's bond portfolio consists almost entirely of instruments issued by low-risk counterparties rated "Investment Grade".

In this situation, the ECL is estimated over a 12-month horizon following the year-end.

The threshold indicating a significant increase in credit risk is reached when the counterparty ceases to be rated "Investment Grade". The significant increase in the default risk may lead to reassessment of the ECL over the instrument's residual life.

For loans and receivables, the Group has chosen an approach based on the probability of default by the counterparty and assessment of changes in the credit risk.

18.1.1 Breakdown between current and non-current financial assets

Current and non-current financial assets break down as follows:

	31/12/2023			31/12/2022		
(In millions of euros)	Current	Non-current	Total	Current	Non-current	Total
Instruments at fair value through OCI with recycling	18,014	5,894	23,908	17,014	4,982	21,996
Instruments at fair value through OCI with no recycling	30	268	298	36	207	243
Instruments at fair value through profit and loss	1,845	25,629	27,474	1,409	23,490	24,899
Debt and equity securities	**19,889**	**31,791**	**51,680**	**18,459**	**28,679**	**47,138**
Trading derivatives – Positive fair value	14,519	-	14,519	30,566	-	30,566
Hedging derivatives – Positive fair value	2,654	3,512	6,166	6,903	5,376	12,279
Loans and financial receivables[1]	2,380	13,024	15,404	2,105	14,457	16,562
CURRENT AND NON-CURRENT FINANCIAL ASSETS	**39,442**	**48,327**	**87,769**	**58,033**	**48,512**	**106,545**

(1) Including impairment of €(353) million at 31 December 2023 (€(386) million at 31 December 2022).

The decrease in the positive fair value of trading derivatives (€(16) billion) is explained by a decrease in the value of derivatives used in the trading activity, principally associated with commodity market price movements observed in 2023, and to a lesser extent the lower volumes contracted.

18.1.2 Debt and equity securities

Details of debt and equity securities

Financial assets are monitored and managed by the Group with two main objectives:

- **dedicated assets set aside in France for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste, as required by article L. 594 of France's Environment Code**. These assets consist of diversified investments in bonds, monetary and equity investment funds, and equity investments held by EDF Invest. The general management policy for dedicated assets and a breakdown of the portfolio is presented in note 15.1.2;
- ***assets managed according to a liquidity-oriented policy*** ("liquid assets"). These are financial assets consisting of funds or interest rate instruments with initial maturity of over three months that are readily convertible into cash. EDF's monetary investment funds included in liquid assets amount to €1,369 million at 31 December 2023 (€1,115 million at 31 December 2022).

Details of debt and equity securities are shown in the table below:

	31/12/2023				31/12/2022
(in millions of euros)	At fair value through OCI with recycling	At fair value through OCI with no recycling	At fair value through profit and loss	Total	Total
Debt and equity securities					
EDF dedicated assets	5,522	-	24,888	30,410	27,369
Liquid assets	18,304	-	1,773	20,077	18,507
Other assets[1]	82	298	813	1,193	1,262
TOTAL	**23,908**	**298**	**27,474**	**51,680**	**47,138**

(1) Investments in non-consolidated companies.

Changes in debt and equity securities

(in millions of euros)	31/12/2022	Net increases	Changes in fair value	Changes in scope	Translation adjustments	Other	31/12/2023
Instruments at fair value through OCI with recycling	21,996	1,349	889	(72)	(153)	(101)	**23,908**
Instruments at fair value through OCI with no recycling	243	18	44	(19)	-	12	**298**
Instruments at fair value through profit and loss	24,899	364	2,164	61	(8)	(6)	**27,474**
TOTAL DEBT AND EQUITY SECURITIES	**47,138**	**1,731**	**3,097**	**(30)**	**(161)**	**(95)**	**51,680**

Changes in fair value recorded in equity

Changes in the fair value of debt and equity securities were recorded in equity (EDF share) over the period as follows:

	2023			2022		
(in millions of euros)	Gross changes in fair value recorded in OCI with recycling[1]	Gross changes in fair value recorded in OCI with no recycling[1]	Gross changes in fair value recycled to profit and loss[2]	Gross changes in fair value recorded in OCI with recycling[1]	Gross changes in fair value recorded in OCI with no recycling[1]	Gross changes in fair value recycled to profit and loss[2]
EDF dedicated assets	319	-	(112)	(1,081)	-	(206)
Liquid assets	525	-	(14)	(850)	-	(65)
Other assets	-	46	-	-	(16)	-
DEBT AND EQUITY SECURITIES [3]	**844**	**46**	**(126)**	**(1,931)**	**(16)**	**(271)**

(1) + / ( ): increase / (decrease) in equity (EDF share).
(2) + / ( ): increase / (decrease) in income (EDF share).
(3) Excluding associates and joint ventures.

In 2023, gross changes in fair value recorded in OCI with recycling principally concern EDF (€970 million, including €431 million for dedicated assets). In 2022, gross changes in fair value recorded in OCI with recycling principally concern EDF (€(1,660) million, including €(875) million for dedicated assets).

No significant impairment was recorded in 2023.

18.1.3 Loans and financial receivables

Loans and financial receivables consist of the following:

(in millions of euros)	31/12/2023	31/12/2022
Amounts receivable from the NLF	13,104	14,000
Loans and financial receivables – other	2,300	2,562
LOANS AND FINANCIAL RECEIVABLES	**15,404**	**16,562**

At 31 December 2023 loans and financial receivables mainly include:

- amounts representing reimbursements receivable from the Nuclear Liabilities Fund (NLF) and the British government for coverage of long-term nuclear obligations, totalling €13,104 million at 31 December 2023 (€14,000 million at 31 December 2022), discounted at the same rate as the provisions they finance (see note 15.2);

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- other loans and financial receivables notably include:
  - > the overfunding of EDF Energy's EDFG (EDF group of the ESPS) pension scheme by €134 million at 31 December 2023, compared to €658 million at 31 December 2022 (see note 16.1.1),
  - > an amount of €298 million representing the advance payments made by Luminus to Synatom to cover long-term nuclear obligations (€253 million at 31 December 2022 and see note 15.3). In Luminus' financial statements these amounts are discounted at the same rate as the provisions they fund. This receivable is equal to the fair value of the amounts held by Synatom on behalf of Luminus as fund assets,
  - > loans made by EDF Renewables in the course of its project development activity to associates and joint ventures mainly in connection with wind farms in France, the United Kingdom and North America, amounting to €903 million at 31 December 2023 compared to €823 million at 31 December 2022.

Changes in loans and financial receivables

(in millions of euros)	31/12/2022	Net increases	Discount effect	Changes in scope	Translation adjustments	Other	31/12/2023
Loans and financial receivables	16,562	(461)	933	(45)	296	(1,881)	15,404

Other changes in loans and financial receivables principally correspond to the changes in the receivable representing amounts reimbursable by the Nuclear Liabilities Fund (NLF) and the British government, and the surplus funding of EDF Energy's EDFG pension scheme.

18.2 Cash and cash equivalents

ACCOUNTING PRINCIPLES AND METHODS

Cash and cash equivalents comprise immediately available liquidities and very short-term investments that are readily convertible (*e.g.* in monetary funds) into a known amount of cash, usually maturing within three months or less of the acquisition date, and with negligible risk of fluctuation in value. These items are held to cover short-term obligations rather than for short-term investments or other purposes. When they mature in more than 3 months, they are included in Liquid assets in Debt and equity securities (see note 18.1.2).

"Cash equivalents" are recorded at fair value, with changes in fair value included in the heading "Other financial income and expenses".

Cash and cash equivalents include the following amounts recorded in the balance sheet:

(in millions of euros)	31/12/2023	31/12/2022
Cash	8,861	10,261
Cash equivalents	1,914	687
CASH AND CASH EQUIVALENTS	**10,775**	**10,948**

Cash restrictions

Cash and cash equivalents include €369 million of cash subject to restrictions at 31 December 2023 (€566 million at 31 December 2022) (see note 1.3.5).

18.3 Financial liabilities

ACCOUNTING PRINCIPLES AND METHODS

Loans and other financial liabilities are carried at amortised cost, adjusted for changes in the value of the risks hedged when they are covered by a fair value hedge (see note 18.7). Interest expenses are calculated at the effective interest rate and recorded in the income statement in "Cost of gross financial indebtedness" over the duration of the loan or financial liability.

18.3.1 Breakdown between current and non-current financial liabilities

Current and non-current financial liabilities break down as follows:

	31/12/2023			31/12/2022		
(in millions of euros)	Non-current	Current	Total	Non-current	Current	Total
Loans and other financial liabilities	67,769	18,878	86,647	67,340	28,713	96,053
Trading derivatives - negative fair value[1]	-	14,418	14,418	-	28,884	28,884
Hedging derivatives - negative fair value[1]	1,955	4,807	6,762	3,718	14,247	17,965
FINANCIAL LIABILITIES	**69,724**	**38,103**	**107,827**	**71,058**	**71,844**	**142,902**

(1) See note 18.7.

The decrease in the negative fair value of trading derivatives (€(14.5) billion) is explained by the decrease in prices observed on the commodity markets in 2022, and to a lesser extent the lower volumes contracted.

18.3.2 Loans and other financial liabilities

18.3.2.1 Changes in loans and other financial liabilities

(in millions of euros)	Bonds	Loans from financial institutions	Other financial liabilities	Lease liability	Accrued Interest	Total
Balances at 31/12/2022	**45,150**	**20,278**	**25,115**	**4,269**	**1,241**	**96,053**
Increases	8,029	1,498	2,419	704	395	13,045
Decreases	(2,003)	(3,567)	(15,489)	(752)	(110)	(21,921)
Translation adjustments	66	(56)	19	(8)	(61)	(40)
Changes in scope of consolidation	-	204	(11)	(1)	2	194
Changes in fair value	231	(24)	(37)	-	-	170
Other changes [1]	(2,390)	(20)	1,431	106	19	(854)
BALANCES AT 31/12/2023	**49,083**	**18,313**	**13,447**	**4,318**	**1,486**	**86,647**

(1) Other changes include €1,369 million corresponding to reclassification of perpetual subordinated bonds as Other financial liabilities including €546 million in view of the commitment to redeem those bonds at 22 January 2024 (see note 14.3).

In 2023, EDF issued approximately €8 billion of **senior bonds** on various markets, notably:

- On 19 January 2023, a 4-tranche senior multi-currency bond issue with nominal value of €2 billion and £950 million;
- On 17 May 2023, a 5-tranche senior bond issue of $3 billion and CAD500 million;
- On 28 November 2023, a green bond issue with nominal value of €1.0 billion (see note 18.3.2.2);

In March 2023, EDF redeemed senior bonds to the value of €2.0 billion.

The principal operations in 2023 concerning **loans from financial institutions** relate to drawings on credit lines totalling €1 billion (€0.9 billion on 4 bilateral credit lines concluded in 2023, and €0.1 million on a credit line concluded in 2022), and the repayment of several bilateral credit lines amounting €3.1 billion.

At 31 December 2023, **other financial liabilities** include negotiable debt instruments amounting to €4,986 million, and an amount of €3,544 million recognised in respect of the cash received for debt securities transferred to several banks under repurchase agreements. These operations are undertaken for liquidity management purposes and do not affect the net indebtedness.

A breakdown of the issuance and repayments of borrowings as presented in the cash flow statement is presented below:

(in millions of euros)	Bonds	Loans from financial institutions	Other financial liabilities	Lease liability	Termination of hedging derivatives	31/12/2023
Issuance of borrowings	8,029	1,498	2,419	-	1	11,947
Repayments of borrowings	(2,003)	(3,567)	(15,489)	(752)	99	(21,712)

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18.3.2.2 Principal borrowings of the Group

The Group's principal borrowings (excluding Green Bonds) at 31 December 2023 are as follows:

Type of borrowing (in millions of currencies)	Entity	Issue date[1]	Maturity	Issue amount	Currency	Rate
Euro MTN	EDF	09/2009	09/2024	2,500	EUR	4.63%
Euro MTN	EDF	11/2010	11/2025	750	EUR	4.00%
Bond	EDF	10/2022	12/2026	750	EUR	3.88%
Bond	EDF	01/2017	01/2027	107,900	JPY	1.09%
Euro MTN	EDF	03/2012	03/2027	1,000	EUR	4.13%
Bond	EDF	05/2023	05/2028	1,000	USD	5.70%
Bond	EDF	09/2018	09/2028	1,800	USD	4.50%
Bond	EDF	10/2022	10/2029	1,000	EUR	4.38%
Euro MTN	EDF	04/2010	04/2030	1,500	EUR	4.63%
Euro MTN	EDF	10/2018	10/2030	1,000	EUR	2.00%
Euro MTN	EDF	07/2001	07/2031	650	GBP	5.88%
Euro MTN	EDF	01/2023	01/2032	1,000	EUR	4.25%
Euro MTN	EDF	02/2003	02/2033	850	EUR	5.63%
Bond	EDF	05/2023	05/2033	1,000	USD	6.25%
Euro MTN	EDF	06/2009	06/2034	1,500	GBP	6.13%
Euro MTN	EDF	10/2016	10/2036	750	EUR	1.88%
Bond	EDF	09/2018	09/2038	650	USD	4.88%
Bond	EDF	01/2009	01/2039	1,750	USD	6.95%
Bond	EDF	01/2010	01/2040	850	USD	5.6%
Euro MTN	EDF	11/2010	11/2040	750	EUR	4.5%
Euro MTN	EDF	10/2011	10/2041	1,250	GBP	5.50%
Euro MTN	EDF	01/2023	01/2043	1,000	EUR	4.63%
Bond	EDF	01/2014	01/2044	1,000	USD	4.88%
Bond	EDF	10/2015	10/2045	1,500	USD	4.75%
Bond	EDF	09/2018	09/2048	1,300	USD	5.00%
Euro MTN	EDF	12/2019	12/2049	1,250	EUR	2.00%
Euro MTN	EDF	09/2010	09/2050	1,000	GBP	5.13%
Bond	EDF	05/2023	05/2053	1,000	USD	6.90%
Euro MTN	EDF	10/2016	10/2056	2,164	USD	4.99%
Euro MTN	EDF	11/2019	12/2069	2,000	USD	4.50%
Bond	EDF	01/2014	01/2114	700	USD	6.00%
Bond	EDF	01/2014	01/2114	1,350	GBP	6.00%

(1) Date funds were received.

At 31 December 2023, the Group's principal **Green Bonds** (see note 20.3.1) are as follows:

Type of borrowing (in millions of currency units)	Issue date[1]	Maturity	Issue amount	Currency	Rate
Bond	10/2015	10/2025	1,250	USD	3.63 %
Euro MTN	10/2016	10/2026	1,750	EUR	1.00 %
Euro MTN	12/2023	06/2027	1,000	EUR	3.75%
Euro MTN	08/2023	09/2027	200	CHF	2.30%
Bond	01/2017	01/2029	19,600	JPY	1.28%
Euro MTN	08/2023	09/2031	125	CHF	2.55%
Bond	01/2017	01/2032	6,400	JPY	1.57%
Euro MTN	11/2021	11/2033	1,850	EUR	1.00 %
Bond	10/2022	10/2034	1,250	EUR	4.75 %

(1) Date funds were received.

On 8 September 2020, EDF made an offering of Green Bonds convertible into new shares and/or exchangeable for existing shares (***OCEANEs** Vertes*) with the nominal amount of €2,400 million at a 0% rate.

Holders of these bonds have the right to convert them into new EDF shares and/or exchange them for existing EDF shares.

On 23 November 2023, following the French government's simplified tender offer, the conversion/exchange ratio was raised to 1.289 EDF share per OCEANE bond.

On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023 (see notes 2 and 14.1).

Following the squeeze-out on 8 June 2023, the remaining 80,298 OCEANE bonds that had not been tendered to the offer were transferred to the State, giving rise to conversion of all those bonds on 13 June 2013, and delisting of EDF's OCEANE bonds from Euronext Access (see note 14.4).

18.3.3 Loans and financial liabilities by maturity, currency and interest rate

18.3.3.1 Maturity of loans and financial liabilities

(in millions of euros)	Bonds	Loans from financial institutions	Other financial liabilities	Lease liability	Accrued interest	Total
Less than one year	2,911	1,498	12,687	703	1,079	18,878
From one to five years	10,888	14,860	480	2,006	119	28,353
More than five years	35,284	1,955	280	1,609	288	39,416
LOANS AND OTHER FINANCIAL LIABILITIES AT 31/12/2023	**49,083**	**18,313**	**13,447**	**4,318**	**1,486**	**86,647**

The non-discounted lease liability matures as follows:

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1-5 years	> 5 year	Total
NON-DISCOUNTED CONTRACTUAL CASH FLOWS	**5,089**	**825**	**2,329**	**1,935**	**4,844**

18.3.3.2 Breakdown of loans and other financial liabilities by currency

The breakdown of loans and other financial liabilities by currency includes the effect of derivatives classified as hedges (of debts in foreign currencies and net investments in foreign subsidiaries) under IFRS 9.

At 31 December 2023

	31/12/2023				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
(in millions of euros)	amount	% of debt	amount	amount	% of debt
Euro (EUR)	51,346	59%	12,811	64,157	74%
American dollar (USD)	20,860	24%	(16,634)	4,226	5%
Pound sterling (GBP)	9,849	12%	5,989	15,838	18%
Other	4,592	5%	(2,166)	2,426	3%
LOANS AND OTHER FINANCIAL LIABILITIES	**86,647**	**100%**	**-**	**86,647**	**100%**

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At 31 December 2022

	31/12/2022				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
(in millions of euros)	amount	% of debt	amount	amount	% of debt
Euro (EUR)	62,269	65%	13,789	76,058	79%
American dollar (USD)	21,465	22%	(15,813)	5,652	6%
Pound sterling (GBP)	8,149	9%	3,284	11,433	12%
Other	4,170	4%	(1,260)	2,910	3%
LOANS AND OTHER FINANCIAL LIABILITIES	**96,053**	**100%**	**-**	**96,053**	**100%**

18.3.3.3 Breakdown of loans and other financial liabilities by type of interest rate

The breakdown of loans and other financial liabilities by type of interest rate includes the effect of derivatives classified as hedges under IFRS 9.

At 31 December 2023

	31/12/2023				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
(in millions of euros)	amount	% of debt	amount	amount	% of debt
Fixed rates	67,531	78%	(16,197)	51,334	59%
Floating rates	19,116	22%	16,197	35,313	41%
LOANS AND OTHER FINANCIAL LIABILITIES	**86,647**	**100%**	**-**	**86,647**	**100%**

At 31 December 2022

	31/12/2022				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
(in millions of euros)	amount	% of debt	amount	amount	% of debt
Fixed rates	69,748	73%	(13,784)	55,964	58%
Floating rates	26,305	27%	13,784	40,089	42%
LOANS AND OTHER FINANCIAL LIABILITIES	**96,053**	**100%**	**-**	**96,053**	**100%**

A large portion of the Group's fixed-rate loans is swapped to variable rates.

18.3.4 Early repayment clauses

Project financing loans from non-Group parties to SPV-type project companies owned by EDF Renewables may include early repayment clauses that principally apply when the project company concerned fails to respect certain covenants, particularly a minimum Debt Service Coverage Ratio (DSCR). In general, early repayment clauses are activated when this ratio falls below 1.

In other Group entities, certain clauses contained in contracts for financing or other commitments may make reference to Group credit ratings but are not classified as covenants.

Eleven loans with a combined total of €2,330 million contain a rendez-vous clause requiring contact between the borrower and lender if the borrower's credit rating falls below a specified level, possibly leading to renegotiation of the terms of the loan.

No early repayment took place in 2023 as a result of any Group entity's failure to comply with contractual clauses concerning loans.

18.4 Unused credit lines

In 2023, EDF concluded two credit lines with a combined total of €900 million. One other credit lines amounting to €300 million matured.

Edison also contractualised a €1 billion credit line from a pool of banks, which is guaranteed to the extent of 70% by Italy's national export credit agency SACE.

At 31 December 2023, the Group has unused credit lines with various banks totalling €15,842 million (€14,051 million at 31 December 2022), including €11,175 million of credit lines indexed on ESG criteria.

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1-5 years	> 5 years	Total
CONFIRMED CREDIT LINES	**15,842**	**4,842**	**10,971**	**29**	**14,051**

18.5 Fair value of financial instruments

ACCOUNTING PRINCIPLES AND METHODS

Financial instruments are stated at fair value, which corresponds to the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction on the principal or most advantageous market at the measurement date. The valuation methods for each level are generally as follows:

- level 1 (unadjusted quoted prices): prices accessible to the entity at the measurement date on active markets, for identical assets or liabilities;
- level 2 (observable data): data concerning the asset or liability, other than the market prices included in initial level 1 input, which are directly observable (such as a price) or indirectly observable (*i.e.* deduced from observable prices);
- level 3 (non-observable data): data that are not observable on a market, including observable data that have been significantly adjusted.

The distribution of financial assets and liabilities in the balance sheet by level is as follows:

At 31 December 2023

(in millions of euros)	Balance sheet value	Fair value	Level 1 Unadjusted quoted prices	Level 2 Observable data	Level 3 Non-observable data
Equity securities	2,527	2,527	-	2,020	507
Debt securities	49,153	49,153	6,599	42,400	154
Hedging derivatives	6,166	6,166	14	6,152	-
Trading derivatives	14,519	14,519	477	11,851	2,191
Cash equivalents	1,914	1,914	61	1,853	-
FINANCIAL ASSETS CARRIED AT FAIR VALUE	**74,279**	**74,279**	**7,151**	**64,276**	**2,852**
Receivables from the NLF	13,104	13,104	-	13,104	-
Other loans and financial receivables	2,300	2,300	-	2,300	-
FINANCIAL ASSETS CARRIED AT AMORTISED COST	**15,404**	**15,404**	**-**	**15,404**	**-**
Hedging derivatives	6,762	6,762	37	6,725	-
Trading derivatives	14,418	14,418	487	12,921	1,010
FINANCIAL LIABILITIES CARRIED AT FAIR VALUE	**21,180**	**21,180**	**524**	**19,646**	**1,010**
Loans and other financial liabilities	86,647	84,736	-	84,736	-
FINANCIAL LIABILITIES CARRIED AT AMORTISED COST	**86,647**	**84,736**	**-**	**84,736**	**-**

Level 3 debt and equity securities are principally non-consolidated investments carried at historical value.

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At 31 December 2022

(in millions of euros)	Balance sheet value	Fair value	Level 1 Unadjusted quoted prices	Level 2 Observable data	Level 3 Non-observable data
Equity securities	2,597	2,597	-	2,093	504
Debt securities	44,541	44,541	2,849	41,542	150
Hedging derivatives	12,279	12,279	188	12,091	-
Trading derivatives	30,566	30,566	882	28,378	1,306
Cash equivalents	687	687	64	623	-
FINANCIAL ASSETS CARRIED AT FAIR VALUE	**90,670**	**90,670**	**3,983**	**84,727**	**1,960**
Receivables from the NLF	14,000	14,000	-	14,000	-
Other loans and financial receivables	2,562	2,562	-	2,562	-
FINANCIAL ASSETS CARRIED AT AMORTISED COST	**16,562**	**16,562**	**-**	**16,562**	**-**
Hedging derivatives	17,965	17,965	9	17,913	43
Trading derivatives	28,884	28,884	773	27,447	664
FINANCIAL LIABILITIES CARRIED AT FAIR VALUE	**46,849**	**46,849**	**782**	**45,360**	**707**
Loans and other financial liabilities	96,053	93,264	-	93,264	-
FINANCIAL LIABILITIES CARRIED AT AMORTISED COST	**96,053**	**93,264**	**-**	**93,264**	**-**

Level 3 debt and equity securities are principally non-consolidated investments carried at historical value.

18.6 Market and counterparty risks

As an operator in the energy sector worldwide, the EDF group is exposed to financial market risks, energy market risks and counterparty risks. All these risks could generate volatility in the financial statements.

A more detailed description of these risks and the sensitivity analyses required by IFRS 7 can be found in chapter 6 of the 2023 Management Report.

Financial market risks

The main financial market risks to which the Group is exposed are the liquidity risk, the foreign exchange risk, the interest rate risk and the equity risk.

The objective of the Group's liquidity risk management is to seek resources at optimum cost and ensure their constant accessibility.

The foreign exchange risk relates to the diversification of the Group's businesses and geographical locations, and results from exposure to the risk of exchange rate fluctuations. These fluctuations can affect the Group's translation differences, balance sheet items, financial expenses, equity and net income.

The interest rate risk results from exposure to the risk of fluctuations in interest rates that can affect the value of assets invested by the Group, the value of the liabilities covered by provision, or its financial expenses.

The Group is exposed to equity risks, particularly through its dedicated asset portfolio held for secure financing of long-term nuclear commitments, through external pension funds, and to a lesser extent through its cash assets and directly-held investments.

Energy market risks

The EDF group operates on deregulated energy markets, mainly in Europe, through its generation, supply and trading activities. This exposes the Group to price variations on the wholesale markets for energy (electricity, gas, coal, oil products) and the CO_2 emissions quota market, with a potentially significant impact on the financial statements.

Counterparty risks

Counterparty risk is defined as the total loss that the EDF group would sustain on its business and market transactions if a counterparty defaulted and failed to perform its contractual obligations.

Regarding the customer risk, which is another component of the counterparty risk, a statement of receivables not yet due and overdue is shown in note 13.3.1.

18.7 Derivatives and hedge accounting

ACCOUNTING PRINCIPLES AND METHODS

The Group uses derivatives such as swaps and forward contracts to hedge its interest rate, foreign exchange, energy and commodity risks.

In accordance with IFRS 9, hedge accounting can be applied to derivatives when they meet certain eligibility criteria. Some derivatives classified as "own use" are excluded from application of IFRS 9.

DERIVATIVES NOT COVERED BY IFRS 9: "OWN USE" CONTRACTS

Forward purchase and sale contracts for physical delivery of energy or commodities are considered to fall outside the scope of application of IFRS 9 when they are entered into as part of the Group's normal business activity ("own use"). This is demonstrated to be the case when all the following conditions are fulfilled:

- a physical delivery takes place under all such contracts;
- the volumes purchased or sold under these contracts correspond to the Group's operating requirements;
- the contracts cannot be considered as options as defined by the standard. In the specific case of electricity sale contracts, the contract is equivalent to a firm forward sale or can be considered as a capacity sale.

The Group considers that transactions negotiated with a view to balancing the volumes between electricity purchase and sale commitments are part of its normal business as an integrated electricity operator, and are thus outside the scope of IFRS 9.

MEASUREMENT AND RECOGNITION OF DERIVATIVES

Derivatives are initially recorded at fair value, based on quoted prices and market data available from external sources. If no quoted prices are available, the Group may refer to recent comparable transactions or, if no such transactions exist, base its valuation on internal models that are recognised by market participants, giving priority to information directly derived from observable data such as over-the-counter listings.

In application of IFRS 13, the fair value of derivatives incorporates the counterparty credit risk for derivative assets and the own credit risk for derivative liabilities.

DERIVATIVES CLASSIFIED AS HEDGES

The EDF group uses derivatives to hedge its foreign exchange and interest rate risks, as well as risks related to certain commodity contracts.

The Group applies the criteria defined by IFRS 9 to identify operations subject to hedge accounting, particularly regarding the existence of formal documentation from their inception and compliance with hedge effectiveness requirements.

The hedging relationship ends when it ceases to satisfy the above criteria. This includes situations in which the hedging instrument expires or is sold, terminated or exercised, or when the risk management objectives initially defined are no longer met.

Only derivatives external to the Group, and internal derivatives that are matched with similar transactions external to the Group, qualify for hedge accounting.

The Group uses the following categories for hedges:

- fair value hedge;
- cash flow hedge;
- net foreign investment hedge.

HEDGE CATEGORIES

Fair value hedge

This is a hedge of exposure to changes in the fair value of an asset or liability recorded in the balance sheet, or a firm commitment to purchase or sell an asset. Changes in the fair value of the hedged item attributable to the hedged component of that item are recorded in profit and loss and offset by corresponding variations in the fair value of the hedging instrument. Only the ineffective portion of the hedge has an impact on profit and loss.

Some loans and financial liabilities, and some commodity contracts, are covered by a fair value hedge. In such cases their balance sheet value is adjusted for changes in fair value attributable to the hedged risks (foreign exchange, interest rate and price risks).

Cash flow hedge

This is a hedge of exposure to variability in cash flows associated with an asset or liability or a highly probable future transaction for which variations in cash flows generated by the hedged item are offset by changes in the value of the hedging instrument.

The effective portion of accumulated changes in the hedging instrument's fair value is recorded in equity, and the ineffective portion (*i.e.* changes in the fair value of the hedging instrument in excess of changes in the fair value of the hedged item) is recorded in profit and loss.

When the hedged cash flows materialise, the amounts previously recognised in equity are recycled to profit and loss in the same way as for the hedged item, or are treated as an adjustment to the value of the non-financial asset acquired.

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Net foreign investment hedge

This is a hedge of exposure to the foreign exchange risk related to a net investment in an entity which does not have the same functional currency as the Group. The effective portion of accumulated changes in the hedging instrument's fair value is recorded in equity until the disposal or liquidation of the net investment, when it is included in the gain or loss on disposal. The ineffective portion (defined in the same way as for cash flow hedges) is recorded directly in profit and loss.

This risk is hedged in the EDF group level either by matching it with debts in the same currency, or by using derivatives.

Hedging costs: foreign currency basis spread on cross-currency swaps

Hedging costs include the foreign currency basis spread on cross-currency swaps. Fair value variations are included in equity with recycling, and subsequently transferred to interest expenses on financing operations, which are included in the cost of gross financial indebtedness in the income statement.

TRADING DERIVATIVES

Trading derivatives comprise:

- derivatives subscribed for economic hedging that do not qualify as hedges for accounting purposes; changes in the value of these instruments are reported in profit and loss. When the derivatives are used for economic hedging of negotiable debt instruments and purchased bonds, they are included in "Other financial income and expenses". When the derivatives are used for economic hedging of generation and supply operations, they are included in "Net changes in fair value on Energy and Commodity derivatives, excluding trading activities" (see note 6);
- derivatives used in trading activities; changes in the fair value of these instruments are included in sales (see note 5.1).

18.7.1 Breakdown of hedging and trading derivatives

The fair value of hedging and trading derivatives reported in the balance sheet breaks down as follows:

(in millions of euros)	Notes	31/12/2023	31/12/2022
Positive fair value of hedging derivatives	18.1.1	6,166	12,279
Negative fair value of hedging derivatives	18.3.1	(6,762)	(17,965)
FAIR VALUE OF HEDGING DERIVATIVES		**(596)**	**(5,686)**
Positive fair value of trading derivatives	18.1.1	14,519	30,566
Negative fair value of trading derivatives	18.3.1	(14,418)	(28,884)
FAIR VALUE OF TRADING DERIVATIVES		**101**	**1,682**

The fair value of hedging and trading derivatives by type of risk hedged is shown below:

(in millions of euros)	Notes	31/12/2023	31/12/2022
Hedging derivatives - interest rate risk	18.7.2	997	1,138
Hedging derivatives - foreign exchange risk	18.7.3	795	1,638
Hedging derivatives - commodity risks	18.7.4	(2,388)	(8,462)
FAIR VALUE OF HEDGING DERIVATIVES		**(596)**	**(5,686)**
Trading derivatives - interest rate risk	18.7.2	(4)	(28)
Trading derivatives - foreign exchange risk	18.7.3	(72)	(217)
Trading derivatives - commodity risk	18.7.4	177	1,927
FAIR VALUE OF TRADING DERIVATIVES		**101**	**1,682**

The fair value of hedging derivatives by type and purpose of hedge is shown below:

(in millions of euros)	Notes	31/12/2023	31/12/2022
Fair value hedges of loans and liabilities		(1,006)	(1,385)
Cash flow hedges of loans and liabilities		2,385	3,409
Sub-total	**19.2**	**1,379**	**2,024**
Fair value hedges of commodity contracts		220	(1,091)
Cash flow hedges of commodity contracts		(2,478)	(6,959)
Sub-total		**(2,258)**	**(8,050)**
Net foreign investment hedges		191	173
Fair value hedges of dedicated assets		57	93
Fair value hedges of liquid assets	19.2	35	74
FAIR VALUE OF HEDGING DERIVATIVES		**(596)**	**(5,686)**

18.7.2 Interest rate derivatives

The Group is exposed to the risk of fluctuations in interest rates that can affect the value of its loans and financial liabilities, its assets (liquid assets and dedicated assets), and its future financial expenses.

The Group hedges its exposure to changes in the fair value of fixed-rate debts, many of which are converted to floating rates. The derivatives used for these hedges are fixed/floating interest rate swaps and cross-currency swaps, with changes in fair value recorded in profit and loss symmetrically to changes in the value of the hedged debts.

The Group also hedges its floating-rate debt against future changes in interest rates by using floating/fixed interest rate swaps for cash flow hedges.

Details of interest rate derivatives used in a hedging relationship or designated as trading derivatives are shown below:

	Notional at 31/12/2023				Notional at 31/12/2022	Fair Value	
(in millions of euros)	< 1 year	1-5 years	> 5 years	Total	Total	31/12/2023	31/12/2022
Purchases of Caps	6	27	28	61	73	7	10
Interest rate transactions	**6**	**27**	**28**	**61**	**73**	**7**	**10**
Fixed rate payer/floating rate receiver	2,197	4,890	6,293	13,380	11,278	1,448	1,807
Floating rate payer/fixed rate receiver	915	6,584	17,260	24,759	22,047	(1,176)	(1,713)
Floating rate/floating rate	-	526	3,154	3,680	2,670	79	76
Fixed rate/fixed rate	525	4,806	5,497	10,828	9,192	639	958
Interest rate swaps	**3,637**	**16,806**	**32,204**	**52,647**	**45,187**	**990**	**1,128**
INTEREST RATE DERIVATIVES - HEDGING	**3,643**	**16,833**	**32,232**	**52,708**	**45,260**	**997**	**1,138**
Purchase of options	-	-	520	520	552	(11)	(22)
Interest rate swaps	195	76	2,113	2,384	9,549	7	(6)
INTEREST RATE DERIVATIVES - TRADING	**195**	**76**	**2,633**	**2,904**	**10,101**	**(4)**	**(28)**

The fair value of interest rate/exchange rate cross-currency swaps comprises the interest rate effect only.
The notional value of cross-currency swaps is included both in this note and the note on currency derivatives (see note 18.7.3).

18.7.3 Currency derivatives

The Group is exposed to the risk of exchange rate fluctuations due to the diversification of its businesses, supply contracts in foreign currencies for goods and services, and its geographical locations. These fluctuations can affect the Group's translation differences recognised in equity, balance sheet items, financial expenses, equity and net income.

There are several types of hedged item:

- Liabilities in foreign currencies, for which cross-currency swaps are used in cash flow hedge;
- Financial assets subscribed in foreign currencies;
- Purchases of commodities and fuels, for which the Group hedges the associated foreign exchange risk;
- Net investments in subsidiaries in foreign currencies.

Details of currency derivatives used in a hedging relationship or designated as trading derivatives are shown in the following tables. The notional value of cross-currency swaps is included both in this note and the note on interest rate hedging derivatives (see note 18.7.2).

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At 31 December 2023

(in millions of euros)	Notional amount to be received at 31/122023 < 1 year	1-5 years	> 5 years	Total	Notional amount to be given at 31/12/2023 < 1 year	1-5 years	> 5 years	Total	Fair value 31/12/2023
Forward exchange transactions	4,644	639	-	5,283	4,641	629	-	5,270	10
Swaps	32,046	11,920	15,030	58,996	31,773	11,792	14,665	58,230	785
Options	3,371	-	-	3,371	3,426	-	-	3,426	-
CURRENCY DERIVATIVES - HEDGING	**40,061**	**12,559**	**15,030**	**67,650**	**39,840**	**12,421**	**14,665**	**66,926**	**795**
Forward transactions	5,854	3,310	-	9,164	5,815	3,275	-	9,090	54
Swaps	21,767	4,666	2,012	28,445	21,879	4,697	2,018	28,594	(126)
Options	-	-	-	-	-	-	-	-	-
CURRENCY DERIVATIVES -TRADING	**27,621**	**7,976**	**2,012**	**37,609**	**27,694**	**7,972**	**2,018**	**37,684**	**(72)**

At 31 December 2022

(in millions of euros)	Notional amount to be received at 31/12/022 < 1 year	1-5 years	> 5 years	Total	Notional amount to be given at 31/12/2022 < 1 year	1-5 years	> 5 years	Total	Fair value 31/12/2022
Forward exchange transactions	4,451	1,010	-	5,461	4,405	964	-	5,369	87
Swaps	25,682	9,303	15,647	50,632	25,257	8,992	14,720	48,969	1,531
Options	-	1,693	-	1,693	-	1,828	-	1,828	20
CURRENCY DERIVATIVES - HEDGING	**30,133**	**12,006**	**15,647**	**57,786**	**29,662**	**11,784**	**14,720**	**56,166**	**1,638**
Forward transactions	9,979	6,281	25	16,285	9,940	6,131	23	16,094	149
Swaps	22,274	7,457	231	29,962	22,484	7,694	225	30,403	(366)
Options	-	-	-	-	-	-	-	-	-
CURRENCY DERIVATIVES - TRADING	**32,253**	**13,738**	**256**	**46,247**	**32,424**	**13,825**	**248**	**46,497**	**(217)**

The notional value of cross-currency swaps shown in this note is also included in the note on interest rate derivatives (see note 18.7.2).

18.7.4 Commodity derivatives

The Group is exposed to price variations on the wholesale markets for energy (electricity, gas, coal, oil products) and the CO_2 emissions quota market with a potentially significant impact on the financial statements.

The Group hedges its forecast sales and purchases of electricity, gas, and coal using futures, forwards, options and swaps, essentially through cash flow hedges.

Details of commodity derivatives used for hedging are as follows:

(in millions of euros)	Units of measure	31/12/2023 Net notional < 1 year	1-5 years	> 5 years	Total	Fair value	31/12/2022 Net notional	Fair value
Electricity	TWh	8	9	-	17	(1,745)	16	(3,619)
Gas	Millions of therms	420	230	-	650	(636)	273	(4,999)
Oil products	Thousands of barrels	6,005	640	-	6,645	-	12,044	96
CO_2	Thousands of tonnes	1,680	682	-	2,362	(7)	4,136	60
Other commodities							-	-
COMMODITY DERIVATIVES - HEDGING						**(2,388)**		**(8,462)**

The negative fair value of commodity derivatives used for hedging at 31 December 2023 (€(2.4) billion) is mainly explained by the change in the market price/contractual exercise price spread on electricity and gas hedging instruments and the change in commodity prices in 2023.

Details of commodity derivatives used for trading are as follows:

		31/12/2023		31/12/2022	
(in millions of euros)	Units of measure	Net notional	Fair value	Net notional	Fair value
Electricity	TWh	(18)	1,213	(13)	(1,090)
Gas	Millions of therms	(3,623)	(1,071)	(2,497)	2,990
Oil products	Thousands of barrels	(746)	(73)	4,065	46
CO_2	Thousands of tonnes	(4,429)	21	(1,417)	(28)
Coal and freight	Millions of tonnes	(1)	83	(1)	15
Other commodities		-	4	-	(6)
COMMODITY DERIVATIVES - TRADING		**177**		**1,927**	

These instruments mainly include contracts included in EDF Trading's portfolio.

18.7.5 Impact of hedging derivatives on comprehensive income

Changes in the fair value of hedging derivatives included in equity (EDF share) and profit and loss :

	2023			2022		
(in millions of euros)	Gross changes in fair value recorded in equity[1]	Gross changes in fair value transferred to income -Recycling[2]	Gross changes in fair value transferred to income - Ineffectiveness	Gross changes in fair value recorded in equity[1]	Gross changes in fair value transferred to income -Recycling[2]	Gross changes in fair value transferred to income - Ineffectiveness
Interest rate hedging[4]	(202)	-	6	392	-	(1)
Exchange rate hedging	(1,069)	(335)	12	2,653	598	92
Net foreign investment hedging	(107)	-	-	308	-	-
Commodity hedging	4,833	(3,066)	(8)	(9,002)	(3,131)	(2)
HEDGING DERIVATIVES[3]	**3,455**	**(3,401)**	**10**	**(5,649)**	**(2,533)**	**89**

(1) +/( ): increase/(decrease) in equity (EDF share).

(2) +/( ): increase/(decrease) in net income (EDF share).

(3) Excluding associates and joint ventures.

(4) Gross changes in fair value recorded in equity in 2022 include €(126) million of changes in the fair value of hedging costs resulting from the foreign currency basis spread on and cross-currency swaps. These changes are transferred to profit and loss via interest expenses on financing operations, which are included in the cost of gross indebtedness in the income statement (see note 8.1).

The gross change in the fair value of hedging instruments recognised in equity (EDF share), including recycling, is €6 856 million in 2023 (€(3,116) million in 2022).

In 2023 this change is explained by the gross fair value changes in net foreign investment hedges, amounting to +€(107) million (+€308 million in 2022), interest rate, exchange rate and commodity hedges, amounting to €7,089 million (€(3,579) million in 2022) and hedging costs associated with the foreign//cross currency basis spread on interest rate swaps and cross-currency swaps, amounting to €(126) million in 2023; see the consolidated statement of comprehensive income.

The amount transferred to operating profit before depreciation and amortisation in 2023 is €(3,066) million in respect of commodity hedges comprises:

- €(1,974) million for gas hedging contracts, concerning the France - Generation and supply and United Kingdom segments,
- €(1,034) million for electricity hedging contracts, concerning the France - Generation and supply and United Kingdom segments,
- €(58) million for other hedging contracts.

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18.7.6 Offsetting of financial assets and liabilities

ACCOUNTING PRINCIPLES AND METHODS

A financial asset and financial liability must be netted if the entity currently has a legally enforceable right to do so and intends either to settle the net amount or to realise the asset and settle the liability simultaneously.

At 31 December 2023

			Balance with offsetting under IAS 32			Amounts covered by a general offsetting agreement but not offset under IAS 32		
(in millions of euros)	As reported in balance sheet	Balance without offsetting	Gross amount recognised (before offsetting)	Gross amount offset under IAS 32	Net amount recognised after offsetting under IAS 32	Financial instruments	Fair value of financial collateral	Net amount
Fair value of derivatives – assets	20,685	9,618	17,835	(6,768)	11,067	(1,504)	(2,718)	6,845
Fair value of derivatives – liabilities	(21,180)	(8,554)	(19,394)	6,768	(12,626)	1,504	3,974	(7,148)

At 31 December 2022

			Balance with offsetting under IAS 32			Amounts covered by a general offsetting agreement but not offset under IAS 32		
(in millions of euros)	As reported in balance sheet	Balance Without offsetting	Gross amount recognised (before offsetting)	Gross amount offset under IAS 32	Net amount recognised after offsetting under IAS 32	Financial instruments	Fair value of financial collateral	Net amount
Fair value of derivatives – assets	42,845	4,493	76,159	(37,807)	38,352	(3,548)	(7,289)	27,515
Fair value of derivatives – liabilities	(46,849)	(5,533)	(79,123)	37,807	(41,316)	3,548	7,503	(30,265)

Note 19 Financial indicators

The financial indicators are not defined by the accounting standards and are not directly visible in the Group's financial statements. The principal financial indicators are the following.

19.1 Net income excluding non-recurring items

Net income excluding non-recurring items corresponds to the Group's share of net income (EDF net income) excluding non-recurring items, net changes in the fair value of energy and commodity derivatives (excluding trading activities), and net changes in the fair value of debt and equity instruments, net of tax.

The following tables show the transition from EDF net income to net income excluding non-recurring items:

At 31 December 2023

		2023			
(in millions of euros)	Notes	Gross value	Income taxes	Non-controlling interests	EDF net income
Net income					**10,016**
Changes in the fair value of debt and equity instruments[1]		**(2,236)**	**577**	**6**	**(1,653)**
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	**6**	**(363)**	**100**	**-**	**(263)**
Impairment		**13,251**	**(2,238)**	**(2,763)**	**8,250**
- impairment of tangible and intangible fixed assets[2]	10.8.1 and 10.8.2	13,011	(2,230)	(2,762)	8,019
- impairment of investments in associates and joint ventures[3]	12.3	240	(8)	(1)	231
Other items		**2,955**	**(752)**	**(72)**	**2,131**
- other operating income and expenses	7	2,944	(752)	(72)	2,120
- other		*11*	-	-	*11*
NET INCOME EXCLUDING NON-RECURRING ITEMS					**18,481**

(1) Including fair value hedges of dedicated assets.
(2) In 2023, this impairment notably concerns EDF Energy (€(12,871) million).
(3) In 2023, this impairment principally concerns dedicated assets (€(86) million), the Neart na Gaoithe (NNG) project in the United Kingdom (€(54) million) and wind farms in Mexico (€(16) million).

The net income excluding non-recurring items amounts to €18,481 million at 31 December 2023, up by €31,143 million compared to 2022.

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At 31 December 2022

(in millions of euros)	Notes	2022 Gross value	Income taxes	Non-controlling interests	EDF net income
Net income					**(17,940)**
Changes in the fair value of debt and equity instruments[1]		**3,160**	**(822)**	**(12)**	**2,326**
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	**6**	**849**	**(227)**	**-**	**622**
Impairment		**1,905**	**(132)**	**(478)**	**1,295**
- impairment of tangible and intangible fixed assets[2]	10.8.1 and 10.8.2	1,762	(121)	(478)	1,163
- impairment of investments in associates and joint ventures[3]	12.3	143	(11)	-	132
Other items		**858**	**181**	**(4)**	**1,035**
- other operating income and expenses	7	687	(141)	(4)	542
- provisions for financial risks on equity investments		187	-	-	187
- expenses related to tax litigation		-	322	-	322
- other		(16)	-	-	(16)
NET INCOME EXCLUDING NON-RECURRING ITEMS					**(12,662)**

(1) Including fair value hedges of dedicated assets.

(2) In 2022, this impairment notably concerns goodwill at EDF Energy (€(1,176) million), wind farms in the United States and Mexico (€(129) million) and impairment of land in the United Kingdom (€(120) million).

(3) In 2022, this impairment principally concerns wind farms in the United States (€(139) million).

19.2 Net indebtedness

Net indebtedness comprises total loans and financial liabilities, less cash and cash equivalents and liquid assets. Liquid assets are financial assets consisting of funds or interest rate instruments with initial maturity of over three months that are readily convertible into cash and are managed according to a liquidity-oriented policy.

Net indebtedness are as follows:

(in millions of euros)	Notes	31/12/2023	31/12/2022
Loans and other financial liabilities	18.3.2	86,647	96,053
Derivatives used to hedge liabilities	18.7.1	(1,379)	(2,024)
Cash and cash equivalents	18.2	(10,775)	(10,948)
Debt and equity securities – liquid assets	18.1.2	(20,077)	(18,507)
Derivatives hedging liquid assets	18.7.1	(35)	(74)
NET INDEBTEDNESS		**54,381**	**64,500**

The Group's net indebtedness amounts to €54,381 million at 31 December 2023 (€64,500 million at 31 December 2022).

Note 20 Climate-related matters relevant to the financial statements

Introduction and background

In accordance with EDF's *raison d'être*: **"To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development"**, the Group has defined 16 Corporate Social Responsibility (CSR) commitments focusing on four issues - Carbon neutrality and the climate, Preserving the planet's resources, Well-being and solidarity, and Responsible development. The commitments are transposed into the functions and investment projects with the help of an assessment grid.

These commitments and their implementation in the Group are also managed and monitored by several governance bodies, under the supervision of the Board of Directors (see section 3.5.2 of the 2022 Universal Registration Document "CSR governance bodies").

On 10 December 2021 the European Union adopted article 8 of European regulation 2020 - 852 which aims to classify economic activities based on their contribution to the achievement of environmental objectives. This **"Taxonomy regulation"** is part of the European strategy to promote emergence of sustainable finance that contributes to attainment of carbon neutrality by 2050, particularly by encouraging capital inflows into sustainable investments. It was supplemented by a specific Delegated Act for nuclear and gas activities, published on 2 February 2022 and applicable from 2022. The information and indicators contained in this regulation (proportion of sales, capital expenditure and operating expenditure associated with eligible activities and aligned with the European taxonomy) are described in section 3.8.4 of the 2022 Universal Registration Document, "Details on the taxonomy". See note 20.4 below presents the amount of taxonomy-aligned CAPEX.

The **Group's financial statements** incorporate issues relating to climate change and sustainable development at different levels, as summarised below. Those issues are taken into consideration through the Group's investment and divestment strategy, introduction of sustainable financing, specific expenditure incurred in response to environmental challenges, particularly under applicable laws and regulations, and mobilising Group executives to engage with climate issues, and also through the valuation methods used for the Group's assets and liabilities.

Themes	Notes	Content
Regulatory mechanisms related to greenhouse gas emission rights, Energy Savings Certificates, Renewable Energy Certificates - see note 20.1	Note 5.5.4 "Other items" Note 10.2 "Other intangible assets" Note 17.2 "Other provisions"	Climate and environmental issues are addressed in compliance with the regulatory systems existing in different countries for greenhouse gas emission rights, renewable energy certificates and energy savings certificates. These systems have an impact on the Group's financial statements at several levels: the income statement and the balance sheet.
Nuclear provisions and provisions for contingencies and losses incorporating environmental risks – see note 20.2.1	Note 15 "Provisions related to nuclear generation and dedicated assets" Note 17 "Other provisions and contingent liabilities"	These are provisions relating to: - nuclear generation, comprising provisions for the back-end of the cycle (spent fuel management and long-term radioactive waste management), provisions for plant decommissioning, and provisions for last cores; - environmental measures; - environmental litigations.
Valuation of assets – see note 20.2.2	Note 10.8 "Impairment/reversals"	Climate issues are addressed in impairment tests, notably though the long-term scenarios applied for electricity prices in line with the trajectories of European decarbonisation objectives
Sustainable finance – see note 20.3	Note 18.3.2 "Loans and other financial liabilities" Note 14.3 "Perpetual subordinated bonds" Note 18.4 "Unused credit lines"	The Group has made several finance issues indexed on environmental indicators or to advance CSR projects: *Green bonds*, *Social bonds* and credit lines indexed on ESG criteria
Expenses for protection of the environment and the climate - see notes 20.4, 20.5 and 20.6	Note 10.2 "Other intangible assets"	The Group devotes a significant portion of its research and development budget to decarbonisation and the energy system transition, and undertakes other expenses for the environment or to adapt its installations to changes in the climate. The accounting policies applicable to research and development expenses are described in note 10.2.

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20.1 Regulatory expenses

20.1.1 Greenhouse gas emission trading systems

EU Emissions Trading System (EU ETS)

The European Union's Emissions Trading System (SEQE-UE or EU ETS) exists to fight climate change and reduce greenhouse gas emissions.

This system, which applies in all EU countries, sets an annual cap on emissions. Businesses (including EDF) receive or buy emission quotas, then the following year surrender to the European Commission a number of greenhouse gas emission certificates corresponding to their Scope 1 emissions for the year elapsed, such as direct greenhouse gas emissions from production of the goods sold (*e.g.* electricity, heat, steel, paper, *etc.*). Fines are payable if there is a shortfall (€100 per tonne of CO_2 not covered by quotas, and an obligation to cover these amounts by quota the following year).

The cap is being progressively reduced in order to bring down the total emissions in Europe.

The legislative framework of the EU-ETS for the fourth trading period (2021 - 2030) has been tightened up to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015 (which set a general target of a 40% cut in emissions compared to 1990 levels for the whole EU)[1]. One key step was accelerating annual quota reductions to 43 million tonnes per year (2.2% below the allocations for 2010).

As part of the Fit for 55 package of legislation, the European Commission adopted laws in April 2023 raising the target for cuts in CO_2 emissions to at least 62% by 2030 for sectors concerned by the Emissions Trading System. The new rules also introduce a reduction in the number of quotas automatically allocated to each company concerned by the Emissions Trading System.

Having halved its direct CO_2 emissions between 2017 and 2022, the Group has set itself new targets for 2025, 2030 and 2035, defining an ambitious short and medium-term trajectory to achieve a carbon-free electricity mix (see the Group press release of 28 November 2023):

- a 60% reduction (compared to 2017) in its scope 1 emissions by 2025;
- a 70% reduction in its scope 1 emissions, and carbon intensity of 30gCO_2/kWh, by 2030;
- an 80% reduction in its scope 1 emissions, and carbon intensity of 22gCO_2/kWh, by 2035.

In the EDF group, the entities concerned by application of these European regulations are EDF, Edison, Dalkia, PEI and Luminus.

The volume of emissions at 31 December 2023 stood at 14 million tonnes (18 million tonnes for 2022).

Actual greenhouse gas emissions amounted to €531 million at 31 December 2022 (€799 million at 31 December 2022) and are included in provisions.

In 2023, the Group surrendered 18 million tonnes in respect of emissions generated in 2021 under the EU ETS (in 2022 it surrendered 17 million tonnes in respect of emissions generated in 2021).

British Emissions Trading Scheme (UK ETS)

The United Kingdom has set up its own system (UK ETS - Emissions Trading Scheme). The UK ETS, which uses a bidding system, covers the same sectors as the EU ETS and operates under generally similar rules, with comparable accounting treatment.

The volume of EDF Energy's emissions at 31 December 2023 stood at 4 thousand tonnes (0.1 million tonnes for 2022). Actual greenhouse gas emissions amounted to €0.4 million at 31 December 2023 (€9 million at 31 December 2022) and are included in provisions in the balance sheet.

In 2023, EDF Energy surrendered 0.1 million tonnes in respect of emissions generated in 2022 under the UK ETS (in 2022 it surrendered 2 million tonnes in respect of emissions generated in 2021).

Accounting treatment of CO_2 emission certificates

Emission certificates acquired to comply with the regulatory requirements on greenhouse gas emissions are recorded in intangible assets.

At the year-end a provision corresponding to the emissions is established, equal to the acquisition cost up to the amount of certificates acquired on the spot or forward markets, and to market prices for the balance. This provision is cancelled when the certificates are surrendered to the State.

20.1.2 Renewable energy certificates (green certificates)

In application of EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources, every EU member state has set national targets for consumption of electricity from renewable sources. The United Kingdom has its own equivalent system.

Guarantee of Origin certificates prove the renewable origins of this electricity, which transits through the grid. They are sold by operators of renewable energy plants and bought by customers who want to use renewable-source electricity.

There are two systems for States to meet their targets:

- setting a specific sales tariff for renewable energies (this is the approach taken in France);
- setting an obligation for electricity producers to surrender a certain volume of renewable energy certificates (as is the case in the United Kingdom, Italy and Belgium).

The renewable energy certificate system may apply to:

- non-obligated electricity producers when the obligation applies to sales (EDF Renewables);
- obligated electricity producers when the obligation applies to generation;
- electricity producers who are also sellers of electricity when the obligation applies to energy sales (EDF Energy, Edison and Luminus).

At 31 December 2023, a provision of €1,176 million was booked in connection with the obligation to surrender renewable energy certificates at that date, essentially concerning EDF Energy (United Kingdom) and Luminus (Belgium). For reminder, a large portion of these obligations is covered by purchases of certificates included in intangible assets (see note 10.2).

Accounting treatment of green certificates

For the entities that produce and sell electricity:

- certificates earned through energy generation are not recognised, since their cost is nil;
- certificates purchased are recognised as intangible assets in the line "Greenhouse gas emission certificates – green certificates".

(1) *The current EU ETS allocations trajectory does not yet include changes to be made in application of the Fit for 55 package.*

A provision is also established to reflect the obligation to surrender certificates. It is based on the cost of certificates earned (with nil value) and purchased (on the spot or forward market), the market price of the certificates still to be purchased, and where relevant the market price or penalty price for the balance. This provision is cancelled when the certificates are surrendered to the State.

20.1.3 Energy savings certificates

In all its subsidiaries, the Group is engaged in a process to control its energy consumption through various legislative measures in application of European Union Directives and national laws.

In France, the Law of 13 July 2005 introduced a system of energy savings certificates, imposing energy savings obligations on suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level. At the end of the period concerned, obligated actors are required to present energy savings certificates that correspond to their obligatory energy savings, otherwise sanctions apply. These certificates are obtained in return for energy savings operations conducted directly or indirectly, or purchased from other obligated or "eligible" economic actors.

For the fifth period, which began on 1 January 2022 and will end on 31 December 2025, the obligation has been raised significantly and major regulatory changes apply to households from 1 January 2024, particularly for energy-efficient home renovations. As a result of these new measures, actors concerned by the system are having to partly reconsider their model for obtaining energy savings certificates.

To meet this obligation, three sources are available to the EDF group: supporting consumers undertaking energy efficiency operations (in 2023, for example, 234,000 renovation projects were completed), funding State-approved energy savings programmes, and purchasing certificates from eligible actors.

In the United Kingdom, EDF Energy voluntarily helps companies explore and develop solutions by enabling them to save energy, carbon and costs, particularly through its Powershift flexibility platform.

Accounting treatment of energy savings certificates

Expenses incurred for energy savings certificates are recorded in expenses of the year concerned, in "Other operating income and expenses". Expenses in excess of the accumulated obligation at the year-end are included in inventories and the stocks of energy savings certificates may be used to cover the obligation in later years.

A provision is recognised if the volume of certificates earned is lower than the accumulated energy savings obligation at the year-end. The amount of the provision is equal to the cost of actions still to be taken to extinguish the obligations related to the energy sales made.

20.2 Valuation of assets and liabilities

20.2.1 Provisions relating to environmental issues

Most of these provisions are provisions related to nuclear generation, which comprise provisions for back-end nuclear cycle expenses (management of spent fuel and radioactive waste), provisions for plant decommissioning and provisions for last cores. Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved. Details of these provisions are provided in note 15 concerning EDF SA and EDF Energy.

They also include provisions for environmental schemes including provisions for greenhouse gas emission certificates, renewable energy certificates and energy savings certificates. At 31 December 2023, these provisions totalled €1,707 million (€1,926 million in 2022, see note 17.2).

Contingent liabilities also exist in connection with environmental litigation, described in note 17.3.5, such as the litigation following the sale of Ausimont (the Bussi site) to Solvay by Edison in 2002.

20.2.2 Valuation of assets

In valuing the Group's long-term assets, climate issues are taken into account through impairment testing. The long-term scenarios used for electricity prices in countries where the Group does business are consistent with the trajectories of European decarbonisation targets, particularly as set in the Paris climate agreement. As explained in note 10.8, in constructing long-term electricity prices, the impact of climate contingencies is incorporated into assumptions concerning demand (particularly energy requirements for heating, and summer comfort), generation of renewable energies (onshore and offshore wind power, solar power) for all European countries, the contribution of hydropower, and environmental tax cuts for nuclear power generation in France. Climate time series analyses are based on the European EUROCORDEX model and include the impact of climate change. A deliberately prudent approach is adopted to avoid any bias towards underestimation of the practical effects of climate change on the relevant physical quantities such as temperatures, cloud coverage and wind speeds and ultimately on the European electricity system between 2028 and 2050. Scenarios also take account of the objectives of public energy and climate policies such as *Fit For 55* and RepowerEU at European Union level, or the National Low Carbon Strategy (*Stratégie Nationale Bas Carbone*) in France. The scenarios used mainly include high CO_2 prices supporting carbon-free electricity production in Europe, and a lower-carbon economy more generally through electrification of uses.

The impairment tests at 31 December 2023 are thus based on CO_2 prices (in 2022 euros) of €130/t for 2030, €165/t for 2040 and €200/t for 2050.

The Group controls and operates thermal (gas-fired, coal-fired, oil-fired) electricity generation plants principally in France and Italy, to a smaller extent in Brazil, in Laos and Belgium, and to a now marginal degree in England (since the sale of West Burton B in 2021). The net book value of the assets concerned is €5.2 billion at 31 December 2023 (€5 billion at 31 December 2022), including €3.2 billion for assets in France and €1.4 billion for assets in Italy (€3.6 billion for assets in France and €1.0 billion for assets in Italy at 31 December 2022). The operating lifetimes of these plants take account of the Group's current emission reduction commitments, and local regulations.

In **mainland France**, the electricity generated by EDF's fleet of thermal power plants (CCGT, CT, and coal), with net book value of €1.6 billion at 31 December 2023 (€1.8 billion at 31 December 2022) accounted for around 1.86% of EDF's total electricity output in 2022. These plants operate in semi-baseload and peak periods and are used to variable degrees throughout the year, playing a significant role in system security when there are tensions in the supply-demand balance, which was the case during the winter of 2022.

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Coal-fired generation in France is to end in application of the multi-year energy programme. The Cordemais plant, with a net book value of €0.1 billion, is due to cease operations in 2026 at the latest (its operating lifetime has been extended by the French government). The Decree of 14 September 2022 which temporarily modified the greenhouse gas emissions caps for fossil-fuelled electricity generation requires a carbon offset fund to be established in return for the additional authorised hours of operation. This fund will meet EDF's carbon offsetting obligations for the additional hours of operation by the Cordemais coal-fired units and CT units for the next two winters, for the payment of €40/t CO_2.

EDF is modernising its fleet of natural gas CCGT plants (Blénod, Martigues, Bouchain) to reduce air emissions of CO_2, NOx and SO2. The Bouchain plant in particular produces CO_2 emissions of around 360g/kWh on average. This fleet of plants has a net book value of €1.1 billion, and their operating lifetimes are due to end between 2036 and 2041.

In the **island territories**, electricity is principally generated by an oil-fired fleet with net book value of €1.6 billion at 31 December 2023 (€1.8 billion at 31 December 2022), and to a smaller degree hydroelectric and other renewable energy plants. On 4 October 2023, EDF announced that it would be moving to carbon-free electricity generation for all island territories under its responsibility by 2033, by converting the thermal power plants presently located there so they can be run on bioliquid instead of fossil fuels (the Port Est plant was converted to liquid biomass on 4 December 2023).

In **Belgium,** Luminus has a thermal fleet made up of several power plants (both combined cycle and open cycle). The project of building a new CCGT plant at Seraing was selected under the Capacity Remuneration Mechanism (CRM). This new plant will be a gas-steam turbine (GST) type plant with total capacity of approximately 870MW. Work started in autumn 2022 and commissioning of the new unit is scheduled for the second half of of 2025.

In **Italy,** Edison's thermal fleet consists of 14 CCG plants. In keeping with the "National plan for energy and the climate" supporting development of gas-based electricity generation and its integration with renewable energy generation, Edison commissioned the first new-generation CCG plant at the Marghera Levante site (780MW) in July 2023, and a 760MW greenfield project at Presenzano in November 2023, using the same technology, with a more moderate environmental impact (CO_2 emissions 40% below the national average, and a 70% reduction in NOx emissions). The combined net book value of these two plants is €1.4 billion, and they account for approximately 65% of the total net book value with an operating lifetime currently set at 25 years. The operating lifetimes of the other CCG plants are currently scheduled to end before 2037.

20.3 Sustainable financing

20.3.1 Green Bonds

Since 2013 the Group has made eleven Green Bond issues for a value equivalent to €11.3 billion. Nine of these bonds, totalling €7.5 billion, were still outstanding at 31 December 2023 (see note 18.3.2.2). The Group's financing framework for green bonds (the Green Bond Framework) includes financing of new wind and solar power projects, investments to renovate and modernise its hydropower assets in mainland France and internationally, energy efficiency projects, and biodiversity protection projects.

In July 2022, it was renamed the Green Financing Framework, because it covers all of EDF's "green" financing operations. Its scope of application has been broadened by adding two new categories: distribution networks and nuclear generation assets, and eligible projects meet the European Taxonomy criteria. The Green Financing Framework was reviewed by an independent body which confirmed that it respects best practices on the Green Loan market (the Green Loan Principles, published by the Loan Syndications and Trading Association).

EDF has issued several green bonds to finance distribution networks; a first green bond dedicated to financing the existing nuclear fleet was issued on 28 November 2023 and totalled €1 billion.

Allocation of the funds raised by EDF's Green Bond issues is certified by one of the statutory auditors (see section 6.7 of the Universal Registration Document). This certification can be consulted on the EDF website's sustainable development page.

20.3.2 Social bonds (social hybrid notes)

On 26 May 2021 EDF launched an issue of Euro-denominated perpetual social hybrid notes with total nominal value of €1.25 billion.

The funds raised were used to finance eligible projects, as defined in the EDF group's Social Bond Framework. These projects include investment expenditure by EDF in Small and Medium-Sized Enterprises (SMEs) that contribute to the development and maintenance of electricity generation and distribution assets in Europe (including the United Kingdom).

The Social Bond Framework's compliance with the Social Bond Principles published by the International Capital Markets Association (ICMA) has been validated by an independent body.

20.3.3 Bilateral green loan

On 18 November 2022 EDF and Crédit Agricole CIB signed a €1 billion bilateral green loan that complies with EDF's Green Financing Framework. This loan will contribute to the *Grand Carénage* programme to enhance safety and extend the operating lifetime of French nuclear reactors beyond 40 years. The funds will be entirely dedicated to maintenance of French power plants, in order to continue production of very low-carbon energy (4g CO_2 equivalent per kWh over the life cycle[1]).

20.3.4 Credit lines indexed on ESG criteria

The EDG group has 23 renewable bilateral credit lines and two syndicated credit facilities indexed on the Group's sustainable development performance (incorporating a cost adjustment mechanism for financing costs):

- a €4 billion 5 - year "green" syndicated credit line with more than 20 banks. The margin is adjusted based on the Group's performance on three environmental KPIs;
- a €1.5 billion 5 - year "social" credit facility with 9 banks. The margin is adjusted based on the Group's performance on four KPIs focusing on EDF's Fair and Inclusive Transition principles;
- 21 renewable bilateral credit lines indexed on ESG criteria. The margins are adjusted based on the Group's performance on KPIs selected with the banks.

At 31 December 2023, undrawn ESG-indexed renewable credit lines (including syndicated credit facilities) totalled over €11,2 billion, or 71% of the EDF group's total undrawn credit lines (see note 18.4). In 2023, the Group respected the required indicators.

(1) Source : *Analyse Cycle de Vie du kWh nucléaire d'EDF* published by EDF in 2022 and reviewed by independent experts *https://www.edf.fr/sites/groupe/files/2022-11/edfgroup_acv-4_plaquette_2022111_en.pdf*

20.4 Carbon-free investments

In 2023, the Group continued its programme of gross operating investments, which amounted to €21.4 billion and included €19.2 billion of gross investments in intangible assets and property, plant and equipment (see notes 4 and 10.7) and €0.9 billion of gross financial investments.

In 2023, nearly 95% of the Group's investments were in line with its net-zero trajectory (94% in 2022), with 53% of investments concerning the nuclear sector (50% in 2022). 64% of the Group's investments were aligned with the current European Taxonomy at 31 December 2023 (compared to 66% for 2022 including the effects of the complementary delegated act on nuclear and gas activities). This notably covered investments in nuclear activities in France, networks, renewable energy generation facilities (solar power, wind power), hydropower facilities and certain energy services.

EDF promotes innovation to contribute to achievement of the net zero objective, by investing in startups and venture capital funds dedicated to innovation (the EDF Pulse Ventures programme), and by developing intrapreneurial projects (the EDF Pulse Incubation programme). The Group has formed several subsidiaries for these purposes, such as Hynamics, a company that produces and sells low-carbon hydrogen produced by water electrolysis to meet the needs of the heavy-duty transport industry.

The Group's *raison d'être* is also expressed in the management policy for its portfolio of dedicated assets held to finance long-term nuclear expenses in France (realisable value of €36.9 billion at 31 December 2023), and its responsible investor's charter introduced in 2020, which has three focal points (compliance with the United Nations' Principles for Responsible Investment; respect of the major international agreements on human rights; and annual reporting on responsible investments). This charter is applicable both to assets managed directly and assets managed by specialist companies under delegated management arrangements.

In 2023, a review was conducted of these delegated management companies' compliance with the United Nations' Principles for Responsible Investment and the major international agreements, and for climate risks, a carbon emission assessment was established for listed and unlisted assets. The climate scenarios incorporated into risk/return studies of dedicated assets were analysed in accordance with the recommendations of the NGFS (Network for Greening the Financial System), to assess the risk of nuclear provisions being underfunded in the event of a climate stress scenario that could affect the value of dedicated assets, depending on different time horizons.

For unlisted assets, EDF is committed to integrating environmental, social and governance (ESG) considerations, notably by encouraging its partners and the management of directly-owned assets to introduce carbon reviews, define net-zero emission objectives for 2050 and action plans to achieve them, and undertake a climate risk assessment.

20.5 Expenses for protection of the environment and the climate, and to adapt installations to climate change

The Group is continuing its commitments to address environmental issues, for example through the following actions.

20.5.1 Research and development (R&D)

Given the goal of carbon neutrality by 2050, and the fact that electricity is a major lever in action to decarbonise the French economy, R&D has a crucial role to play in the electricity, climate, digital and societal transition.

In 2023, the EDF group's total R&D budget amounted to €706 million, comprising €512 million for EDF's R&D, and separate R&D by certain subsidiaries, principally Framatome, EDF Energy and Edison.

In France, 99% of EDF's R&D budget is dedicated to achieving the net zero goal, and the energy system transition.

The R&D budget is particularly channelled into research into energy efficiency, uses of electricity as a substitute for fossil fuel-based energies, renewable energies and their insertion into the grid, energy storage and production, carbon-free hydrogen and its applications for decarbonising the economy, sustainable cities, the local impacts of climate change and other environmental issues such as biodiversity, water quality, and the mitigation of all forms of pollution.

Research concerning electricity storage, enhancement of energy performance diagnosis methods, improvement of techniques for urban heating and cooling networks, platforms for sharing studies relevant to the ecological transition, and increasing safety at nuclear power plants is supported by public subsidies, notably from the European Union.

The CAP 2030 Decarbonised Thermal Project, launched in March 2021, aims to give each of the Group's thermal fleets a decarbonisation strategy for existing assets and a development strategy for new decarbonised assets, with a roadmap to guarantee the availability of such decarbonised thermal generation facilities at the appropriate time, for good control of the related technologies and skills. All the EDF group's gas activities thus follow carbon trajectories (covering both direct and indirect emissions) set for each entity in line with the Group's 2030, 2035 and 2050 objectives.

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20.5.2 Other expenses for protection of the environment and climate

ACCOUNTING PRINCIPLES AND METHODS

Other expenses for protection of the environment and climate are identifiable expenses incurred to prevent, reduce or repair damage that has been or may be caused by the Group as a result of its activities. These expenses are treated as follows:

- they are capitalised if they are incurred to prevent or reduce future damage or protect resources (*e.g.* expenses for structures to facilitate the passage of migrating fish, effluent treatment installations, *etc.*);
- they are booked as environmental liabilities and increases to provisions for environmental risks if they correspond to an obligation that exists at the year-end and it is probable or certain at the reporting date that they will lead to an outflow of resources;
- they are recognised as expenses if they are operating expenses for the units in charge of environmental concerns, environmental supervision, environmental duties and taxes, processing of liquid and gas effluents and non-radioactive waste, or research unrelated to an investment.

All of the Group's functions, employees, activities and projects are mobilised to fulfil EDF's objective of being an environmentally responsible company. Some of the actions concerned are presented below.

Action for biodiversity

The EDF group has been committed to action for biodiversity since 2006 with a dedicated policy, and today its biodiversity ambitions are reflected in formal commitments made through two initiatives, *Entreprises engagées pour la nature* (Committed companies for nature) and "Act4nature international". These voluntary commitments cover some twenty actions to reduce contributions to major pressure points on biodiversity (as identified by IPBES, the biodiversity equivalent of the IPCC), recreate biodiversity-friendly spaces and conditions, further improve and share knowledge, strengthen biodiversity governance and raise employee awareness.

In addition to these commitments, between 2013 and 2023, the Group undertook more than 70 operations through EDF hydro and its hydropower activities for a cumulative total investment of €107 million (including subsidies received), to facilitate fish migration at ecologically sensitive sites in mainland France ("list 2" sites for the purposes of the "national law on water and aquatic environments"), installing fish passes and fish ladders and removing river weirs.

20.5.3 Expenses to adapt the Group's assets to climate change

To adapt France's current and future nuclear power plants, in addition to work on safety and security in compliance with regulations and safety authority recommendations, EDF has established a plan to adapt its facilities and their operations. The ADAPT project is part of a systemic approach for analysing the resilience of all ecosystems, natural or socio-economic, which are decisive for generation capacity.

This project sees climate change as systemic and changing. Among other things, these analyses are a basis for:

- imagining the climate futures of different areas and regions over different time horizons;
- improving the level of protection for the group's installations against unforeseeable natural events, through better quantification of their extreme versions;
- reducing the environmental impact of the Group's facilities;
- identifying innovative solutions, for example for recovering evaporated water from cooling towers, and testing the most promising ideas on site in the near future.

The increasing pace of climate change is also leading the Group to reinforce its R&D and engineering capacities, by increasing the number of people hired with key skills in all the related areas: climatology, hydrogeology, environmental matters, and of course technical engineering.

20.6 Mobilisation of Group executives on climate issues

Climate performance-related remuneration for Group executives

In line with EDF's aim to promote integrated performance based on both finance and CSR, the annual variable salary of the Group's senior executives also depends on financial and CSR performance. The CSR performance criteria, which can represent up to 15% of these executives' variable remuneration, consist of a climate criterion (based on carbon intensity) and two social criteria (total Lost Time Incident Rate (LTIR) and the commitment index).

For certain executives, the long-term remuneration (3-year plan) also depends on financial performance plus the following CSR criteria: the rating given by the CDP agency (climate and water) and the percentage of women on the Management Committees and female executives at Group level. These two criteria account for 20% of the variable remuneration.

Vehicle fleet electrification

As the first French Group to sign the EV100 initiative, EDF made a commitment to have a fully-electric light vehicle fleet by 2030. By the end of 2022 the worldwide fleet numbered more than 47,000 light vehicles (especially in Europe) and 29.3% were already electric (over 13,700 electric vehicles, an increase of more than 3,400 from 2022). Joining the EV100 initiative is also an encouragement for Group employees to control their energy consumption and reduce their carbon footprint, as it gives them access to competitive offers from car suppliers and offers for recharging services sold by EDF group subsidiaries.

For 2022, the vehicle fleet electrification indicator accounted for 10% of EDF SA's and Enedis' profit-sharing criteria.

Note 21 Off-balance sheet commitments

This note presents off-balance sheet commitments given and received by the Group at 31 December 2023. The amounts of commitments correspond to non-discounted contractual values.

21.1 Commitments given

The table below shows off-balance sheet commitments given by the Group that have been valued. Other commitments are described separately in the detailed notes.

(in millions of euros)	Notes	31/12/2023	31/12/2022
Operating commitments given	21.1.1	64,201	61,990
Investment commitments given	21.1.2	17,605	16,900
Financing commitments given	21.1.3	6,043	6,345
TOTAL COMMITMENTS GIVEN		**87,849**	**85,235**

In almost all cases, these are reciprocal commitments, and the third parties concerned are under a contractual obligation to supply the Group with assets or services related to operating, investment and financing activities.

21.1.1 Operating commitments given

Operating commitments given by the Group are as follows:

(in millions of euros)	31/12/2023	31/12/2022
Fuel and energy purchase commitments[1]	43,548	43,863
Operating contract performance commitments given	20,103	17,456
Operating lease commitments as lessee	550	671
TOTAL OPERATING COMMITMENTS GIVEN	**64,201**	**61,990**

(1) Excluding gas purchases and related services

21.1.1.1 Fuel and energy purchase commitments

In the course of its ordinary generation and supply activities, the Group has entered into long-term contracts for purchases of electricity, gas, other energies and commodities and nuclear fuel, for periods of up to 20 years.

The Group has also entered into long-term purchase contracts with a certain number of electricity producers, by contributing to the financing of power plants.

At 31 December 2023, fuel and energy purchase commitments mature as follows:

	31/12/2023					31/12/2022
		Maturity				
(in millions of euros)	Total	< 1 year	1 to 5 years	5 to 10 years	> 10 years	Total
Electricity purchases and related services	29,142	4,396	8,715	6,407	9,624	30,085
Other energy and commodity purchases[1]	390	115	177	98	-	362
Nuclear fuel purchases	14,016	1,755	5,858	4,648	1,755	13,416
FUEL AND ENERGY PURCHASE COMMITMENTS	**43,548**	**6,266**	**14,750**	**11,153**	**11,379**	**43,863**

(1) Excluding gas purchases and related services (see note 21.1.1.1.4).

21.1.1.1.1 Electricity purchases and related services

Electricity purchase commitments at 31 December 2023 mainly concern EDF Energy and EDF. In the case of EDF many of these commitments are borne by the Island Energy Systems (SEI), which have made commitments to purchase the electricity generated using bagasse and coal.

The change over the year is mainly explained by a decrease in projected electricity prices, partly offset by an increase in the volumes of EDF Energy's purchase obligations resulting from new contracts.

In addition to the obligations reported above and under Article 10 of the Law of 10 February 2000, in mainland France, EDF is obliged, at the producer's request and subject to compliance with certain technical features, to purchase the power produced by co-generation plants and renewable energy generation units (wind turbines, small hydro-electric plants, photovoltaic power, etc.). The additional costs generated by this obligation are offset, after validation by the CRE, by the CSPE. These purchase obligations total 50TWh for 2023 (50TWh for 2022), including 5TWh for co-generation (6TWh for 2022), 23TWh for wind power (22TWh for 2022), 14TWh for photovoltaic power (13TWh for 2022) and 2TWh for hydropower (3TWh for 2022).

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21.1.1.1.2 Other energy and commodity purchases

Purchase commitments for other energies and commodities mainly concern purchases of biomass fuel used by Dalkia in the course of its business.

21.1.1.1.3 Nuclear fuel purchases

Commitments for purchases of nuclear fuel arise from supply contracts for the nuclear plants intended to cover the EDF group's needs for uranium and fluoration, enrichment and fuel assembly production services.

21.1.1.1.4 Gas purchases and related services

Gas purchase commitments are principally undertaken by Edison and EDF. The volumes concerned for both entities at 31 December 2023 are as follows:

	31/12/2023				31/12/2022
		Maturity			
(in billions of m3)	Total	< 1 year	1 to 5 years	> 5 years	Total
Edison	112	12	46	54	124
EDF	52	2	11	39	56

Gas purchase contracts

Edison has entered into agreements to import natural gas from Libya, Algeria, Azerbaijan and Qatar, for a total maximum volume of 11.9 billion m³ per year. The residual terms of these contracts vary between 4 and 21 years.

In 2020, EDF signed a 5-year purchase contract for 0.5 billion m³ of gas per year from Norway.

In 2017 Edison signed a purchase contract for LNG from the United States (1 million tonnes per year, *i.e.* 1.4 billion m³ of natural gas, for a 20 - year term). Deliveries under this contract were due to start in 2023. As no deliveries of LNG have been made, Edison began arbitration proceedings against the supplier Venture Global before the London International Court of Arbitration (LCIA) (see note 17.3.5).

In 2014, EDF signed a contract for LNG imports from the United States, for an annual supply of 0.8 million tonnes of LNG (1 billion m³ of natural gas per year) over a 20-year period starting from May 2020. In 2020 EDF also signed a 20-year purchase contract for LNG from the United States (1 million tonnes per year, *i.e.* 1.4 billion m³ of natural gas). Deliveries under this contract are due to begin in 2026.

Some of these contracts contain "take-or-pay" clauses committing the buyer to pay for a minimum volume of gas every year, whether or not it actually takes delivery of that volume.

Gas-related service contracts

Under the contract with Terminale GNL Adriatico, Edison also benefits from approximately 80% of the terminal's regasification capacities until 2034.

Under the contract with the Dunkerque LNG methane terminal, EDF benefits from approximately 61% of the terminal's regasification capacities until 2037, in return for payment of an annual premium of approximately €150 million. A provision for onerous contracts has been recorded in connection with this contract (voir note 17.2).

21.1.1.2 Operating contract performance commitments given

At 31 December 2023, these commitments mature as follows:

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
Operating guarantees given	11,805	4,064	4,411	3,330	9,648
Operating purchase commitments[1]	8,116	4,674	2,692	750	7,611
Other operating commitments	182	71	94	17	197
OPERATING CONTRACT PERFORMANCE COMMITMENTS GIVEN[2]	**20,103**	**8,809**	**7,197**	**4,097**	**17,456**

(1) Excluding fuel and energy

(2) Including commitments given by controlled entities to joint ventures, amounting to €2.186 million at 31 December 2023 (€1,912 million at 31 December 2022).

In the course of its business, the Group provides contract performance guarantees, generally through the intermediary of banks.

Operating guarantees given at 31 December 2023 mainly consist of guarantees given by EDF Renewables in connection with its development projects, Edison and EDF.

The change in these guarantees is essentially explained by new EDF Renewables projects in development (particularly in the United States).

21.1.1.2.1 Operating guarantees given

Operating guarantees given are as follows:

(in millions of euros)	31/12/2023	31/12/2022
EDF Renewables	4,912	3,252
Edison	2,228	2,373
EDF	1,413	1,314
Framatome	977	1,111
EDF Energy	847	622
Other entities	1,428	976
TOTAL	**11,805**	**9,648**

21.1.1.2.2 Operating purchase commitments

Operating purchase commitments are as follows:

(in millions of euros)	31/12/2023	31/12/2022
EDF	3,294	3,399
Framatome	1,724	1,493
Enedis	1,029	896
EDF Renewables	673	450
EDF Energy	380	317
Other entities	1,016	1,056
TOTAL	**8,116**	**7,611**

21.1.1.2.3 Lease commitments as lessee

At 31 December 2023, lease commitments as lessee break down as follows:

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
LEASE COMMITMENTS AS LESSEE	**550**	**31**	**250**	**269**	**671**

The only remaining off-balance sheet lease commitments are:

- Leases that are exempt from recognition in application of IFRS 16. The total amount concerned at 31 December 2023 is €108 million (€83 million at 31 December 2022);
- Leases of assets that have not yet been made available to the Group (principally real estate and LNG tankers under construction). The right-of-use assets and the lease liability will be recognised in the balance sheet when the leased asset is made available. The total amount concerned at 31 December 2023 is €442 million (€588 million at 31 December 2022). The decrease is notably due to Edison taking delivery of an LNG tanker.

21.1.2 Investment commitments given

At 31 December 2023, details of investment commitments are as follows:

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
Commitments related to acquisition of tangible and intangible assets	16,065	11,086	4,570	409	15,867
Commitments related to acquisition of financial assets	1,247	510	685	52	864
Other commitments related to investments	293	256	35	2	169
TOTAL INVESTMENT COMMITMENTS GIVEN[1]	**17,605**	**11,852**	**5,290**	**463**	**16,900**

(1) Including commitments given by controlled entities to joint ventures, amounting to €161 million at 31 December 2023 (€183 million at 31 December 2022).

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21.1.2.1 Commitments related to acquisition of tangible and intangible fixed assets

The commitments related to acquisition of tangible and intangible fixed assets are as follows:

(in millions of euros)	31/12/2023	31/12/2022
EDF	4,820	4,041
EDF Energy	4,662	5,179
Enedis	3,089	2,956
EDF Renewables	1,995	2,050
Framatome	572	666
Other entities	927	975
TOTAL	**16,065**	**15,867**

Commitments related to acquisition of tangible and intangible fixed assets principally concern EDF SA (including commitments for the *Grand Carénage* refurbishment programme, the 10-year plant inspections, and a small amount for the EPR 2 project), EDF Energy (mainly commitments related to HPC), Enedis and EDF Renewables (notably commitments for projects in the United States).

For the EPR 2 project, until the final investment decision is made, the amounts recorded in off-balance sheet commitments correspond to the unavoidable commitment for EDF, not the total value of the contracts signed.

The rise in commitments given related to acquisition of tangible and intangible fixed assets is mainly explained by an increase in EDF SA's commitments for maintenance of its nuclear fleet, partly offset by a decrease in commitments given by EDF Energy (due to progress on the HPC project).

21.1.2.2 Commitments related to acquisition of financial assets

The increase in commitments related to acquisition of financial assets is principally attributable to EDF SA's commitment to invest in Nordic's logistics warehouses in Sweden and the Norwegian ferry operator Fjordt. These operations relate to management of the dedicated assets held to secure financing of long-term nuclear obligations.

Some commitments related to acquisition of financial assets cannot be estimated. They mainly concern Belgium: Luminus signed an amendment to the shareholder pact on 26 October 2015. It contains a liquidity clause for the investments held by its minority shareholders, which could, in certain conditions under the control of EDF, result in sale of their shares through an IPO, or purchase of their shares by the Group at market value. This liquidity clause is valid at all times from 1 July 2018 to 31 December 2025.

Regarding the investment in EDF Investissements Groupe (EIG), C3 (a fully-owned EDF subsidiary) has a call option to buy the EIG shares held by NBI (Natixis Belgique Investissement, a subsidiary of the Natixis group) at a fixed price, exercisable at any time until May 2026. Meanwhile, NBI has a cash-settled put option to sell EDF all of its EIG shares for a fixed price, exercisable subject to certain conditions between February 2024 and May 2026.

Due to their features, in compliance with IAS 32, NBI's put option and C3's call option are considered as derivatives and their net value is included in the positive or negative fair value of trading derivatives. At 31 December 2023, the fair value of these trading derivatives is limited.

On 4 November 2022, GE and EDF signed a final agreement related to EDF's acquisition of GE Steam Power's nuclear activities (see note 3.1.3).

21.1.2.3 Other commitments related to investments

Other commitments given related to investments at 31 December 2023 mainly comprise guarantees given by EDF Norte Fluminense in connection with its 51% investment in Sinop Energia, and a guarantee given by Dalkia following the sale of its subsidiary Suir.

21.1.3 Financing commitments given

Financing commitments given by the Group at 31 December 2023 comprise the following:

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
Security interests in real property	3,760	1,187	514	2,059	3,616
Guarantees related to borrowings	1,216	24	650	542	1,587
Other financing commitments	1,067	998	51	18	1,142
TOTAL FINANCING COMMITMENTS GIVEN[1]	**6,043**	**2,209**	**1,215**	**2,619**	**6,345**

(1) Including commitments given by controlled entities to joint ventures, amounting to €2,113 million at 31 December 2023 (€2,609 million at 31 December 2022). These financing commitments to joint ventures mainly concern EDF Renewables and EDF Trading.

Security interests and assets provided as guarantees mainly concern pledges or mortgages of tangible assets and shares representing investments in consolidated subsidiaries which own property, plant and equipment, for EDF Renewables.

The guarantees given for borrowings are essentially guarantees provided by EDF Renewables for its project financing.

The decrease in financing commitments given principally reflects the release of EDF Renewables' financial guarantee in France for the Saint-Nazaire offshore wind farm project.

21.2 Commitments received

The table below shows off-balance sheet commitments received by the Group that have been valued. Other commitments received are described separately in the detailed notes.

(in millions of euros)	Notes	31/12/2023	31/12/2022
Operating commitments received[1]	21.2.1	9,466	8,916
Investment commitments received	21.2.2	206	317
Financing commitments received[2]	21.2.3	13	22
TOTAL COMMITMENTS RECEIVED		**9,685**	**9,255**

(1) Excluding commitments related to supplies of energy and related services (see note 21.2.1.4).
(2) Excluding commitments related to credit lines, which are described in note 18.4.

21.2.1 Operating commitments received

Operating commitments received by the Group at 31 December 2023 comprise the following:

	31/12/2023				31/12/2022
		Maturity			
(In millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
Operating lease commitments as lessor	429	110	143	176	509
Operating sale commitments	7,098	1,787	3,357	1,954	6,348
Operating guarantees received	1,895	1,295	196	404	1,998
Other operating commitments received	44	17	22	5	61
OPERATING COMMITMENTS RECEIVED	**9,466**	**3,209**	**3,718**	**2,539**	**8,916**

21.2.1.1 Operating lease commitments as lessor

In 2023, the Group benefits from commitments as lessor in operating leases amounting to €429 million. These commitments mainly concern real estate leases.

21.2.1.2 Operating sale commitments

Operating sale commitments received exclude energy deliveries and principally concern firm orders made through contracts recorded on a percentage-of-completion basis at Framatome (construction and engineering contracts) and EDF Renewables (agreements for operation services, maintenance services, and development and sale of structured assets).

21.2.1.3 Operating guarantees received

Operating guarantees received principally concern Framatome, and relate to supply and technical assistance contracts for EDF's nuclear power plants with guarantees received from suppliers, particularly in connection with ARENH deliveries.

21.2.1.4 Electricity supply commitments

In the course of its business, the EDF group has signed long-term contracts to supply electricity as follows:

- long-term contracts with a number of European electricity operators, for a specific plant or a defined group of plants in the French nuclear generation fleet, corresponding to installed power capacity of 3GW;
- in execution of France's "NOME" Law on organisation of the French electricity market, EDF has a commitment to sell some of the energy generated by its existing nuclear power plants to other suppliers, until 31 December 2025. This has concerned a maximum volume of 120TWh each year since enactment of the law of 16 August 2022 (see note 5.1.1).

21.2.2 Investment commitments received

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
INVESTMENT COMMITMENTS RECEIVED	**206**	**30**	**12**	**164**	**317**

The decrease in investment/divestment commitments received mainly reflects the sale by Dalkia of its subsidiary Suir.

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21.2.3 Financing commitments received

	31/12/2023				31/12/2022
		Maturity			
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
FINANCING COMMITMENTS RECEIVED	**13**	**2**	**11**	**-**	**22**

Note 22 Related parties

ACCOUNTING PRINCIPLES AND METHODS

Related parties include the French State, companies in which the State holds majority ownership and certain of their subsidiaries, and companies in which the EDF group exercises joint control or significant influence. They also include members of the Group's management and governance bodies.

Details of transactions with related parties are as follows:

	Associates and joint ventures		Joint operations		French State or State-owned entities[1]		Group Total	
(in millions of euros)	31/12/2023	31/12/2022	31/12/2023	31/12/2022	31/12/2023	31/12/2022	31/12/2023	31/12/2022
Sales	1,112	933	-	-	3,514	2,709	4,626	3,642
Energy purchases	4,218	2,279	2	2	2,893	2,895	7,113	5,176
External purchases	11	13	7	7	126	206	144	226
Financial assets	180	135	-	-	-	-	180	135
Other assets	952	2,195	-	-	672	560	1,624	2,755
Other non-financial liabilities	1,495	441	1	1	754	558	2,250	1,000

(1) Excluding tax and social liabilities and the CSPE receivable.

22.1 Transactions with entities included in the scope of consolidation

Transactions with the principal associates (CTE (the company that owns RTE) and Taishan) are presented in note 12.

Transactions with other associates, joint ventures, and partner entities in joint arrangements with the Group mainly consist of sales and purchases of energy.

22.2 Relations with the French State and State-owned entities

22.2.1 Relations with the French State

Following the compulsory squeeze-out on 8 June 2023 and the purchase of treasury shares, the French State holds 100% of the capital of EDF at 31 December 2023, and is thus entitled in the same way as any majority shareholder to control decisions that require approval by the shareholders.

In accordance with the legislation applicable to all companies having the French State as their majority shareholder, the EDF group is subject to certain inspection procedures, in particular economic and financial inspections by the State, audits by the French Court of Auditors (*Cour des Comptes*) or Parliament, and verifications by the French General Finance Inspectorate (*Inspection générale des finances*).

The public service contract between the French State and EDF was signed on 24 October 2005. This contract is intended to form the framework for public service missions assigned to EDF by the lawmaker for an unlimited period. The Law of 9 August 2004 does not stipulate the duration of the contract.

22.2.2 Relations with Engie

Enedis and GRDF's common service function, defined by Article L. 111 - 71 of the French Energy Code, is not a legal entity in its own right. Enedis and GRDF are bound by an agreement that defines their relations within this common service function, its competences, and the resulting division of costs. The agreement has an unlimited term and can be terminated at any time subject to 18 months' notice: in such a case, the parties undertake to renegotiate the agreement during the notice period. It is updated regularly. In 2019, the Enedis-GRDF governance agreements were entirely reviewed.

Concerning the common service of LPG distribution and supply in the cities of Ajaccio and Bastia in Corsica, following adoption of article 96 of France's Finance Law for 2022, decree 2023-554 of 30 June 2023 introducing a simplified modification of Corsica's multi-year energy programme stipulated that the Corsican LPG networks would cease operations on 31 December 2038 and set out measures for progressive discontinuation of use from 2024.

Another decree, 2023-872 of 12 September 2023, defines the terms on which the State will bear part of the costs associated with conversion of the LPG networks to electricity or renewable energies. The tender procedures for the Ajaccio and Bastia concessions are still in process. The CRE is currently examining the offers made by Engie with a view to awarding the concessions by the summer of 2024.

These developments have no impact for EDF at this stage, but once the concession renewals are finalised EDF will be required to work on some pilot sectors, to determine the schedule for progressive discontinuation of LPG use over the next 15 years. Ultimately, the prospect of ending LPG distribution operations and converting uses to electricity will need investments to reinforce the electricity distribution networks.

22.2.3 Relations with public sector entities

The EDF group's relations with public sector entities mainly concern Orano.

Transactions with Orano concern:

- the front-end of the nuclear fuel cycle (uranium supplies, conversion and enrichment services);
- the back-end of the nuclear fuel cycle (transportation, storage, processing and recycling services for spent fuel).

Front-end of the cycle

Several important agreements were negotiated between EDF and Orano:

- for supplies of natural uranium: Orano Mining contracts;
- for fluoration and enrichment of natural uranium into uranium 235: an Orano Chimie-Enrichissement contract.

Back-end of the cycle

Relations between EDF and Orano Recyclage concerning transportation, processing and recycling of spent fuels are described in note 15.1.1.1.

22.3 Management compensation

The Company's key management and governance personnel are the Chairman and CEO, the members of the COMEX (Executive Committee) throughout 2023 or since their date of appointment if they joined the COMEX during the year, and the Directors. Directors representing the employees receive no remuneration for their services.

The total compensation paid by EDF and controlled companies to the Group's key management and governance personnel amounted to €14.6 million in 2023 (€12.5 million in 2022). This amount covered short-term benefits (basic salaries, performance-related salary, profit share and benefits in kind), special IEG post-employment benefits where relevant, and the corresponding employer contributions, plus any director's fees.

EDF's key management and governance personnel benefit from no special pension system, starting bonus or severance payment entitlement except by contractual negotiation.

Note 23 Subsequent events

On 25 January 2024 EDF acquired the 5% stake in Framatome held by the minority shareholder Assystem for €205 million (see note 14.5).

In early 2024 EDF completed the acquisition of investments in Fjord1 and Nordic Logistic (see note 15.1.2.3).

Note 24 Statutory auditors' fees

The following table sets forth the fees paid for work done by the Statutory Auditors and their network during 2023:

	PWC network		KPMG network		Deloitte network	
(in thousands of euros)	Amount (excluding taxes)	%	Amount (excluding taxes)	%	Amount (excluding taxes)	%
Audit –Statutory audit, certification, review of company and consolidated accounts						
EDF	2,628	15.3	2,523	11.7	-	-
Controlled entities[1]	5,362	31.3	16,920	78.3	1,758	83.7
Sub-total	**7,990**	**46.6**	**19,443**	**89.9**	**1,758**	**83.7**
Non-audit services[2]						
EDF	1,302	7.6	1,181	5.5	-	-
Controlled entities[1]	7,849	45.8	996	4.6	343	16.3
Sub-total	**9,151**	**53.4**	**2,176**	**10.1**	**343**	**16.3**
TOTAL	**17,141**	**100.0**	**21,620**	**100.0**	**2,101**	**100.0**

(1) Fully consolidated subsidiaries and jointly controlled entities whose auditors' fees are included in the consolidated income statement.

(2) These are services required by laws and regulations, and services supplied at the request of the Group, mainly (i) certifications of financial and accounting information or independent Reports on social, environmental and societal information required under Article L. 225 - 102 - 1 of the French Commercial Code, (ii) services relating to acquisitions or disposals of entities, (iii) tax services authorised by local legislation, and (iv) operating process reviews and information system consulting services that are unrelated to the production of accounting and financial information.

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Statutory Auditors' fees for 2022

The following table sets forth the fees paid for work done by the Statutory Auditors and their network during 2022:

	KPMG network		Deloitte network	
(in thousands of euros)	Amount (excluding taxes)	%	Amount (excluding taxes)	%
Audit –Statutory audit, certification, review of company and consolidated accounts				
EDF	2,928	14.2	3,022	26.7
Controlled entities[1]	15,464	75.2	6,531	57.7
Sub-total	**18,392**	**89.4**	**9,553**	**84.4**
Non-audit services				
EDF	678	3.3	1,480	13.0
Controlled entities[1]	1,508	7.3	292	2.6
Sub-total	**2,187**	**10.6**	**1,772**	**15.6**
TOTAL	**20,579**	**100**	**11,325**	**100**

(1) Fully consolidated subsidiaries and jointly controlled entities whose auditors' fees are included in the consolidated income statement.

6.2 Statutory auditors' report on the consolidated financial statements

For the year ended 31 December 2023

This is a translation into English of the statutory auditors' report on the consolidated financial statements of the Company issued in French and it is provided solely for the convenience of English speaking users.

This statutory auditors' report includes information required by European regulation and French law, such as information about the appointment of the statutory auditors or verification of the information concerning the Group presented in the management report. This report should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France.

To the Shareholders,

Opinion

In compliance with the engagement entrusted to us by your General Meeting, we have audited the accompanying consolidated financial statements of Électricité de France S.A. (« EDF », the « Company » or the « Group ») for the year ended December 31, 2023.

In our opinion, the consolidated financial statements give a true and fair view of the assets and liabilities and of the financial position of the Group as at December 31, 2023 and of the results of its operations for the year then ended in accordance with International Financial Reporting Standards as adopted by the European Union.

The audit opinion expressed above is consistent with our report to the Risk and Audit Committee.

Basis for Opinion

Audit Framework

We conducted our audit in accordance with professional standards applicable in France. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under those standards are further described herein in the Statutory Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report.

Independence

We conducted our audit engagement in compliance with independence requirements of the French Commercial Code (Code de Commerce) and the French Code of Ethics (Code de Déontologie) for statutory auditors for the period from January 1, 2023 to the date of our report and specifically we did not provide any prohibited non-audit services referred to in Article 5(1) of Regulation (EU) No 537/2014.

Justification of Assessments – Key Audit Matters

In accordance with the requirements of Articles L.821-53 et R.821-180 of the French Commercial Code (Code de Commerce) relating to the justification of our assessments, we inform you of the key audit matters relating to risks of material misstatement that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period, as well as how we addressed those risks.

These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on specific items of the consolidated financial statements.

Valuation of provisions related to nuclear generation in France – back-end of the nuclear cycle, plant decommissioning and last cores – and dedicated assets

Notes 1.3.4.2, 1.3.4.5, 15, 18.1 and 20 to the consolidated financial statements

Key Audit Matter

As at December 31, 2023, the provisions recorded to cover obligations relating to nuclear power plants for which EDF is the operator in France total €48,220 million, including €27,081 million with respect to the back-end of the nuclear cycle (management of spent fuel and radioactive waste) and €21,139 million with respect to the decommissioning of nuclear power plants and last cores.

The valuation of these provisions depends on the regulatory context which is described in Notes 1.3.4.2 and 15.1. It requires defining technical and financial assumptions and using complex calculation models.

They are updated and the assumptions taken into consideration in the models are reviewed at least once a year. The selected assumptions reflect management's best estimate at the reporting date of the impacts of the applicable regulation, the implementation of decommissioning, spent fuel management and storage processes. They also take into account the changes in the main financial parameters, inflation and discounting. In the same way as in 2022, they reflect the impacts of the adjustment to 2023 year-end economic conditions in connection with real inflation. In addition, as every year, variations in the provisions include the effects of charges incurred as well as the effects of increasing volumes of spent fuels to be reprocessed.

Furthermore, in accordance with the provisions of the French law of June 28, 2006 on the sustainable management of radioactive materials and waste, and its implementing regulations on securing the financing of nuclear liabilities, the Company is required to allocate so-called "dedicated" assets to secure the financing of its long term obligations.

Responses

We have analysed the measures for recognizing provisions related to nuclear generation in France. We gained an understanding of the industrial scenarios for decommissioning nuclear power plants and the technical solutions adopted in terms of management of spent fuel and radioactive waste. We have assessed the compliance of the methods for determining the provisions with regard to applicable accounting, legal and regulatory measures.

We have verified the calculation models adopted by the Company and assessed the assumptions adopted in terms of cost, forecast cash outflows, fieldwork progress when compared to incurred costs and financial parameters (discount and inflation rates).

Our work also consisted in verifying the type of costs used to determine provisions and assessing the reconciliation of forecast costs and forecast cash outflows with industrial scenarios as well as the available studies and quotes, based on the current year change in assumptions.

We have also assessed the appropriateness of:

- margins for uncertainties and risks included in the provisions, to take into account the degree of control over decommissioning techniques to be performed and uncertainties involved in assessing future costs depending on their valuation basis;
- the series and mutualisation effects adopted in the quotes for decommissioning nuclear power plants in operation, and feedbacks from the preparation of the dismantling of the nuclear power plants of Fessenheim since 2021, so that it can be considered on the other nuclear power plants.

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The law sets the realizable value of these assets which should allow the Company's commitments relating to the decommissioning of nuclear power plants and long-term storage of radioactive waste in France to be covered (Notes 1.3.4.5, 15.1.2 and 18.1 to the consolidated financial statements).

Dedicated assets include (i) yield assets, made up of infrastructure assets, including CTE securities, and real estate assets; (ii) so-called growth assets, made up of listed equity funds and unlisted equity funds; and (iii) so-called fixed-income assets, made up of listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

The realizable value of these dedicated assets amounts to €36,885 million (or a net carrying amount of €34,424 million) as of December 31, 2023.

We considered the valuation of provisions related to nuclear generation and dedicated assets to be a key audit matter due to:

- the sensitivity of the assumptions on which the valuation of these provisions is based, notably in terms of assumptions and industrial scenarios considered for decommissioning, spent fuel reprocessing, storage, costs, uncertainties and other risks, inflation and long-term discount rates, as well as the depreciation periods of nuclear power plants in operation, and forecast cash outflows; the modification of these parameters can lead to a material revision in the provisioned amounts;
- the negative impacts on the financial position of the Company (cash earmarked to increase the amount of dedicated assets) in the event of an increase in nuclear provisions in France, a decrease in the realizable values of dedicated assets or changes in the legal coverage rate of nuclear provisions for dedicated assets,

It being specified that the valuation of provisions covers and includes uncertainties related to the fact that certain scenarios and technical solutions have never been implemented.

Concerning the inflation and discount rates and their calculation methods adopted by management described in note 15.1.1.5 to the consolidated financial statements, we have verified their compliance with applicable accounting standards and regulatory measures, since 2020. We have reconciled the data used for this purpose with available market data or expertise-based documentation.

Concerning the securing of financing for certain of these provisions through dedicated assets, we have reconciled the realizable value of the dedicated assets in the portfolio, as disclosed in the note 15.1.2.4 to the consolidated financial statements, with the available certificate of depository statements, and available external data and valuations performed by external experts engaged by the Company.

Finally, we have verified the reconciliation of information on the determination of these provisions with the consolidated financial statements and the appropriateness of the disclosures given in the Notes, notably regarding the sensitivity of the valuation of provisions to changes in macro-economic and technical assumptions (Note 15.1.1.5 to the consolidated financial statements).

6.

Valuation of goodwill, intangible assets with indefinite useful live, property, plants and equipments

Notes 1.3.4.1, 1.3.4.4,10 and 20.2.2. to the consolidated financial statements

Key Audit Matter

As at December 31, 2023, the goodwill, intangible assets and tangible assets (except for assets under concessions) have respectively a net book value of €7,895 million and €111,887 million and represent significant amounts of the Group's consolidated financial statements.

The notes 1.3.4.4 and 10.8 to the consolidated financial statements describe the methodologies adopted and applied to determine if indicators exist showing that an asset may be subject to an impairment loss and the methods for performing impairment tests. Note 20.2.2. to the consolidated financial statements also describes how the impairment tests took into consideration climate and environmental matters. The tests and the determination of recoverable amounts are carried out at the cash-generating unit (CGU) level our group of CGU. They are carried out annually at the CGU level for those holding intangible assets with indefinite lives or goodwill. The recoverable amount corresponds, for the majority of these CGU or groups of CGU, to the value in use determined based on the discounted value of future cash flows. Those tests led, as described in note 10.8 to the consolidated financial statements, to the accounting of a total impairment for €13,011 million in 2023, including €11,151 million for the nuclear assets under construction of Hinkley Point C (HPC) and €1,773 million for the goodwill of EDF Energy.

We considered the valuation of goodwill and intangible and tangible assets of generation and retail activities in France and in the United Kingdom to be a key audit matter due to:

- their materiality at closing date. Their net book values amount to respectively €5,031 million and €86,092 million;
- the sensitivity of valuations to macro-economic and industry assumptions, in terms of decarbonation and energy efficiency policies and power price, as well as mid-term financial assumptions (discount and inflation rates) and cost-to-completion for assets under construction
- the estimates and judgments that these evaluations require from Management.

Responses

Our audit approach consisted mainly in:

- Analyzing the determination of the CGUs or groups of CGUs at which impairment tests of goodwill, intangible and tangible assets are performed;
- Substantiating the existence of impairment indicators;
- Understand the process used by Management to develop estimated and assumptions for impairment testing and assess the; appropriateness of the valuation model with the assistance of internal experts in valuation
- Verifying, for the CGU tested, that the discounted future cash flow projections correspond to those generated by the assets included in these CGU and that they were consistent with (i) the CGU budget data for the first years, and, beyond, with the Group's long-term assumptions, (ii) past performances, and (iii) the expected operating life of the assets;
- Examining by conducting interviews with Management, the different underlying assumptions (economic growth, price of raw material and CO2, electricity demands, production capacities and interconnections and changes in energetic mix) on which the medium and long-term price assumptions are based, by substantiating them with external studies carried out by experts in energy and by verifying their consistency with the European targets for decarbonation;
- When it comes to the nuclear generation asset under construction of HPC, analyzing the new project schedule and updated construction costs. In particular, we i) conducted interviews with project management, experts, internal audit and Group management in order to assess the process implemented and understand the identified operational risks and ii) substantiated cost assumption with available external documentation such as for example physical progress or contracts signed with suppliers;
- Verifying with the assistance of our internal experts, the methods used to determine discount rate assumptions, based on the weighted average cost of capital by geographical area and by activity, and in particular the consistency of the risk-free rates and risk premiums adopted by Management with the underlying market assumptions;
- Comparing the value of assets tested with accounting data;
- Checking the arithmetical accuracy of impairment tests

Finally, we have verified that Notes 1.3.4.4 and 10.8 to the consolidated financial statements provide appropriate disclosure in particular in terms of assumptions adopted to perform impairment tests and sensitivity analyses.

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Valuation and accounting of deferred tax assets in connection with tax loss carryforwards in France

Notes 1.3.4.8 and 9 to the consolidated financial statements

Key Audit Matter

Deferred tax assets on tax loss carryforwards amount to €7,538 million as at 31 December 2023. They include €6,190 million in connection with the France tax group loss for 2022.

As described in note 9 to the consolidated financial statements, the Group determines deferred tax at a level of a tax entity or tax group and recognizes deferred tax assets only when it is probable that the tax entity or tax group will have sufficient taxable profit to utilize the benefit of the assets on a foreseeable future. As at 31 December 2023, according to the accounting Group policy, this foreseeable future corresponds to a period of 10 years for the French tax group.

We considered the valuation and the accounting of deferred tax assets in connection with tax loss carryforwards in France, to be a key audit matter, due to their materiality at closing date, the sensitivity of the assumptions to estimate their expected recoverability, and the justification of the accounting, in particular in terms of future taxable profits and management judgment.

Responses

Our audit approach consisted, with the assistance of our internal tax experts, mainly in:

- assessing the documentation used by Management to estimate the probability that the Group could use within a 10-year horizon its tax losses carried forward generated to date, in particular with regard to the ability of the France tax group to generate future taxable profits;
- reviewing the process for preparing the 2024 budget established by Management and approved by the Board of Directors and the mid-term plan for 2025-2026 prepared by Management and presented to the Board of Directors, as well as the underlying assumptions of the Group's internal financial trajectory;
- assessing the relevance of the methods for extrapolating tax results beyond the financial year 2027;
- comparing the earnings projections for previous fiscal years with the actual results for the fiscal years concerned, in order to assess the reliability of the process for preparing tax earnings projections;
- analyzing the reversal of the main timing differences over the projection horizon

We have also assessed the appropriate nature of the information given with respect to these deferred tax assets in note 9 to the consolidated financial statements

Specific Verifications

We have also performed, in accordance with professional standards applicable in France, the specific verifications required by laws and regulations of the Group's information given in the management report of the Board of Directors.

We have no matters to report as to its fair presentation and its consistency with the consolidated financial statements.

We attest that the consolidated non-financial statement required by Article L.225-102-1 of the French Commercial Code is included in the information pertaining to the Group presented in the management report, being specified that, in accordance with the provisions of Article L.823-10 of the code, we have not verified the fair presentation and the consistency with the consolidated financial statements of the information contained therein and should be reported on by an independent insurance services provider.

Report on Other Legal and Regulatory Requirements

Format of presentation of the consolidated financial statements intended to be included in the annual financial report

We have also verified, in accordance with the professional standard applicable in France relating to the procedures performed by the statutory auditor relating to the annual and consolidated financial statements presented in the European single electronic format, that the presentation of the consolidated financial statements intended to be included in the annual financial report mentioned in Article L.451-1-2, I of the French Monetary and Financial Code (code monétaire et financier), prepared under the responsibility of the Chief Executive Officer, complies with the single electronic format defined in the European Delegated Regulation N° 2019/815 of 17 December 2018. As it relates to consolidated financial statements, our work includes verifying that the tagging of these consolidated financial statements complies with the format defined in the above delegated regulation.

Based on the work we have performed, we conclude that the presentation of the consolidated financial statements intended to be included in the annual financial report complies, in all material respects, with the European single electronic format.

Due to the technical limits inherent in the block-tagging of the consolidated financial statements according to the European single electronic format, the content of certain tags of the notes may not be rendered identically to the accompanying consolidated financial statements.

Furthermore, it is not our responsibility to verify that the consolidated financial statements which will actually be included by your company in the annual financial report filed with the AMF correspond to those on which we carried out our work.

Appointment of the Statutory Auditors

We were appointed as statutory auditors of Electricité de France S.A. by the General meeting of June 6, 2005 for KPMG S.A. and by the General meeting of June 28, 2023 for PricewaterhouseCoopers Audit.

As at December 31, 2023, KPMG Audit was in the 19th year of total uninterrupted engagement and PricewaterhouseCoopers Audit SAS was in the 1st year of engagement.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards as adopted by the European Union, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless it is expected to liquidate the Company or to cease operations.

The Risk and Audit Committee is responsible for monitoring the financial reporting process and the effectiveness of internal control and risks management systems and where applicable, its internal audit, regarding the accounting and financial reporting procedures.

The consolidated financial statements were approved by the Board of Directors.

Statutory Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Objectives and audit approach

Our role is to issue a report on the consolidated financial statements. Our objective is to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with professional standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As specified in Article L. 821-55 of the French Commercial Code (Code de commerce), our statutory audit does not include assurance on the viability of the Company or the quality of management of the affairs of the Company.

As part of an audit conducted in accordance with professional standards applicable in France, the statutory auditor exercises professional judgment throughout the audit and furthermore:

- Identifies and assesses the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence considered to be sufficient and appropriate to provide a basis for his opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control.
- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management in the consolidated financial statements.
- Assesses the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. This assessment is based on the audit evidence obtained up to the date of his audit report. However, future events or conditions may cause the Company to cease to continue as a going concern. If the statutory auditor concludes that a material uncertainty exists, there is a requirement to draw attention in the audit report to the related disclosures in the consolidated financial statements or, if such disclosures are not provided or inadequate, to modify the opinion expressed therein.
- Evaluates the overall presentation of the consolidated financial statements and assesses whether these statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtains sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. The statutory auditor is responsible for the direction, supervision and performance of the audit of the consolidated financial statements and for the opinion expressed on these consolidated financial statements.

Report to the Audit Committee

We submit a report to the Risk and Audit Committee which includes in particular a description of the scope of the audit and the audit program implemented, as well as the results of our audit. We also report, if any, significant deficiencies in internal control regarding the accounting and financial reporting procedures that we have identified.

Our report to the Risk and Audit Committee includes the risks of material misstatement that, in our professional judgment, were of most significance in the audit of the consolidated financial statements of the current period and which are therefore the key audit matters, that we are required to describe in this report.

We also provide the Risk and Audit Committee with the declaration provided for in Article 6 of Regulation (EU) N° 537/2014, confirming our independence within the meaning of the rules applicable in France such as they are set in particular by Articles L.821-27 à L.821-34 of the French Commercial Code (code de commerce) and in the French Code of Ethics (Code de Déontologie) for statutory auditors. Where appropriate, we discuss with the Risk and Audit Committee the risks that may reasonably be thought to bear on our independence, and the related safeguards.

Paris La Défense and Neuilly-sur-Seine, February 15, 2024

The Statutory Auditors

KPMG SA		**PricewaterhouseCoopers Audit**	
Marie GUILLEMOT	Jacques-François LETHU	Séverine SCHEER	Cédric HAASER

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6.3 EDF SA financial statements at 31 December 2023

NB: Most figures in the tables are reported in millions of euros. The resulting approximation can lead to slight differences in totals or movements and changes.

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Income statement

(in millions of euros)	Notes	2023		2022	
Sales	3		90,291		87,129
Sales in France		70,552		50,374	
Sales outside France		19,739		36,755	
Change in inventories and capitalised production			1,763		1,520
Operating subsidies	4		14,198		883
Reversals of depreciation, amortisation and operating provisions	5		4,873		6,491
Other operating income and transfers of charges	6		1,295		3,552
I Total Operating income			112,420		99,575
Purchases and other external expenses	7		71,386		106,080
Fuel purchases used		5,541		9,059	
Energy purchases		46,812		78,202	
Services and other purchases used		19,033		18,819	
Taxes other than income taxes	8		2,370		1,974
Personnel expenses	9		7,071		6,615
Depreciation, amortisation and provisions			9,879		10,307
Depreciation and amortisation	10	4,540		4,490	
Provisions and impairment	5	5,339		5,817	
Other operating expenses	6		3,500		2,661
II Total Operating expenses			94,206		127,637
OPERATING PROFIT (LOSS) (I – II)			18,214		(28,062)
III Joint operations			-		-
IV Financial result	11		(8,945)		(3,269)
PROFIT OR LOSS BEFORE INCOME TAXES AND EXCEPTIONAL ITEMS (I – II + III + IV)			9,269		(31,331)
V Exceptional result	12		272		536
VI Income taxes	13		(1,831)		147
PROFIT OR LOSS (I – II + III + IV + V + VI)			7,710		(30,648)

Balance sheet

Assets

		31/12/2023			31/12/2022
(in millions of euros)	Notes	Gross values	Amortisation, depreciation and impairment	Net values	Net values
Intangible assets	14	3,784	2,265	1,519	1,325
Intangible assets in progress	14	1,943	14	1,929	1,604
Property, plant and equipment owned by EDF	15	100,136	68,824	31,312	29,352
Property, plant and equipment operated under concessions	15	16,700	9,836	6,864	6,817
Tangible assets in progress	15	22,759	33	22,726	22,080
Investments and related receivables		61,563	10,814	50,749	58,004
Investment securities		25,889	1,086	24,803	23,391
Loans and other financial assets		36,705	168	36,537	34,041
Financial assets	16	124,157	12,068	112,089	115,436
I Total Fixed assets		269,479	93,040	176,439	176,614
Inventories and work-in-progress	17	13,873	553	13,320	12,833
Advances on orders	18	756	3	753	725
Trade and other receivables	18	19,269	303	18,966	26,556
Marketable securities	19	20,060	553	19,507	17,717
Cash instruments	18	2,759	-	2,759	3,603
Cash and cash equivalents	18-20	8,147	-	8,147	6,810
Prepaid expenses	18	1,137	-	1,137	1,089
II Total Current assets		66,001	1,412	64,589	69,333
Deferred charges (III)		231	-	231	217
Bond redemption premiums (IV)		843	362	481	392
Unrealised foreign exchange losses (V)	21	1,187	-	1,187	1,906
TOTAL ASSETS (I + II + III + IV + V)		337,741	94,814	242,927	248,462

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Equity and liabilities

(in millions of euros)	Notes	31/12/2023	31/12/2022
Capital		**2,084**	**1,944**
Capital-related premiums		**24,085**	**21,868**
Revaluation surplus		**693**	**692**
Reserves			
Legal reserves		194	162
Other reserves		2,970	2,976
Retained earnings		**(22,461)**	**8,187**
Profit or loss for the financial year		**7,710**	**(30,648)**
Interim dividend		**-**	**-**
Investment subsidies		**209**	**218**
Tax-regulated provisions		**5,636**	**5,742**
Total Equity	**22**	**21,120**	**11,141**
Additional equity	**23**	**11,979**	**11,972**
Special concession liabilities	**24**	**2,515**	**2,430**
Total I Equity and Concession accounts		**35,614**	**25,543**
Provisions for risks	**25**	**1,231**	**1,913**
Provisions related to nuclear generation (back-end of the nuclear cycle, plant decommissioning and last cores)	26	48,220	43,382
Provisions for decommissioning of non-nuclear facilities	27	1,018	987
Provisions for employee benefits	28	12,535	12,092
Provisions for other expenses	29	818	1,691
Provisions for expenses		**62,591**	**58,152**
Total II Provisions		**63,822**	**60,065**
Financial liabilities	**30-31**	**80,663**	**92,513**
Advances and progress payments received	**30**	**2,520**	**8,164**
Operating, investment and other liabilities	**30**	**53,718**	**54,219**
Cash instruments	**30**	**2,913**	**4,434**
Deferred income	**30**	**3,367**	**2,949**
Total III Liabilities	**30**	**143,181**	**162,279**
Unrealised foreign exchange gains (IV)	**32**	**310**	**575**
TOTAL EQUITY AND LIABILITIES (I + II + III + IV)		**242,927**	**248,462**

Cash flow statement

(in millions of euros)	Notes	2023	2022
Operating activities			
Profit/(loss) before income tax		9,541	(30,795)
Depreciation, amortisation and provisions		13,507	8,005
Capital (gains)/losses		62	5
Financial income and expenses		126	(1,620)
Changes in working capital [1]		(2,709)	6,366
Net cash flow from operations		**20,527**	**(18,039)**
Net financial expenses, including dividends received [2]		(457)	1,945
Income taxes paid		(1,738)	(179)
Net cash flow from (used in) operating activities	**(A)**	**18,332**	**(16,273)**
Investing activities			
Investments in property, plant and equipment and intangible assets		(6,807)	(6,105)
Proceeds from sale of property, plant and equipment and intangible assets		13	12
Changes in financial assets [3]		(2,905)	(19,089)
Net cash flow used in investing activities	**(B)**	**(9,699)**	**(25,182)**
Financing activities			
Issuance of borrowings and underwriting agreements [4]		34,286	51,074
Repayment of borrowings and underwriting agreements [4]		(41,565)	(20,673)
Dividends paid	22	-	(72)
Increase in equity [5]	22	-	3,251
Issuance and redemption of perpetual subordinated bonds, net of expenses	23	724	1,000
Security deposits	31	(1,100)	3,600
Funding contributions received for assets operated under concessions		37	6
Investment subsidies received [6]	22	-	62
Net cash flow from (used in) financing activities	**(C)**	**(7,618)**	**38,248**
Net increase/(decrease) in cash and cash equivalent	**(A)+(B)+(C)**	**1,015**	**(3,207)**
CASH AND CASH EQUIVALENTS – OPENING BALANCE [7]	**20**	**(1,466)**	**1,561**
Effect of currency fluctuations		(92)	132
Financial income on cash and cash equivalents		240	48
CASH AND CASH EQUIVALENTS – CLOSING BALANCE [7]	**20**	**(303)**	**(1,466)**

(1) Changes in working capital in 2023 are principally explained by the €4,044 million excess CSPE compensation for EDF, which led to recognition of a CSPE liability at 31 December 2023 amounting to €2,030 million (see note 30 (4)).

(2) The variation in this item is mainly explained by the higher cost of borrowing (see note 11).

(3) In 2023, changes in financial assets are principally explained by loans to subsidiaries (see note 16.7 (4)).

(4) In 2023, EDF transferred bonds under repurchase agreements for the amount of €23,161 million and made corresponding repayments of €(28,883) million. These operations are presented in the lines reporting issuance and repayment of borrowings.

Excluding these repurchase operations, the change in 2023 in "Issuance of borrowings and underwriting agreements" and "Repayment of borrowings and underwriting agreements" was a decrease of €(1,557) million.

This decrease is notably explained by redemptions of bonds and repayments of bank loans, totalling €(5,448) million (see note 31) and redemptions of negotiable debt instruments net of issuance costs totalling €(5,649) million (see note 31), offset by issues of senior multi-tranche bonds totalling €8,112 million (see notes 2.2.1, 2.2.2, 2.2.4, 2.2.5 and 2.2.6) and bilateral credit lines concluded during the year for a total of €1,000 million (see note 31).

(5) This concerns the capital increase of 7 April 2022, maintaining the shareholders' preferential subscription rights, which led to a €249 million increase in the share capital and a €2,899 million issue premium, net of expenses; and the "ERO 2022" capital increase reserved for employees of 25 July 2022, with elimination of preferential subscription rights, which led to a €9 million increase in the share capital and an issue premium of €94 million.

(6) In December 2022, a €50 million subsidy was granted by the French State under the "France 2030" plan, after due notification and authorisation from the European Commission.

(7) "Cash and cash equivalents – opening balance" and "Cash and cash equivalents – closing balance" do not include investment funds or negotiable debt instruments maturing in more than three months. Details of the variation in cash and cash equivalents are presented in note 20.

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Notes to the financial statements

Électricité de France SA (EDF), the parent company of the EDF group, is a French *société anonyme* governed by French law and registered in France (22-30 avenue de Wagram, 75008 Paris), operating in electricity generation and electricity and gas supply. EDF is also in charge of all the business activities of the Island Energy Systems (SEI) for Corsica and France's overseas departments.

EDF's financial statements at 31 December 2023 were prepared under the responsibility of the Board of Directors and approved by the Directors at the Board meeting held on 15 February 2024. They will become final after approval at the General Shareholders' Meeting to be held on 11 June 2024.

Note 1 Accounting principles and methods

1.1 Accounting standards

EDF's financial statements are prepared in accordance with the accounting principles and methods defined in regulation 2014-03 of 5 June 2014 issued by the ANC (*Autorité des normes comptables*, France's Accounting Standards Authority) concerning the current French national chart of accounts. They also comply with the November 2021 update to ANC Recommendation 2013-02 of 7 November 2013 regarding measurement and recognition rules for retirement commitments and benefits.

The accounting conventions for the preparation and presentation of individual company financial statements have been applied in compliance with the conservatism principle and the and the basic concepts of:

- the going concern principle;
- consistency of methods;
- accruals-basis accounting.

The accounting and valuation methods applied are identical to those used in the financial statements for the financial year ended on 31 December 2022 and incorporate changes resulting from the interest rate benchmark reform.

This reform has been applicable since 1 January 2021 to financial assets and liabilities for which it has directly caused contractual modifications. It is applied prospectively, with no impact on profit and loss, keeping the hedging relationships for the instruments concerned. Its effects are mainly operational (renegotiation of contracts, fallback provisions, information system upgrades).

The replacement operations for the USD Libor were completed in line with the end date for its publication, *i.e.* 30 June 2023.

1.2 Management judgments and estimates

The preparation of the financial statements requires the use of judgments, best estimates and assumptions in determining the value of assets and liabilities, income and expenses recorded for the period, and in considering positive and negative contingencies existing at year-end. The figures in EDF's future financial statements could differ significantly from current estimates due to changes in these assumptions or economic conditions.

In a context characterised by volatility on the financial and energy markets, the parameters used to prepare estimates are based on macro-economic assumptions appropriate to the very long-term cycle of EDF's assets.

The principal operations for which EDF uses estimates and judgments are the following:

1.2.1 Depreciation period of nuclear power plants

In the specific case of the depreciation period of its nuclear power plants, EDF's industrial strategy is to continue operation beyond 40 years, in optimum conditions as regards safety and efficiency.

EDF has therefore been making preparations for several years to extend the operation period, and making the necessary investments under its Grand Carénage industrial refurbishment programme which was approved in principle by the Board of Directors in January 2015.

The depreciation period of 900MW-series power plants was extended from 40 years to 50 years in 2016 (except for Fessenheim where both reactors were permanently shut down in the first half of 2020) since all the technical, economic and governance conditions were fulfilled.

On 23 February 2021, the Nuclear Safety Authority (Autorité de sûreté nucléaire – ASN) issued a resolution on the conditions for continued operation of EDF's 900MW reactors beyond their fourth 10-year inspection. The ASN considered that "the measures planned by EDF combined with those prescribed by ASN open the prospect of continued operation of these reactors for a further ten years following their fourth 10-year inspection". This resolution ended the "generic" phase of the review, which concerned the studies and modifications of facilities common to all the 900MW reactors, which all have a similar design model.

The fourth 10-year inspections have been completed at 12 of the 32 reactors in the 900MW series, including Blayais 1 and Saint-Laurent B2 in 2023, and five more are currently in process (Blayais 2, Bugey 3, Chinon B1, Dampierre 3, Gravelines 2).

In 2021, the technical, economic and governance conditions for extending the depreciation period of 1300MW-series plants were fulfilled, and it was extended from 40 to 50 years.

The depreciation period of the 1450MW-series units (the four reactors at Chooz and Civaux), which are much more recent, currently remains at 40 years as the conditions for extension are not yet fulfilled.

These depreciation periods take into account the date of recoupling with the network after the most recent 10-year inspection.

1.2.2 Nuclear provisions

The measurement of provisions for the back-end of the nuclear cycle, decommissioning and last cores is sensitive to assumptions concerning technical processes, costs, inflation rates, long-term *discount rates, the depreciation period of plants currently in* operation and disbursement schedules.

These parameters are therefore re-estimated at each closing date to ensure that the amounts accrued correspond to the best estimate of the costs eventually to be borne by EDF.

EDF considers that the assumptions used at 31 December 2023 are appropriate and justified. However, any future change in assumptions could have a significant impact on EDF's financial statements (see note 26).

The main assumptions and sensitivity analyses relating to nuclear provisions are presented in note 26.5.

The calculation of provisions incorporates a level of risks and unknowns as appropriate to the operations concerned, together with uncertainty factors such as:

- changes in the regulations, particularly on safety, security and *environmental protection, and financing of long-term nuclear* expenses;
- changes in the regulatory decommissioning process and the time necessary for issuance of administrative authorisations;
- future methods for storing long-lived radioactive waste and provision of storage facilities by the French agency for radioactive waste management ANDRA (Agence nationale pour la gestion des déchets radioactifs);
- changes in the contractual terms for spent fuel management and more generally the outlook for Orano's long-term industrial strategy in line with French energy policy, the operating performance of its installations, and the level of associated costs and investments;
- changes in certain financial parameters such as discount rates and/or inflation rates;
- the useful life of nuclear facilities (calculation of decommissioning provisions for nuclear plants in operation is based on the depreciation period of the assets concerned, *i.e.* 50 years for 900MW-series and 1300MW-series power plants and 40 years for 1450MW-series power plants).

1.2.3 Pensions and other long-term and post-employment benefit obligations

The value of pensions and other long-term and post-employment benefit obligations is based on actuarial valuations that are sensitive to all the actuarial assumptions used, particularly concerning discount rates, inflation rates and wage increase rates.

The principal actuarial assumptions used to calculate these post-employment and long-term benefits at 31 December 2023 are presented in note 28.4. These assumptions are updated annually.

EDF considers the actuarial assumptions used at 31 December 2023 appropriate and well-founded, but future changes in these assumptions could have a significant effect on the amount of the obligations and on EDF's net income.

1.2.4 Energy supplied but not yet measured and billed

As explained in note 3, the quantities of energy supplied but not yet measured and billed are calculated at the reporting date based on statistic consumption models and selling price estimates. Determination of the unbilled portion of sales revenues at the year-end is sensitive to the assumptions used to prepare these statistics and estimates.

1.2.5 Impairment of long-term assets

Impairment tests on long-term assets are sensitive to the macro-economic and segment assumptions used, particularly concerning *changes in energy prices, and to medium-term financial forecasts* (discount and inflation rates) and completion costs for assets under construction. EDF therefore revises the underlying estimates and assumptions based on regularly updated information (see note 15).

1.2.6 Impairment of investments

At each year-end, investments are stated at their value in use. Impairment is recorded when the value in use is lower than the net book value.

Value in use is determined based on the share in the subsidiary's consolidated equity at the year-end, or where relevant based on discounted future cash flows.

Impairment tests of investments valued by the discounted cash flow method are sensitive to the macro-economic and segment assumptions used, particularly concerning changes in energy prices, commodity prices, and medium-term financial forecasts (see note 16).

Note 2 Significant events and transactions

2.1 Nuclear developments

2.1.1 Flamanville 3 EPR

In accordance with the schedule announced on 16 December 2022, EDF continued work in 2023 to complete the installation, and finalise preparations for fuel loading, which is due to take place in the first quarter of 2024.

Once the nuclear fuel is loaded in the reactor, start-up operations will continue, principally checks of all safety systems, equipment testing and qualification throughout the duration of the temperature and pressure increases in the nuclear steam supply system, and afterwards during the reactor ramp-up. On reaching 25% nominal power, the reactor will be connected to France's national grid.

The estimated cost to completion is unchanged at €13.2 billion in 2015 euros, excluding interim interest.

Developments on the Flamanville project in 2023 were as follows:

- the ASN and IRSN finalised their technical examination of the outstanding topics (SIS filtration function, pressuriser relief valves, *etc.*);
- work on the main secondary circuit welds was completed, with more than 120 welds repaired and 200 subjected to stress-relieving heat treatment. The ASN will issue its final opinion on the main secondary circuit's compliance in its Compliance Declaration for the nuclear steam supply systems;
- the "Overall Requalification Tests" on the plant were finalised on 10 December 2023: 4,000 pieces of equipment were verified;
- the ASN issued a decision on 16 May 2023 authorising use of Flamanville's current reactor vessel head until "the reactor shutdown during which the first complete requalification of the primary circuit takes place". As a result, the reference scenario for EDF now assumes that the vessel head will be replaced during the first scheduled shutdown for a full inspection, which should begin in mid-2025 at the end of the reactor's first operating cycle.

2.1.2 Grand Carénage programme

Since 2014 EDF has been implementing its *Grand Carénage* industrial refurbishment programme for the French nuclear fleet, designed to enhance reactor safety and extend their operating lifetimes significantly beyond 40 years. On 31 March 2022, EDF's Board of Directors validated a new roadmap for the period 2022–2028, incorporating information gained from current ASN inspections, particularly the fourth 10-year inspections of 900MW and 130MW plants, and including the start of the research phase for the fifth 10-year inspections of 900MW plants, for an estimated total investment of €33 billion in current euros, *i.e.* €31.2 billion in 2021 euros.

Investments made under the programme in 2023 totalled €4.4 billion.

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2.1.3 Stress corrosion

In late 2021, during preventive maintenance checks on reactor 1 at the Civaux nuclear power plant, scheduled as part of its 10-year inspection, defects were detected close to welds on the pipes of the safety injection system (SIS) circuit. Preventive checks were then carried out on the Civaux 2, Chooz 1 and Chooz 2 reactors, which also belong to the N4 series, and similar defects were identified. Preventive maintenance checks conducted during the 10-year inspection of reactor 1 at the Penly nuclear power plant also found similar defects on the SIS circuit.

Through expert assessments and analyses conducted during 2022, EDF identified the reactors where the SIS circuit pipes are the most susceptible to stress corrosion. They are the 16 most recent reactors: the four N4 reactors, and twelve P'4 1300MW reactors.

The ASN declared its position on 26 July 2022 regarding EDF's proposed inspection strategy for the stress corrosion affecting its reactors. The ASN considered EDF's strategy appropriate given the knowledge learned about this phenomenon, and the related safety issues.

On 10 March 2023, following the results of an expert assessment of a weld at the Penly 1 reactor that was repaired twice during reactor construction, EDF sent the ASN a proposed update to its strategy aiming to accelerate the pace of inspections of welds repaired at the time of construction, which will take place during scheduled reactor outages for maintenance in 2023, 2024 and 2025.

In mid-March 2023 the ASN indicated that it had taken note of the updated strategy and would continue technical discussions with EDF to ensure that the intended timetable was appropriate [1]. In a bulletin published on 25 April 2023, the ASN validated EDF's proposed timetable.

EDF has completed the planned 2023 programme of inspections of the repaired welds identified as high-priority because of the conditions in which they were repaired during construction, and has begun the 2024 programme validated by the ASN. These inspections will be carried out during maintenance outages that are already scheduled, and EDF does not expect any additional or *ad hoc* outages.

The welds on the N4 series have been repaired, and the N4 reactors were brought back online during the first half of 2023.

Preventive repairs have been completed at eleven of the twelve P'4 1300MW reactors (Penly 1, Penly 2, Cattenom 1, Cattenom 2, Cattenom 3, Golfech 1, Golfech 2, Belleville 1, Belleville 2, Nogent 1 and Nogent 2), and will be carried out on the last one (Cattenom 4) during the 10-year inspection scheduled for February 2024.

EDF's nuclear power output totalled 320.4TWh in 2023, an increase of nearly 42TWh compared to 2022.

2.1.4 Signature of an exclusive agreement to acquire part of GE Steam Power's nuclear activities

On 4 November 2022, GE and EDF signed a final agreement related to EDF's acquisition of GE Steam Power's nuclear activities. These activities include the manufacturing of conventional island equipment for new nuclear power plants, including the Arabelle steam turbine as well as maintenance and upgrade activities for existing nuclear power plants in all regions other than the Americas. The transaction also includes steam turbine technology for first and second-generation European pressurized reactors (EPR and EPR2) and small modular reactors (SMR).

This acquisition will enable the EDF group to strengthen its conventional island technologies and skills, which are essential for the durability of the existing nuclear fleet and future projects.

Completion of this operation, initially expected during the second half of 2023, will take place once all the necessary conditions, including issuance of the required regulatory authorisations, have been fulfilled.

2.1.5 Update on the Hinkley Point C project

On 23 January 2024 the EDF group announced that over recent months, the Hinkley Point C project had achieved a series of major milestones:

- on 15 December 2023, the dome was lifted and installed on Unit 1;
- the detailed design for the next phase of electromechanical (MEH) work was finalised;
- 70% of the equipment to be installed on Unit 1 has been delivered;
- the steam generators have been built and are ready for delivery;
- testing of the UK instrumentation and control system is underway.

Previously, on 19 May 2022 [2], the Group had stated that the start of electricity production was scheduled for June 2027. At that time, the risk of further delay in the delivery of the two units was estimated at 15 months, and the cost of completion of the project at between £25 and £26 billion in 2015 sterling [3].

A review of the Hinkley Point C project has been finalised and has led to the following re-evaluation of the schedule and costs.

Regarding the schedule, the aim of the project is now to bring Unit 1 into service around the end of the decade. Several scenarios have been analysed:

- the first scenario around which the project is organised is targeting becoming operational in 2029. This schedule is based on a target productivity for the electromechanical work, which action plans are being drawn up to achieve;
- a second scenario (base case), which assumes certain risks inherent in the ramp-up of the electromechanical work and the testing schedule do materialise, would see Unit 1 operational in 2030;
- finally, given the complexity of the project, an unfavourable scenario assuming a further 12-month risk materialises could lead to Unit 1 being operational in 2031.

In the first two scenarios, the costs of completing the project are now estimated at between £31 billion and £34 billion in 2015 values. The cost of civil engineering and the longer duration of the electromechanical phase (and its impact on other work) are the two main reasons for this cost revision. If the risk of an additional delay of 12 months mentioned above in the final scenario does materialise it would result in an estimated additional cost of around £1 billion in 2015 values.

Following this announcement, EDF recorded additional impairment of €7,013 million on its investment in EDF International (the holding company of EDF Energy which is in charge of the HPC project, €2,650 million in 2022) (see notes 11(7) and 16.1 (4)).

(1) See ASN's press release of 16 March 2023.
(2) See EDF's press releases of 27 January 2021 and 19 May 2022.
(3) Excluding interim interest, at the project's reference exchange rate of £1 = €1.23.

2.2 Financing operations

2.2.1 Senior multi-tranche bond issue for the nominal amount of €2 billion and £950 million

On 19 January 2023 EDF successfully launched a senior bond issue in 4 tranches for a nominal amount of €2 billion and £950 million (see note 31 (1)):

- €1 billion bond, with 9-year maturity and a 4.25% fixed coupon;
- €1 billion bond, with 20-year maturity and a 4.625% fixed coupon;
- £450 million bond, with 12-year maturity and a 5.5% fixed coupon;
- £500 million bond, with 30-year maturity and a 5.625% fixed coupon.

Settlement and delivery took place on 25 January 2023, the date on which the Bonds were admitted to trading on the regulated market of Euronext Paris.

On 28 March 2023 EDF complemented this issue with a second issue of nominal value of £99 million, having the same coupon and maturity as the £500 million tranche issued on 19 January 2023 (30-year maturity and a 5.625% coupon).

2.2.2 Senior multi-tranche bond issue for the nominal amount of €3 billion and CAD 500 million

On 17 May 2023, EDF successfully priced a senior bond issue in 5 tranches for a nominal amount of US$3 billion and CAD 500 million (see note 31 (1)):

- $1 billion bond, with 5-year maturity and a 5.7% fixed coupon;
- $1 billion bond, with 10-year maturity and a 6.25% fixed coupon;
- $1 billion bond, with 30-year maturity and a 6.9% fixed coupon;
- CAD 300 million bond, with 7-year maturity and a 5.993% fixed coupon;
- CAD 200 million bond, with 30-year maturity and a 6.492% fixed coupon.

Settlement and delivery of the US$ bonds took place on 23 May 2023, the date on which the US$ bonds were admitted to trading on the Euro MTF, the multilateral trading facility operated by the Luxembourg Stock Exchange. Settlement and delivery of the CAD bonds also took place on 23 May 2023.

2.2.3 Hybrid notes issue for a nominal amount of $1.5 billion and continuation of the tender offer to purchase notes for cash announced on 6 June 2023

On 8 June 2023, EDF successfully priced a US$1.5 billion issue of new US dollar-denominated perpetual subordinated notes, at an initial 9.125% coupon until 2033 with a 10-year first call date at EDF's discretion (see note 23).

EDF will be able to redeem the New Notes for cash (i) at any time during the 3-month period preceding the first interest reset date, *which is expected to be in 10 years, and every 5 years thereafter*, (ii) for rating methodology or accounting events, or certain changes of tax regime, or (iii) at any time pursuant to the make-whole call [1].

The proceeds resulting from this offering will be allocated for the redemption, in whole or in part, of its US dollar-denominated perpetual subordinated notes amounting to $1.5 billion [2], and for general corporate purposes of the Group.

Settlement and delivery of the new notes took place on 15 June 2023, the date on which they were admitted to trading on Euro MTF, the multilateral trading facility operated by the Luxembourg Stock Exchange.

On 7 July 2023 EDF announced the final results of its offer launched on 6 June 2023 to purchase for cash any and all of its US dollar-denominated Reset Perpetual Subordinated Notes. The final amount of the purchases was $904 million (see note 23).

On 14 December 2023, EDF announced its intent to exercise the option to redeem the outstanding US dollar-denominated hybrid notes, which totalled $596 million. All these notes were redeemed at the First Call Date of 22 January 2024 (see note 23).

2.2.4 Senior multi-tranche samurai bond issue for a nominal amount of ¥33 billion

On 22 June 2023, EDF successfully priced a senior Samurai bond issue in 4 tranches for a nominal amount of ¥33 billion (see note 31 (1)):

- ¥25.3 billion bond, with 5-year maturity and a 1.059% fixed coupon;
- ¥2.2 billion bond, with 7-year maturity and a 1.355% fixed coupon;
- ¥4.4 billion bond, with 10-year maturity and a 1.695% fixed coupon.
- ¥1.1 billion bond, with 20-year maturity and a 2.328% fixed coupon.

2.2.5 Senior multi-tranche Green Bond issue for a nominal amount of CHF 325 million

On 21 August 2023, EDF successfully raised CHF 325 million from 2 tranches of senior Green Bonds (see note 31 (1)):

- CHF 200 million bond, with a 4-year maturity and a 2.30% fixed coupon;
- CHF 125 million bond, with a 8-year maturity and a 2.55% fixed coupon.

An amount equal to the net proceeds of these Green Bonds will be used to finance and/or refinance, in whole or in part, electricity distribution investments, notably to adapt the grid to the needs of the energy transition as defined in EDF's Green Financing Framework published in July 2022.

(1) The make-whole call enables EDF to redeem the outstanding New Notes early, at a price which depends on the make-whole redemption date.
(2) See the press release of 6 June 2023.

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2.2.6 Green Bond issue for a nominal amount of €1 billion

On 28 November 2023, EDF successfully launched a senior Green Bond issue dedicated to the financing of the existing nuclear fleet, for a nominal amount of €1 billion, with 3.5-year maturity and a 3.75% fixed coupon (see note 31 (1)). The net proceeds will be used to refinance EU Taxonomy-aligned nuclear energy capital expenditures on existing French nuclear reactors for their operating lifetime extension, as defined in EDF's Green Financing Framework [1].

After the previous bond issues of 2023, this transaction enabled EDF to further strengthen its balance sheet structure.

Settlement and delivery took place on 5 December 2023, the date on which the Bonds were admitted to trading on the regulated market of Euronext Paris.

2.2.7 Simplified public tender offer

On 4 October 2022 the French State, the majority shareholder of EDF ("the Company") which held, alone or in concert, 83.69% of the capital and 89.24% of the theoretical voting rights in the Company, filed a draft Simplified Tender Offer (STO) with the *Autorité des marchés financiers* (AMF), covering all the shares and the bonds convertible into new shares or exchangeable for existing shares in EDF that it did not yet hold at that date.

On 27 October 2022, based on the work and recommendations of an *ad hoc* internal committee and the conclusions of consulting firm Finexsi, designated as independent appraiser, EDF's Board of Directors issued a favourable opinion of the Offer, supplying its reasons.

On 22 November 2022, the AMF approved the Offer initiated by the French State, offering the Company's shareholders and holders of its OCEANE bonds €12.00 per share and €15.52 per OCEANE bond for all shares and bonds tendered to the Offer, which opened on 24 November 2022.

Also, in accordance with the terms and conditions of the OCEANE bonds, the opening of the Offer after approval by the AMF led to adjustment of the EDF share allocation ratio during the adjustment period in the event of a tender offer.

On 7 December 2022, the AMF extended the duration of the tender offer, without setting a new closing date, following legal action for annulment of the AMF's approval of the Offer brought before the Paris Court of Appeal on 2 December 2022 by minority shareholders of the EDF group, together with a request to suspend execution of the Offer.

In a public announcement of 20 January 2023, the Ministry of the Economy stated that the French State had exceeded the threshold of 90% of the capital and theoretical voting rights of EDF on 19 January 2023.

On 25 January 2023, the AMF announced that the Offer would be temporarily closed on 3 February 2023, subject to reopening in accordance with the French government's undertakings to the plaintiffs in the legal action, until the Court of Appeal issued its ruling on the merits of the case, which was to be on 2 May 2023 at the latest.

Despite exceeding the 90% threshold, the French government promised not to proceed to the compulsory squeeze-out until the Court of Appeal ruled on the validity of the AMF's approval of the Offer.

On 3 February 2023, the AMF provisionally closed the Offer.

After the provisional closing of the offer, on 8 February 2023 the AMF published the result of the Simplified Tender Offer for the equity securities of EDF. After the Offer closed, pending the decision of the Court of Appeal referred to above, the French State held 3,725,111,882 EDF shares or 95.82% of the Company's capital and at least 96.53% of the voting rights, and 218,616,300 OCEANE bonds or 99.96% of the outstanding OCEANEs.

On 2 May 2023 the Paris Court of Appeal dismissed the action brought by the Supervisory Board of the employees' mutual fund *FCPE Actions EDF*, the shareholders' association Énergie En Actions, and the Association pour la défense des actionnaires minoritaires (Association for the Defence of Minority Shareholders or "ADAM") against the AMF's decision declaring the French State's simplified tender offer for EDF shares compliant with the applicable laws and regulations.

Consequently, the AMF stated in a notice released on 2 May 2023 that, in accordance with the French government's undertakings [2], the Offer would be reopened for a period of 10 trading days from 4 May 2023 to 17 May 2023 inclusive. After the offer closed, the French State owned 3,908,590,275 EDF shares, representing 97.69% of the share capital and at least 98.04% of the voting rights. Settlement and delivery of the reopened offer took place on 25 May 2023.

After this reopening of the French State's simplified tender offer for EDF shares [3], in accordance with the AMF's opinion issued on 26 May 2023, a compulsory squeeze-out procedure for EDF shares and OCEANEs was implemented on 8 June 2023.

As a result of this squeeze-out, the securities that had not been tendered to the Offer were transferred to the State, the EDF shares were delisted from Euronext Paris and EDF's OCEANE bonds were delisted from Euronext Access. The French State now holds all the capital and voting rights of EDF (see notes 22.1 and 22.3).

2.3 Other developments

2.3.1 Long-term electricity supply contract signed between EDF and Trimet

EDF and aluminium producer Trimet signed a new contract for electricity to produce primary aluminium in France. This agreement extends the cooperation that has existed between the two partners since 2013. It provides for a secure energy supply of 22TWh for the aluminium smelter in Saint-Jean-de-Maurienne over a period of up to ten years, and includes mechanisms to ensure a balanced division of risks and rewards.

The signature of this contract gave rise to payment of a cash advance by Trimet to EDF during the second half of 2023.

2.3.2 Pension reform in France

French law 2023-270 amending social security funding for 2023, adopted on 14 April 2023, introduced changes to France's general pension system. The principal measures are a gradual rise in the standard retirement age from 62 to 64, and an increase in the contribution period required to qualify for a full pension.

The implementation decree 2023-692 concerning employees affiliated to the special IEG (electricity and gas sector) regime was published on 28 July 2023. The parametric rules defined in this decree will be applicable from 1 January 2025 for employees born in or after 1963 (whereas the measures of the law applicable to the standard national pension system came into force from 1 September 2023 and apply to employees born in or after 1961).

(1) The *Framework* is available from the Sustainable Finance section of EDF's website.
(2) See the press release of 8 February 2023.
(3) See the press release of 23 May 2023.

The new law also discontinues the special IEG pension system for employees joining the sector from 1 September 2023. These employees will still benefit from the regulatory and negotiated measures, and other benefits associated with IEG status (such as the special 'tarif agent' energy price, family benefits, etc.). The only difference is the pension system itself.

Finally, in view of the 2023 pension reform law of 14 April 2023, the national inter-industry agreement of 5 October 2023 took account of the consequences of the reform for the AGIRC-ARRCO complementary pension system by eliminating the temporary 10% bonus/discount which applied to AGIRC-ARRCO pensions when employees retired after/before qualifying for a full pension (solidarity or bonus coefficients). As these bonuses and discounts were funded by the special IEG pension system, their elimination has a favourable impact on the amount of the obligation covered by provisions recognised in EDF's 2023 financial statements due to the system affiliation mechanism.

All the impacts of the pension reform described above are classified as plan amendments. The resulting past service cost amounts to €232 million, recognised in expenses in the income statement for 2023 (see note 28 (1) and (2)).

Income statement

Note 3 Sales

ACCOUNTING PRINCIPLES AND METHODS

Sales essentially comprise income from energy sales (to final customers and as part of trading activities) and sales of services. EDF's energy sales revenues include delivery services through the energy distribution network purchased from the subsidiary Enedis and reinvoiced to end-customers.

Sales are recognised when delivery of goods has taken place or the service has been completed.

The quantities of energy delivered to EDF customers but not yet measured and billed at the end of the period are calculated based on the quantities used by the sites of the EDF balance-responsible entity less the quantities billed, after losses measured by a statistical method presented to the Commission de régulation de l'énergie (CRE), the French Energy Regulation Commission. These quantities are valued using an average price determined by reference to energy invoiced in the previous month.

Sales of goods and services not completed at the balance sheet date are valued by reference to the stage of completion at that date.

Sales of energy to EDF Trading, the EDF group's trading company, are recorded at their contractually stipulated amount.

CAPACITY MECHANISM

French law 2010-1488 of 7 December 2010 on the new organisation of the electricity market introduced an obligation in France to contribute to guaranteeing power supply security from 1 January 2017.

A capacity mechanism was therefore set up in France to ensure secure power supplies during peak periods.

Operators of electricity generation plants and load-shedding operators must have their capacities certified by RTE, and commit to a forecast level of availability for a given year of delivery. In return, they are awarded capacity certificates.

Meanwhile, electricity suppliers and purchasers of power to compensate for network losses (obligated actors) must have capacity certificates equivalent to consumption by their customers in peak periods. Suppliers pass on the cost of the capacity mechanism to final customers through their sale prices.

The system is completed by registers for trading of capacities between actors. Capacity auctions are held several times a year.

EDF is concerned by both aspects of this system, as an operator of electricity plants and as an electricity supplier.

The operations are recorded as follows:

- sales of certificates are recognised in income when the auctions or over-the-counter sales take place;
- the cost of the capacity mechanism passed on to final customers through regulated sales tariffs and market-price offers is recognised in sales revenues as and when the electricity is delivered. In addition, the ARENH price is considered to include a capacity value;
- stocks of certificates are stated either at their certification value (*i.e.* cost of certification by RTE) or at their purchase value on the markets;
- decreases in the stock of certificates are valued at the weighted average unit cost. The timing of recognition depends on the actor:
  - > operators of installations: when the auction sales take place,
  - > obligated actors: over the 5-month peak period (January to March, November and December).
- for operators of installations, if the effective capacity is lower than the certified capacity, a liability (accrued expenses or provision) is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation (rebalancing or settlement mechanism);
- for obligated actors, if there is a shortfall in the stocks of capacity certificates, a provision is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation;
- at the closing date, if the realisable value of the stock of capacity certificates is lower than its net book value, impairment is recognised.

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3.1 Regulatory changes in France

REGULATED ELECTRICITY SALES TARIFFS IN FRANCE – "BLUE" TARIFF IN FRANCE

In accordance with Article L. 337-4 of the French Energy Code, regulated electricity sales tariffs are set by the Ministers for Energy and the Economy following proposals by the French Energy Regulatory Commission (Commission de régulation de l'énergie or CRE).

France's Council of State ruled in decisions of 18 May and 3 October 2018 that the principle of regulated electricity sales tariffs is compatible with European Union law when such tariffs serve the general economic interest objective of guaranteeing consumers an electricity price that is more stable than market prices.

In accordance with European Directive 2019/944 of 5 June 2019 on common rules for the internal market for electricity, the French Energy and Climate law of 8 November 2019 authorised continuation of regulated sales tariffs, but they are reserved for residential or business consumers with a subscribed power level of up to 36kVA, provided they have fewer than 10 employees and their annual sales, income or balance sheet total is below €2 million.

TARIFF CHANGES

In accordance with Article L. 337-4 of the French Energy Code, the CRE is responsible for sending the Ministers for the Economy and Energy its reasoned proposals for regulated sales tariffs for electricity. If no objections are made within three months, the proposals are deemed to have been approved.

The comparability of sales between periods is thus affected by the tariff changes introduced since 1 January 2022, presented in the table below:

Date of the CRE proposal	Increase in "blue" residential customer tariffs (incl. taxes/excl. taxes)	Increase in "blue" non-residential customer tariffs (incl. taxes/excl. taxes)	Date of the tariff decision	Date of application
18/01/2022	4%/24.3%	4%/23.6%	28/01/2022	01/02/2022
07/07/2022	No change	No change	28/07/2022	01/08/2022
19/01/2023	15%/20%	15%/19.9%	31/01/2023	01/02/2023
22/06/2023	10%/10.0%	10%/10%	28/07/2023	01/08/2023
18/01/2024	9.5%/0.18%	5.7%/-3.55%	29/01/2024	01/02/2024

The French government decided to prolong the tariff cap from 1 February 2023, and limited the increase in regulated electricity sales tariffs to 15% (including taxes) above the tariffs in force since 1 February 2022 for all categories of eligible consumers. The government then decided to scale back the tariff cap from 1 August 2023, raising the regulated electricity sales tariffs at that date by 10% (including taxes) compared to the tariffs in force since 1 February 2023.

Article 181 of France's Finance Law for 2023, adopted on 30 December 2022, stipulates that if the reasoned proposals for regulated sales tariffs presented by the CRE lead to tariffs defined under Article R. 337-18 of the same code that, including the applicable taxes, are more than 15% higher than the tariffs applicable at 31 December 2022, the Ministers for the Economy, Energy and the Budget may object to the proposals and by joint decision set a lower level accounting for 95% of the tariff applied for customers' consumption, in order to serve the objective of price stability.

In such an event, the law defines a mechanism to compensate EDF and the local distribution companies for the loss of income on their regulated-tariff offerings, and to compensate all suppliers for the loss of income on market-price offerings for residential and non-residential customers eligible for regulated sales tariffs, *via* the compensation for public service charges (CSPE).

In a decision of 19 January 2023, the CRE proposed an increase of 99.36% including taxes (108.91% excluding taxes) in the "blue" tariffs for residential customers and 97.94% including taxes (106.88% excluding taxes) in the "blue" tariffs for non-residential customers from 1 February 2023.

This proposed increase was primarily justified by:

- the exceptionally high prices on the wholesale markets for delivery in 2023, which had been at record levels for more than a year;
- the outstanding consequences of the tariff cap applied in 2022, to reflect the ultimate reality of the costs involved in the "cost stacking" calculations, including the effects of the additional 20TWh of ARENH supplies.

In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential and non-residential customers at 15% including taxes (20% and 19.9% respectively excluding taxes) through tariff orders of 30 January 2023, published in the *Journal officiel* of 31 January 2023 and implemented from 1 February 2023.

In a decision of 22 June 2023, the CRE proposed an increase of 0.88% including taxes (0.84% excluding taxes) in the "blue" tariffs for residential customers, and a decrease of 0.32% including taxes (0.35% excluding taxes) in the "blue" tariffs for non-residential customers from 1 August 2023. This proposal was justified primarily by the change in the TURPE tariffs for access to the public electricity network from 1 August 2023, which was partly offset by a downward revision to the catch-up adjustment for 2022, particularly for non-residential customers.

These developments led the CRE to consider the theoretical tariff to be 74.5% higher (including taxes) than the frozen tariffs in place since 1 February 2023.

In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential and non-residential customers at 10% including taxes through tariff orders of 28 July 2023, published in the *Journal officiel* of 30 July 2023 and implemented from 1 August 2023.

EDF therefore recognised compensation of €13,992 million for loss of income (including €1,458 million under the "electricity buffer" mechanism and €88 million under the tariff cap for gas in operating subsidies at 31 December 2023) (see note 4).

A CRE proposal submitted on 19 January 2024 to the Higher Energy Council (Conseil supérieur de l'énergie) for its meeting of 25 January 2024 proposed a change in average regulated sales tariffs for electricity from 1 February 2024, of +0.18% excluding taxes for the "blue" tariffs for residential customers and -3.55% excluding taxes for the "blue" tariffs for non-residential customers (compared to the tariffs in force since 1 August 2023).

This proposed change was primarily justified by the decrease in wholesale market prices following the exceptionally high levels observed during the energy price crisis, leading to the discontinuation of the tariff cap component included in the previous tariff.

Article 92 of France's Finance Law of 29 December 2023 for 2024 allows the government to raise the excise duty on electricity (previously named the domestic tax on the final consumption of electricity or TICFE) by a maximum 10% (including taxes) of the average regulated sales tariffs compared to 1 August 2023. The excise duty applicable from 1 February 2024 was set by a decision of 30 January 2024 at €21/MWh, leading to a 9.5% increase (including taxes) in the "blue" tariffs for residential customers and a 5.7% increase (including taxes) in the "blue" tariffs for non-residential customers.

"TURPE" NETWORK ACCESS TARIFF

TURPE 6 DISTRIBUTION TARIFFS

The CRE issued two decisions of 21 January 2021 (published in France's *Journal Officiel* 0096 of 23 April 2021) on the TURPE 6 Transmission (high voltage) and TURPE 6 Distribution (medium voltage – low voltage) tariffs, after the Higher Energy Council (Conseil supérieur de l'énergie) gave its approval. These tariffs were introduced from 1 August 2021 for a period of approximately 4 years.

For distribution expenses, in its tariff decision n° 2021-13 of 21 January 2021, the CRE set the margin on assets at 2.5% and the additional return on regulated equity at 2.3%. The average tariff increase was +0.91% at 1 August 2021. In decision n° 2022-158 of 9 June 2022, the CRE set the increase in the average TURPE Distribution tariff from 1 August 2022 at +2.26%. In its decision n° 2023-137 of 31 May 2023, the rise in the average TURPE Distribution tariff from 1 August 2023 was set at +6.51%.

For transmission expenses, in its tariff decision n° 2021-12 of 21 January 2021, the CRE set a nominal pre-tax weighted average cost of capital (WACC) of 4.6% for the return on RTE's regulated asset base. The average tariff increase was +1.09% at 1 August 2021. In decision n° 2022-157 of 9 June 2022, the CRE set the change in the average TURPE Transmission tariff from 1 August 2022 at -0.01%. In its decision n° 2023-136 of 31 May 2023, the rise in the average TURPE Transmission tariff from 1 August 2023 was set at +6.69%.

In its decision 2023-01 of 5 January 2023, the CRE adapted the price regulation framework, particularly to make the TURPE 6 (high voltage) and TURPE 6 (medium voltage – low voltage) tariffs incorporate the impact of wholesale electricity prices on the business of RTE and Enedis, by refocusing certain incentives on the electricity volumes purchased to compensate for network losses, rather than on prices.

SUPPLIER COMMISSIONING

In application of the CRE's decision of 18 January 2018, energy suppliers receive remuneration from distribution network operators for the service of managing single-contract customers on their behalf.

The commissioning principle is identical for all suppliers selling single-contract market-price offers. Only regulated electricity tariffs gave rise to slightly lower commissions (€4.50 instead of €6.80 per point of delivery until 1 August 2019), and this difference was progressively reduced to zero by 1 August 2022.

For remuneration of past customer management charges (prior to 1 January 2018), the CRE's decision set an amount it considered as a cap that can be passed on through the TURPE tariff.

Law 2017-1839 of 30 December 2017 introduced a measure intended to rule out the possibility of suppliers receiving remuneration from network managers for past customer management services.

ELECTRICITY EQUALISATION FUND

The TURPE tariff for the medium and low-voltage network is identical for every electricity network operator. It is determined on the basis of forecast expenses to be borne by Enedis, provided they correspond to an efficient network operator, and forecasts of the number of consumers connected to Enedis' networks, their consumption, and the power level subscribed.

As this tariff cannot always cover the specific needs of certain service zones, the Electricity Equalisation Fund (FPE) exists to compensate for disparities in network operating conditions. The Energy Code requires electricity distribution costs resulting from public network operation to be shared between public distribution network operators. There are two equalisation mechanisms: one based on fixed amounts, the other set by the CRE based on analysis of the network operators' accounts. The calculation method for the fixed-rate allocation mechanism is defined by decree and ministerial order. At EDF, this concerns the Island Energy Systems (SEI).

In its decision n° 2023-201 of 19 July 2023, the CRE set the final amount of the allocation from the Electricity Equalisation Fund (*Fonds de péréquation de l'électricité*) to SEI, based on analysis of its accounts, at €229.4 million for 2023.

CAPACITY MECHANISM

The French capacity mechanism took effect on 1 January 2017. It was introduced by France's Energy Code to contribute to guaranteeing a secure power supply in France.

On 11 September 2023, RTE submitted a proposed change to the capacity mechanism rules to the CRE for its opinion. In its decision 2023-309 of 28 September 2023, the CRE responded in favour of changing the rules and changing certain parameters for delivery years 2025 and 2026 (the safety coefficient, the contribution by interconnections, and the offshore wind power coefficient). The proposed changes provide frameworks for early termination of purchase obligation contracts, and for the inclusion from 2025 of capacities using fossil fuels.

These new rules were approved by decision of the Ministry for the Ecological Transition on 5 October 2023. They set the opening dates for trading of capacity guarantees for delivery years 2025 and 2026 at 1 October 2023 and 1 January 2024 respectively. The duration of the current mechanism's final delivery year, 2026, has been modified so that the future capacity mechanism can be introduced from November 2026; delivery year 2026 of the current capacity mechanism is thus "shortened" and will run from 1 January to 31 March 2026.

For the delivery years shown below, the mean market prices resulting from capacity auctions ahead of the delivery year were as follows:

Delivery year	2022	2023	2024
Price *(in €/kW)*	26.2	45.6	27.1

For the delivery year 2025, three auctions have been held, with the following results: €25.5/kW in October, €25.0/kW in November and €9.37/kW in December.

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ARENH

General description of the scheme

The ARENH (*accès régulé à l'energie nucléaire historique*) scheme for regulated access to historic nuclear power, set up in 2011 and due to end on 31 December 2025, allows alternative suppliers to purchase electricity from EDF to supply their final customers, after signing a framework agreement, at a regulated price for set quantities determined under the provisions of the French Energy Code. This scheme is also open to network operators to cover their energy losses.

The ARENH price, determined by the Ministers for Energy and the Economy following a proposal by the CRE, has been fixed at €42/MWh since January 2012. This includes delivery of the electricity and has incorporated the associated capacity guarantees since 2017.

The maximum total ARENH volume that can be sold by law to suppliers who apply to the scheme to cover the needs of their final customers is set by ministerial order and cannot exceed a legal ceiling. Until 31 December 2019, the ceiling was 100TWh per year. It was then raised to 150TWh by the energy and climate law of 8 November 2019.

The "MUPPA" law of 16 August 2022 introducing urgent measures to protect purchasing power reduced this legal ceiling to 120TWh. The MUPPA law also set a minimum ARENH price of €49.50/MWh, although its application is conditional on prior approval by the European Commission, which has not yet been given.

Additional ARENH scheme measures for 2022

Under exceptional measures imposed on EDF by the Government in early 2022, eligible alternative electricity suppliers could benefit from up to 20TWh of additional volumes of electricity at the price of €46.20/MWh during the period 1 April to 31 December 2022, provided they first sold EDF an equivalent volume to the volume they would buy under the ARENH scheme, at the price of €256.98/MWh. The alternative suppliers only made applications for 19.5TWh of the additional ARENH volume offered.

Applying the procedure set out in its decision n° 2022-98 of 31 March 2022, the CRE set up a mechanism to monitor and control the way eligible suppliers passed on the effect of their reduced sourcing costs (resulting from allocation of additional ARENH volumes at the price of €46.20/MWh) through their customer invoicing. EDF was obliged to replicate the terms imposed on alternative suppliers in its own market-price contracts.

This caused very significant prejudice for the Company, and on 9 August 2022 EDF filed an appeal against the exceptional measures before the Council of State, on the grounds that the State had exceeded its power.

EDF also lodged a claim before the Paris Administrative Court on 27 October 2022 to obtain full compensation from the French government for the prejudice caused by these measures.

On 3 February 2023, the Council of State rejected EDF's appeal against these measures, in a decision that cannot be challenged. The proceedings brought by EDF in 2023 before the Paris Administrative Court claiming full reparation from the State for the prejudice borne by EDF as a result of the exceptional measures are ongoing. The prejudice suffered was estimated by EDF at €7.96 billion at 13 October 2023, the date when the Company filed its reply submissions, plus interest estimated at €0.20 billion at 31 December 2023.

The ARENH scheme in 2023

During 2023, the CRE notified EDF of three suspensions to ARENH deliveries. In two cases this was due to decisions by the CRE's Dispute Resolution and Enforcement Committee (CoRDIS), and in the third case it followed a failure to pay price supplements due on deliveries made during 2022. Over the entire year these suspensions concerned a total 5.2MW of electricity.

The ARENH scheme in 2024

For the ARENH allocations for 2024 determined by the CRE's decision n° 2023-330 of 26 October 2023, as required by the Energy Code (Article R. 336-14 of the Energy Code modified by decree n° 2022-1380 of 29 October 2022), the CRE has defined the method for allocating ARENH volumes if applications exceed the maximum total volume allowed for 2024. It has also laid down criteria for assessing ARENH applications (verification methods, and where relevant correction procedures for ARENH applications from alternative suppliers).

Under these criteria, any application by EDF-controlled subsidiaries (this does not apply to network operators) taking the total volume above the limit would be fully curtailed, but they could enter into contracts directly with their parent company for supplies on terms identical to the ARENH framework agreement, including the curtailment conditions applied to other alternative suppliers.

On 15 November 2023, the CRE decided on a change to the calculation rules for the ARENH price supplement (CP2) paid by alternative suppliers whose ARENH applications are excessive in view of their actual sales volumes. These changes are likely to make the penalty for such disproportionate applications more dissuasive.

Finally, ARENH applications during the November 2023 session for delivery in 2024 totalled 130.45TWh (excluding applications from EDF subsidiaries and network operators). The CRE scaled down certain applications (-0.04TWh in total), bringing the application volume validated by the CRE to 130.41TWh, and curtailed each supplier's application, to respect the overall ARENH ceiling of 100TWh. The final attribution rate was thus 76.68%. Further volumes were also sold by EDF to its subsidiaries through contracts that replicate the ARENH scheme, and to compensate for network electricity losses (25.54TWh).

Post-ARENH regulation

On 22 November 2023, the French government began a consultation to determine proposed measures to give electricity consumers in France protection, stability and billing predictability after the ARENH scheme ends on 31 December 2025.

Following this public consultation, a proposed law on energy sovereignty was presented by the government on 9 January 2024. The potential implications of this law were taken into account in defining the assumptions used by the Group for impairment testing.

3.2 Sales breakdown

Sales are comprised of:

(in millions of euros)	2023	2022
Sales of energy*	**87,413**	**83,628**
electricity	*71,249*	*55,023*
gas	*16,164*	*28,605*
Sales of services and other	**2,878**	**3,501**
SALES	**90,291**	**87,129**

** Including a share of delivery costs for sales of electricity and gas.*

The €16.2 billion increase in electricity sales is principally explained by higher sales to final customers, and essentially reflects price effects on sales at regulated tariffs and market-price contracts, including the effect of the regulatory measures taken in France for 2023:

- for regulated-tariff sales, the price effect results from indexing of tariffs from 1 February 2022 (+24.3% on "blue" tariffs for residential customers and +23.6% on "blue" tariffs for non-residential customers), which limited the increase to 4% (including taxes) due to the lower CSPE compensation, from 1 February 2023 (+20.0% on "blue" tariffs for residential customers and +19.96% on "blue" tariffs for non-residential customers), which limited the increase to 15% (including taxes) due to the reduction in the TICFE tax, and from 1 August 2023 (+10% on "blue" tariffs for residential customers and +10% on "blue" tariffs for non-residential customers) as the tariff cap was gradually lowered;
- for market-price contracts, the favourable price effects result from rising market prices.

These price effects were partly offset by a negative volume effect associated with the decrease in consumption in 2023, largely driven by energy sufficiency effects, mitigated by growth in the customer portfolio on the residential and business customer markets.

The €12.4 billion decrease in gas sales principally reflects an unfavourable price effect on the volumes sold to EDF Trading as the market prices declined in 2023.

Note 4 Operating subsidies

(in millions of euros)	2023	2022
OPERATING SUBSIDIES RECEIVED	**14,198**	**883**

Operating subsidies mainly comprise the subsidy received or receivable by EDF in respect of the compensation for 2023 public energy service charges, reflected in the financial statements through recognition of income of €14,126 million in 2023 (€808 million in 2022).

At 31 December 2023, the compensation for purchase obligations resulted in an expense of €2,193 million (expense of €3,096 million at 31 December 2022), as the public service charges to be covered for purchase obligations have decreased substantially since the end of 2022, becoming negative because market prices were very high and above the State-guaranteed support prices.

Conversely, the compensation for public service charges includes an amount of €13,992 million to cover the loss of income caused by national measures to support final customers. This includes €12,446 million under the tariff cap for gas and €1,458 million under the "electricity buffer" mechanism (see note 3.1). The tariff cap for gas generated compensation of €88 million.

This CSPE income gave rise to a corresponding entry in "Other liabilities" at 31 December 2023 (see note 30 (4)).

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COMPENSATION FOR PUBLIC ENERGY CHARGES (CSPE)

MECHANISM

The compensation mechanism for public energy service charges (*compensation des charges de service public de l'energie*) resulted from a reform introduced by France's amended Finance Law for 2015, but since 1 January 2021 public energy service charges have been compensated through the State's general budget.

In compensation for the 2023 charges, France's initial Finance Law for 2023 introduced an €8.4 billion "public energy service" budget to cover the additional costs (purchase obligations and additional remuneration) incurred on support contracts for renewable energies and biogas, expenses associated with the electricity and gas tariff caps (see note 3.1), solidarity charges borne by gas and electricity suppliers, costs associated with support for non-renewable energy production (essentially cogeneration), and the cost of applying the standard national tariffs to zones that are not connected to France's mainland network.

Income generated by the excise duty on electricity (previously named the domestic tax on the final consumption of electricity (TICFE), and shown on customer invoices as the "Contribution to the public energy service" (CSPE)) goes directly into the general budget. This excise duty is received directly from final consumers of electricity through an additional levy on the electricity sale price (collected by their suppliers), or directly from electricity producers that produce electricity for their own uses.

The level of this excise duty was set at a full rate of €32/MWh for residential users. The law also defines a special rate, reduced rates and exemptions for businesses depending on their activity and consumption levels. However, France's electricity tariff cap then effectively reduced the tax to its minimum level of €1/MWh for residential customers and €0.5/MWh for business customers.

In accordance with decree 2016-158 of 18 February 2016 concerning compensation for public service energy charges, the CRE published two decisions in 2023 (decision n° 2023-200 of 20 July and decision 2023-293 of 21 September), setting out a forecast of EDF's public service charges for 2024, a revised forecast of charges for 2023, and the actual charges recorded for 2022.

CLOSURE OF FESSENHEIM NUCLEAR POWER PLANT

In accordance with the application for termination of operations and the declaration of the permanent shutdown of both reactors at Fessenheim nuclear power plant sent by EDF to the Minister for the Ecological and Inclusive Transition and to the ASN on 30 September 2019, EDF shut down reactor 1 on 22 February 2020 and reactor 2 on 30 June 2020.

On 27 September 2019, due to the cap on nuclear power output set by the "energy transition for green growth" law of 17 August 2015, the French State and EDF signed a protocol agreement whereby the State will compensate EDF for the early closure of Fessenheim.

The compensation paid under the terms of this protocol comprises:

- initial instalments to compensate for expenses incurred after the closure of the plant (end-of-operations expenditure, BNI taxes, dismantling costs and staff redeployment costs), which will essentially be paid over a 4-year period following the closure. An amount of €370 million was received on 14 December 2020.

  This compensation is recognised as income in profit and loss as and when the associated costs are incurred;
- subsequent payments corresponding to the lost income that would have been generated by future power generation up until 2041, based on Fessenheim's previous output figures and calculated *ex post* on the basis of nuclear power sale prices, particularly observed market prices. There is no reason to recognise such income in the financial statements at this stage.

Once decoupled from the network, the Fessenheim plant entered a post-operating phase of approximately five years. Units 1 and 2 continue to be operated and maintained as "defueled core" and "evacuated fuel" reactors. This requires a series of technical and administrative operations. By the end of 2022, all the spent fuel had been removed to La Hague, and decontamination of the nuclear zone had been finalised by 31 December 2023. The dismantling decree for Fessenheim is expected to be issued in 2026.

Note 5 Provisions and impairment

(in millions of euros)	Notes	2023	2022
Reversals of provisions for risks	25	290	1,262
Increases to provisions for risks	25	(251)	(81)
Net provisions for risks		39	1,181
Pensions and similar obligations	28	777	809
Spent fuel management	26	913	849
Long-term radioactive waste management	26	325	204
Decommissioning of nuclear power plants and last cores	26	224	201
Decommissioning of thermal and hydropower plants	27	62	53
Other provisions for expenses*	29	1,947	2,803
Reversals of provisions for expenses		4,248	4,919
Pensions and similar obligations	28	(674)	(835)
Spent fuel management*	26	(2,475)	(417)
Long-term radioactive waste management	26	(21)	(128)
Decommissioning of nuclear power plants and last cores	26	(294)	(273)
Decommissioning of thermal and hydropower plants	27	(42)	(214)
Other provisions for expenses*	29	(1,093)	(3,573)
Increases to provisions for expenses		(4,599)	(5,440)
Net provisions for expenses		(351)	(521)
Reversals of impairment		335	310
Increases to impairment		(489)	(296)
Net impairment		(154)	14
PROVISIONS AND IMPAIRMENT		(466)	674
total reversals		4,873	6,491
total increases		(5,339)	(5,817)

** In 2023, EDF allocated a further €1,026 million to Other provisions for expenses in view of the ongoing negotiations with Orano Recyclage concerning the amendment to the processing and recycling agreement for the period 2024-2026, bringing the total provision concerned to €1,880 million at 30 June 2023 (see note 29.1 (1)). This €1,880 million provision was cancelled in full following the signature in September 2023 of an agreement on the principles of the future 2024-2026 amendment. An additional €2,216 million allocation to the provision for spent fuel management was then recorded to reflect the estimation of costs associated with the future 2024-2026 amendment, replacing the provision for expenses previously recognised (see notes 26.1 (1) and 29.1 (1)).*

During the first half-year of 2022, EDF recognised an operating provision of €2,749 million in Other provisions for expenses for the cost in the second half-year of 2022 of the additional 19.5TWh ARENH allocation introduced by the decree of 11 March 2022 and its implementing orders (see note 3.1 to the 2022 financial statements). These placed EDF under concurrent purchase and sale obligations for fixed volumes and prices over the period April to December 2022: it was required to sell 19.5TWh of ARENH electricity to eligible suppliers at the price of €46.20/MWh and to purchase 19.5TWh from the same suppliers at the price of €256.98/MWh, in coordination with the Caisse des Dépôts et Consignation and RTE, under the supervision of the CRE. This provision was used entirely during the second half-year of 2022 as and when the sales and purchases took place.

Note 6 Other operating income and expenses and transfers of charges

(in millions of euros)	2023	2022
Other operating income	1,169	3,460
Transfers of charges	126	92
Other operating income and transfers of charges	**1,295**	**3,552**
Other operating expenses	**(3,500)**	**(2,661)**
TOTAL OPERATING INCOME AND EXPENSES AND TRANSFERS OF CHARGES	**(2,205)**	**891**

Other operating expenses amount to €(3,500) million in 2023 (€(2,661) million in 2022) and notably include costs relating to Energy Savings Certificates used or consumed over the year, financial compensation paid by EDF to RTE for differentials over its scope as balance-responsible entity, losses on non-recoverable receivables, royalties on software, the net book value of assets demolished or scrapped, royalties relating to hydropower concessions and additional remuneration paid to producers of renewable energies.

This additional remuneration was introduced by France's law on the Energy Transition for green growth. It is a support mechanism intended to guarantee reasonable remuneration for producers who sell their energy directly on the markets, by compensating for the differential between the revenues from those sales and a reference amount. Conversely, when these revenues are higher than the reference amount, the producer must repay the differential received. This mechanism complements the purchase obligation system.

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Other operating income and expenses also include items related to closure of the Fessenheim plant at 31 December 2023, mainly comprising:

- expenses of €93 million (salaries and social security charges for labour at the site amounting to €45 million, purchases of goods and services amounting to €43 million, taxes other than income taxes, mainly payroll taxes, energy taxes and local taxes amounting to €5 million);
- the compensation defined in the protocol for expenses that will be incurred after the closure, amounting to €43 million, recognised as an operating subsidy in the income statement as explained above.

Energy savings certificates

ACCOUNTING PRINCIPLES AND METHODS

France's energy savings certificates scheme was introduced by the Law of 13 July 2005. Suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level became subject to energy savings obligations, initially for a three-year period.

To meet this obligation, three sources are available to EDF: supporting consumers in their energy efficiency operations, funding State-approved energy savings certificate schemes, and purchasing certificates on the secondary market.

EDF accounts for Energy Savings Certificates in compliance with Articles 616-1 to 616-25 of ANC regulation 2014-03 on France's national chart of accounts. As its Energy Savings Certificates are held in order to meet the requirements of the regulations on energy savings, the Company applies the "Energy Savings" model defined by ANC regulation 2014-03.

Certificates obtained or receivable are recorded in inventories at production or acquisition cost, and are valued under the FIFO (first in first out) method.

At the year-end, only the net position is presented in the financial statements:

- an asset is recognised (in work-in-progress and other inventories) if the energy savings achieved are greater than the energy savings obligations. This inventory corresponds to the certificates purchased, obtained or receivable that cover future energy savings obligations. It is consumed as and when energy sales are completed that generate energy savings obligations; or
- a liability (provision for other expenses) is recognised if the energy savings achieved are lower than the energy savings obligations. The liability corresponds to the cost of action yet to be taken to cover the obligations associated with energy sales completed. It is subsequently extinguished by making energy savings expenditures that enable the Company to obtain certificates, or by purchasing certificates.

REGULATORY MECHANISM

The fifth period of France's energy savings certificates scheme (2022-2025) began on 1 January 2022. Decree 2021-712 tightened up the scheme (for example by significantly reducing special measures and bringing calculations closer to the real savings), and directs more funding to very vulnerable households (raising the "energy poverty" obligations, restricting the scope to very vulnerable households, and increasing the penalties in this category to €20/MWhc).

However, to reinforce the dynamic, the French Department for Energy and Climate (Direction générale de l'énergie et du climat or DGEC) issued a decree just ten months after the fifth period began (decree 2022-1368 of 27 October 2022) that raised the scheme obligations for the period from 1 January 2023 as follows:

- "Standard" obligation: 1970TWhc vs 1770TWhc initially, and +200TWhc for the period 2023-2025;
- "Energy poverty" obligation: 1130TWhc vs 730TWhc initially, and +400TWhc for the period 2023-2025.

These regulatory changes in the course of the period are obliging the actors concerned to make adaptations. At 31 December 2023, EDF had met its obligation for the fifth period of the scheme (2022-2025).

Note 7 Purchases and other external expenses

(in millions of euros)	2023	2022
Fuel purchases used [1]	5,541	9,059
Energy purchases [2]	46,812	78,202
electricity	*31,758*	*52,443*
gas	*13,992*	*24,868*
Services and other purchases used [3]	19,033	18,819
PURCHASES AND OTHER EXTERNAL EXPENSES	**71,386**	**106,080**

(1) Fuel purchases used include costs relating to raw materials for energy generation (nuclear fuels, fissile materials and gas, and coal and fuel oil in very small proportions), and purchases of services related to the nuclear fuel cycle. Purchases of gas consumed decreased, due to the lower level of electricity generation by CCG (Combined Cycle Gas) facilities.

Fuel purchases used also include greenhouse gas emission certificates used (see note 17):

- *at 31 December 2023, the volume of emissions was 4 million tonnes (6 million tonnes in 2022),*
- *in 2023 EDF surrendered 6 million tonnes in respect of emissions generated in 2022 (6 million tonnes were surrendered in 2022 in respect of emissions generated in 2021).*

(2) Energy purchases include purchases made through the purchase obligation mechanism. The decrease in electricity purchases is principally explained by lower purchase volumes induced by the improvement in nuclear power output (see note 2.1.3). In 2022, purchases resulting from the additional 19.5TWh ARENH allocation amounted to €5,011 million (see note 3.1 to the 2022 financial statements), and this had no equivalent in 2023.

The decrease in gas purchases mostly concerns purchases on the international markets.

(3) Service purchases primarily include distribution network access fees invoiced by the subsidiary Enedis. Excluding delivery, service purchases decreased by €653 million compared to 2022, and in 2023 they include €454 million of costs relating to repair work on the main secondary circuit welds in the Flamanville 3 EPR (€617 million in 2022) (see note 15 (3)).

Note 8 Taxes other than income taxes

Details of taxes other than income taxes are as follows:

(In millions of euros)	2023	2022
Taxes on salaries and wages	188	180
Energy-related taxes	1,083	1,123
Local Economic Contribution*	453	41
Property taxes	298	305
Other taxes	348	325
TOTAL TAXES OTHER THAN INCOME TAXES	**2,370**	**1,974**

** The increase in 2023 in the Local Economic Contribution mainly results from the fact that EDF's value added returned to a positive position during the year. In 2022, the Local Economic Contribution tax was exceptionally low, due to lower value added caused by an increase in energy purchases observed in 2022 in a context of declining nuclear power output, and the purchase of 19.5TWh of electricity for the ARENH scheme (see note 3.1 to the 2022 financial statements).*

The EU Inframarginal revenue cap on electricity production (CRI)

On 6 October 2022 the European Union adopted a regulation for harmonised action to address the energy price crisis. Among other measures, this regulation set targets for reducing energy consumption during the winter of 2023, and introduced state aid for businesses and households, funded by a windfall tax on the fossil fuel sectors, and an inframarginal revenue cap on electricity production.

This inframarginal revenue cap is a compulsory tax measure requiring electricity producers to pay to the State all revenues above a threshold expressed in €/MWh. Under the EU regulation, this cap was applicable from 1 December 2022 to 30 June 2023 with a threshold of €180/MWh, but many EU member states decided to lengthen the application period and set different thresholds, well below the EU level, for different generation technologies.

In France, a 90% tax on inframarginal rents was introduced for three periods: 1 July – 30 November 2022, 1 December 2022-30 June 2023, and 1 July – 31 December 2023. Any deficit in one period could be partially carried over to the next. This tax was renewed for the period 1 January 2024 to 31 December 2024 by Article 80 of France's Finance Law for 2024.

Separate inframarginal rent thresholds (in €/MWh) are set for each electricity generation technology (8 different categories), principally €90/MWh for nuclear power and €80-€140/MWh for hydropower (depending on the power of each plant).

EDF made a significant loss (that could be carried forward) for the first period in 2022, reflecting purchases made on high-price markets due to the very substantial downturn in nuclear power output ((81,7)TWh) over that period. In view of the carry-forward mechanism, EDF does not expect to pay any tax on inframarginal rents for 2023.

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Note 9 Personnel expenses

(In millions of euros)	2023	2022
Salaries and wages	4,244	3,981
Social contributions	2,827	2,634
TOTAL PERSONNEL EXPENSES	**7,071**	**6,615**

Personnel expenses increased, principally as a result of the general pay rise measures introduced in 2022 and early 2023 in an exceptionally inflationary economy. They also include €41 million of exceptional costs (€41 million in 2022) relating to repair work on the main secondary circuit welds in the Flamanville 3 EPR (see note 15 (3)).

	2023			2022
	Executives	Non executives	Total	Total
IEG status employees	29,528	28,879	58,407	57,114
Other	915	3,864	4,779	4,493
AVERAGE WORKFORCE	**30,443**	**32,743**	**63,186**	**61,607**

Average workforce numbers are reported on a full-time equivalent basis.

Note 10 Depreciation and amortisation

(In millions of euros)	2023	2022
Amortisation of intangible assets	384	391
Depreciation on property, plant and equipment:		
• owned by EDF	3,782	3,744
• operated under concessions*	344	328
Total depreciation and amortisation on fixed assets	**4,510**	**4,463**
Other depreciation and amortisation	30	27
TOTAL DEPRECIATION AND AMORTISATION	**4,540**	**4,490**

** Increases to this depreciation concern the Island Energy Systems public electricity distribution concessions, and hydropower concessions.*

Note 11 Financial result

(in millions of euros)		2023		2022
Income from investments [1]		3,035		2,429
Income from other securities and receivables related to fixed assets		1,592		876
Interest and similar income and expenses		**(4,191)**		**(1,512)**
• *Expenses on long-term financial liabilities after hedging [2]*	*(3,084)*		*(1,740)*	
• *Other [3]*	*(1,107)*		*228*	
Foreign exchange result [4]		(565)		(173)
Gains and losses on sales of marketable securities		(37)		(104)
Increases/Decreases in provisions and transfers of charges:		**(8,779)**		**(4,785)**
• *Discount expense on employee benefits*	*(914)*		*(419)*	
• *Discount expense on nuclear provisions [5]*	*(2,489)*		*813*	
• *Provision on investment securities in dedicated assets [6]*	*832*		*(1,661)*	
• *Impairment of marketable securities [6]*	*178*		*(710)*	
• *Provision on investment securities [7]*	*(7,323)*		*(2,812)*	
• *Provision for foreign exchange losses [8]*	*638*		*(312)*	
• *Reversals from provisions, impairment and transfers of charges*	*368*		*222*	
FINANCIAL RESULT		**(8,945)**		**(3,269)**

(1) Dividends received principally concern:
- *Enedis (€1,258 million in 2023 and €907 million in 2022);*
- *EDF Holding SAS (the holding company for EDF Trading) (€947 million in 2023 and €445 million in 2022);*
- *CTE (€174 million in 2023 and €179 million in 2022);*
- *C3 (the holding company for EDF Investissements Groupe) (€130 million in 2023 and €98 million in 2022);*
- *EDF PEI (€123 million in 2023 and €100 million in 2022);*
- *C74 (€84 million in 2023, no equivalent in 2022);*
- *C81 (€47 million in 2023, no equivalent in in 2022);*
- *Framatome (€40 million in 2023 and €61 million in 2022);*
- *EDF Nam Theun Holding (€32 million in 2023 and €42 million in 2022);*
- *EDEV (€23 million in 2023 and €49 million in 2022);*
- *EDF Immo (€19 million in 2023 and €73 million in 2022);*
- *Manostock (€13 million in 2023 and €109 million in 2022);*
- *Dortgaz (€3 million in 2023 and €163 million in 2022).*

(2) The increase in these interest expenses reflects the higher cost of borrowing.

(3) Mainly financial expenses on short-term debt.

(4) The 2023 foreign exchange result principally comprises foreign exchange effects associated with redemptions of perpetual subordinated bonds (see note 23).

(5) The discount effect comprises the €(2,109) million cost of unwinding the discount, and the effects of adjusting cost estimates to 2023 economic conditions, which were recorded in the income statement for provisions not backed by assets at the value of €(396) million (see note 26 (2)).

In 2022, the net positive discount effect of €813 million principally comprised the €(1,830) million cost of unwinding the discount, and the positive €2,548 million effects of the change in the real discount rate in 2022, which were recorded in the income statement for provisions not backed by assets.

(6) This change is due to more favourable financial market trends in 2023 than 2022.

(7) Including impairment of €7,013 million recognised in 2023 in respect of the investment held in EDF International (€2,650 was recognised in 2022 (see notes 2.1.5 and 16.1 (4)).

(8) See note 25 (1).

Note 12 Exceptional result

At 31 December 2023, the exceptional result was a net €272 million. The main items were the following:

- net gains of €100 million on sales of investment securities included in dedicated assets, undertaken in the course of operational portfolio management;
- net reversals of €128 million from excess tax depreciation.

At 31 December 2022, the exceptional result was a net €536 million. The main items were the following:

- net gains of €296 million on sales of investment securities included in dedicated assets, undertaken in the course of operational portfolio management;
- net reversals of €56 million from excess tax depreciation;
- a reversal of €135 million from provisions for ongoing tax litigation, including €69 million for amounts disbursed by EDF in 2022 in connection with the outcome of the existing dispute concerning the tax-deductibility of certain long-term liabilities for the financial years 2012-2013 and the period 2016-2019. The corresponding expense was recognised as an income tax expense (see note 13.2 to the 2022 financial statements). A further appeal lodged by the Company before the Council of State was dismissed in March 2023, putting an end to this litigation.

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Note 13 Income taxes

13.1 Tax group

Since 1 January 1988, EDF and certain subsidiaries have formed a group subject to the tax consolidation regime existing under French tax legislation (Articles 223A to 223U of the French Tax Code). This tax group comprises 302 subsidiaries in 2023, including Enedis, EDF International, EDF Renewables and Dalkia.

13.2 Income tax payable

Under Article 223A of the French Tax Code, EDF, as the head of the tax group, is the sole entity responsible for payment of income taxes and additional related contributions.

The tax consolidation agreement between the members of the tax group stipulates that the arrangement must be neutral in effect. In application of this principle, each subsidiary pays the consolidating company a contribution to group income tax equivalent to the tax it would have paid had it been taxed separately.

The tax consolidation agreement between EDF and the subsidiaries included in the tax group requires EDF to reimburse loss-making subsidiaries for the tax saving generated by their losses, as and when the entities concerned make taxable profits, in compliance with the standard rules for use of taxable losses.

EDF, as head of the tax group, recorded an income tax expense of €(1,831) million for 2023 (after recognition of income tax income of €147 million for 2022) taking account of €1,794 million of losses carried forward.

This expense breaks down as follows:

- a tax expense of €(1,748) million on the taxable income for 2023;
- a tax expense of €(80) million on the exceptional result;
- a tax expense of €(3) million corresponding to adjustments resulting from the tax consolidation.

13.3 Deferred taxes

Deferred taxes are not recognised in EDF's financial statements. Deferred taxes result from differences between the accounting bases and tax bases of items. They generally arise as a result of timing differences:

- deferred tax assets reflect expenses which will be tax-deductible in future years or losses carried forward which will reduce taxable income in the future;
- deferred tax liabilities reflect either advance tax deduction of future accounting expenses or accounting revenues that will be taxable in future years and will increase taxable income in the future.

EDF, as head of the tax group, includes tax losses generated at the level of the tax group in its deferred tax positions.

Changes in the basis for deferred taxes are as follows:

(in millions of euros)	31/12/2023	31/12/2022	Variation
1. Timing differences generating a deferred tax asset			
• Non-deductible provisions [1]	(17,412)	(17,551)	139
• Financial instruments and unrealised exchange gains	(3,078)	(1,881)	(1,197)
• Other	(1,588)	(428)	(1,160)
Total deferred tax assets subject to the standard rate	**(22,078)**	**(19,860)**	**(2,218)**
2. Timing differences generating a deferred tax liability			
• Financial instruments and unrealised exchange losses	2,653	4,682	(2,029)
• Other	3,393	2,889	504
Total deferred tax liabilities subject to the standard rate	**6,046**	**7,572**	**(1,525)**
• Capital gains not yet taxed			-
• Provisions for losses taxable at 15%	(61)	(39)	(22)
Total deferred tax assets subject to the reduced rate	**(61)**	**(39)**	**(22)**
BASIS FOR DEFERRED TAXES	**(16,093)**	**(12,328)**	**(3,765)**
Future tax receivable at standard rate	10,234 [2]	11,030	(796)
Future tax receivable at reduced rate	9	6	3

(1) Mainly concerning post-employment benefits for personnel.

(2) This figure includes €6 billion relating to French tax group losses that are yet to be carried forward, and €4.2 billion relating to the deferred tax position on items subject to the standard rate.

Balance sheet

Note 14 Intangible assets

ACCOUNTING PRINCIPLES AND METHODS

RESEARCH AND DEVELOPMENT EXPENSES

Research expenses are recognised as expenses in the financial period incurred.

Development costs that meet the requirements for capitalisation laid down in Article 211-5 of the French national chart of accounts are included in intangible assets and amortised on a straight-line basis over their foreseeable useful life.

OTHER INTANGIBLE ASSETS

Other intangible assets mainly consist of software and storage capacity reservations.

Royalties paid for SaaS (Software as a Service) are generally charged to expenses as the services are provided. To qualify as intangible assets, expenses on SaaS contracts must confer a right of control to the user in addition to access to the software for a fixed period.

Intangible assets other than research and development expenses are amortised on a straight-line basis over their useful lives regardless of whether they are generated in-house or purchased.

Details of the net values of intangible assets are shown below:

(in millions of euros)	Cumulative amount at 31/12/2022	Increases	Decreases	Cumulative amount at 31/12/2023
Software	3,187	408	289	3,306
Other [1]	305	173	-	478
Intangible assets in progress [2]	1,604	925	586	1,943
Gross values	**5,096**	**1,506**	**875**	**5,727**
Software	(1,999)	(370)	(287)	(2,082)
Other	(168)	(15)	-	(183)
Intangible assets in development	-	(17)	(3)	(14)
Amortisation and impairment	**(2,167)**	**(402)**	**(290)**	**(2,279)**
NET VALUES	**2,929**	**1,104**	**585**	**3,448**

(1) "Other" intangible assets in 2023 include €166 million reflecting the implementation of studies for the SMR (Small Modular Reactor) project (for which an amount of €141 million was booked in intangible assets in progress in 2022).

(2) In 2023, intangible assets in progress notably include €1,446 million for studies for the EPR 2 project (€980 million in 2022).

Principal projects in progress and investments during the year

New nuclear reactors in France: the EPR 2 project

The EPR 2 project concerns a new pressurised water nuclear reactor that meets the objectives for third-generation reactor safety, aiming to incorporate design, construction and commissioning experience acquired from EPR reactors and the nuclear reactors currently in operation.

On 16 July 2019, the ASN issued an opinion that the safety levels of EDF's key design options for its EPR 2 were satisfactory. It stated that "the general safety objectives, the safety baseline requirements and the main design options are on the whole satisfactory".

The EPR 2 will also offer superior operating performance in terms of power (1650MW compared to 1450MW for the most powerful current reactor), output, availability and manoeuvrability.

On 10 February 2022, the French President announced the launch of a programme to construct 6 EPR 2 reactors by 2035, and begin studies for an additional 8 EPR 2 reactors by 2050. He also observed that it was necessary to aim to have the first new reactor commissioned by 2035, and said that these new EPR 2 units will be built and operated by EDF.

While awaiting a decision on the EPR 2, EDF was authorised by its Board of Directors on 31 March 2022 to continue development work until the end of 2023 with a budget extension of approximately €0.6 billion, bringing the total development budget for the EPR 2 project to €1,805 million.

On 29 June 2023, EDF announced that it was making the applications for approval to launch construction of the first pair of EPR 2 reactors at Penly, and starting other administrative procedures required for their completion and connection to the electricity transmission network. EDF is proposing to build three pairs of EPR 2 reactors, at Penly (Normandy), Gravelines (Hauts de France) and Bugey (Auvergne Rhône-Alpes) in that order (see the press release by the French President's Office of 19 July 2023).

Work on the competitiveness plan, the technical maturity review and programme consolidation is in process and should finish in 2024. The final conclusions of the State's financial audit will then be issued.

An appropriate plan for financing, and where relevant regulation, is currently being drafted for implementation of this programme. Revision of the completion cost for the project has begun and will continue during 2024. So far, no final investment decision has been made.

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NUWARD, France's Small Modular Reactor (SMR) project

Development of the NUWARD SMR continued in 2023, with the end of the Conceptual Design phase, and the start in early April of the Basic Design phase which is due to be completed at the end of 2026. NUWARD SMR is a third-generation model pressurised water plant consisting of two 170MW units, designed to be built in large numbers and exportable. Its main target is to provide a replacement for fossil-fired plants in the next few decades. Sales will be backed up by a model plant in France, due to start construction by 2030.

The design of the NUWARD SMR is being preassessed by the ASN in collaboration with the Czech and Finnish safety authorities SUJB and STUK. The purpose of this assessment, which will continue with the participation of more safety authorities (from Poland, Sweden and the Netherlands), is to accelerate the granting of international licences for SMRs while also giving a new impetus to regulatory harmonisation.

Another milestone in 2023 was the formation of the new subsidiary NUWARD, dedicated to development of the NUWARD SMR.

EDF received an initial €50 million subsidy from the French State in December 2022, granted under the "France 2030" plan (see note 22 (1)). In June 2023, another subsidy of €300 million was attributed to the subsidiary NUWARD to finance the Basic Design phase, subject to European Commission approval which is expected to be given in 2024.

Note 15 Property, plant and equipment

ACCOUNTING PRINCIPLES AND METHODS

EDF's property, plant and equipment is reported under two balance sheet headings, as appropriate to the business and contractual circumstances of the assets' use:

- property, plant and equipment owned by EDF, essentially nuclear generation facilities;
- property, plant and equipment operated under concessions.

INITIAL MEASUREMENT

Property, plant and equipment is recorded at acquisition or production cost:

- the cost of facilities developed in-house includes all labour and materials costs, and all other production costs attributable to the construction of the asset;
- the cost of property, plant and equipment also includes the initial estimate of decommissioning costs. These costs are recognised in assets against the provision recognised to cover these obligations. At the date of commissioning, these assets are measured and recorded in the same way as the corresponding provision (see note 26);
- decommissioning costs for nuclear generation installations also include last core costs (see note 26).

When some of the decommissioning costs for a plant are to be borne by a partner, the expected reimbursement is recognised as accrued income in the assets. The difference between the provision and the accrued income is recorded in Property, plant and equipment, and subsequent payments by the partner are deducted from the accrued income.

EDF capitalises safety expenses incurred as a result of legal and regulatory obligations sanctioning non-compliance by an administrative ban from operation.

Strategic safety spare parts for generation facilities are treated as property, plant and equipment, and depreciated over the residual useful life of the installations.

The costs of operations that are necessary for generation assets to remain in service, and are undertaken at the time of scheduled shutdowns, particularly during major inspections, are capitalised and amortised over a period corresponding to the time elapsing between two inspections.

Borrowing costs attributable to the financing of an asset incurred during the construction period are recognised as expenses.

DEPRECIATION

Items of property, plant and equipment are depreciated on a straight-line basis over their useful life, defined as the period during which the Company expects to draw future economic benefits from their use.

The expected useful lives for the main facilities are as follows:

- hydroelectric dams: 75 years;
- electromechanical equipment used in hydropower plants: 50 years;
- fossil-fired power plants (mainly CCGT-Combined Cycle Gas Turbine plants): 25 to 45 years;
- nuclear generation facilities: 40 to 50 years;
- distribution installations (lines, substations): 20 to 45 years;

For concession assets, the depreciation periods take account of the duration of the concession agreement.

CONCESSION AGREEMENTS

EDF is the operator for two types of concessions:

- public electricity distribution concessions in which the grantors are local authorities (municipalities or syndicated municipalities);
- hydropower concessions granted by the French State.

The accounting treatment of concessions is based on the 1975 accounting guide for concession operator firms, as there are no specific instructions in the French national chart of accounts.

PUBLIC ELECTRICITY DISTRIBUTION CONCESSION

EDF is the concession operator for the island public distribution networks located in Corsica and France's overseas departments, under concession agreements based on standard concession rules approved by the public authorities. Concession agreements signed since 2018 follow the concession model negotiated in 2017 with the National Federation of Licensing Authorities (Fédération nationale des collectivités concédantes et régies – FNCCR) and France Urbaine, while other concessions follow the concession model signed with the FNCCR in 1992 (and updated in 2007).

Concession assets are reported in the balance sheet assets as property, plant and equipment operated under concessions, regardless of their initial financing, at acquisition cost or their estimated value at the transfer date when supplied by the grantor. An offsetting liability is recognised for any assets supplied for nil consideration by concession grantors.

HYDROPOWER CONCESSIONS

Hydropower concessions follow standard rules approved by decree. For concessions granted before 1999, hydropower concession assets consist solely of hydropower generation equipment (dams, pipes, turbines, *etc.*), while for more recent concessions, they also include hydropower generation equipment and switching facilities (alternators, *etc.*).

Assets used in these concessions are recorded under "Property, plant and equipment operated under concessions" at acquisition cost and depreciated over their useful life.

Additional depreciation is also booked in the balance sheet liabilities for assets operated under concessions (see note 24).

Most concessions that expired before 2012 were initially for 75 years and were renewed for terms of 30 to 50 years. However, the French government has not yet renewed 31 concessions that have expired. Since their expiry these concessions have thus been in the "rolling extension" situation defined by the law, which stipulates that at the expiry date of a concession, if no new concession has been established "the concession is extended on the existing terms until such time as a new concession is granted", so as to ensure continuity of operations in the meantime (Article L. 521-16 par. 3 of the French Energy Code).

When a concession is operated in these circumstances, a fee based on the "rolling extension" profits has been payable since 2019. This fee amounts to 40% of the normative earnings of the concession as defined by Article R. 523-5 of the French Energy Code, less corporate income tax.

LONG-TERM ASSET IMPAIRMENT

At each reporting date, EDF assesses whether there is an indication that an asset could have significantly lost value. If so, an impairment test is carried out as follows:

- EDF measures any long-term asset impairment by comparing the carrying value of these assets, combined into groups where necessary, and their recoverable amount, usually determined using the discounted future net cash flow method. When this recoverable amount is lower than the value in the balance sheet, an amount equivalent to the difference is written off under Depreciation and impairment;
- the discount rates used are based on the weighted average cost of capital (WACC) for each asset or group of assets concerned;
- future cash flows are calculated on the basis of the best available information at the valuation date;
  - > for the first few years, cash flows correspond to the Medium-Term Plan (MTP). Over the MTP horizon, energy and commodity prices are determined based on available forward prices, taking hedges into consideration,
  - > beyond the MTP horizon, cash flows are estimated based on long-term assumptions prepared for each country and each energy, in a scenario development process that is updated annually. Medium and long-term electricity prices are constructed analytically by assembling blocks of assumptions concerning factors such as economic growth, commodity prices (oil, gas, coal) and CO_2 prices, demand for electricity, interconnections, and developments in the energy mix (rise of renewable energies, installed nuclear capacity, *etc.*), combined with fundamental models of supply-demand balance. EDF compares each principal component of assumptions with analyses by external bodies (for example, for commodities and CO_2, which are primary influences on electricity prices). The scenarios used are also based on the objectives of public energy and climate policies such as Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie nationale bas carbone*) in France, and EDF compares its own scenarios with scenarios developed by organisations such as the IEA, IHS, Wood Mackenzie or Aurora, bearing in mind that each of these analysts itself proposes a cone of scenarios corresponding to different macro-economic environments,
  - > income from capacity market mechanisms is also taken into consideration in valuing generation assets.

These calculations may be significantly influenced by several variables:

- changes in discount rates;
- changes in market prices for energy and commodities and tariff regulations;
- changes in demand and EDF's market shares, and the attrition rate on customer portfolios;
- the useful life of facilities, or the duration of concession agreements where relevant;
- the growth rates used beyond the medium-term plans.

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Details of the net values of property, plant and equipment are shown below:

(in millions of euros)	Cumulative amount at 31/12/2022	Increases	Decreases	Cumulative amount at 31/12/2023
Land, buildings and land improvements	12,571	340	55	12,856
Nuclear power plants	67,685	4,588	1,770	70,503
Machinery and plant other than networks	13,570	263	146	13,687
EDF-owned networks	1,192	43	5	1,230
Other tangible assets	1,833	120	93	1,860
Property, plant and equipment owned by EDF	**96,851**	**5,354**	**2,069**	**100,136**
Land, buildings and land improvements	10,947	94	18	11,023
Machinery and plant other than networks	1,937	76	19	1,994
Concession networks	3,489	185	18	3,656
Other tangible assets	21	6	-	27
Property, plant and equipment operated under concessions [1]	**16,394**	**361**	**55**	**16,700**
Property, plant and equipment in progress [2]	**22,112**	**7,767**	**7,120**	**22,759**
Gross values [3]	**135,357**	**13,482**	**9,244**	**139,595**
Land, buildings and land improvements	(8,318)	(313)	(51)	(8,580)
Nuclear power plants	(47,285)	(3,036)	(2,320)	(48,001)
Machinery and plant other than networks	(10,010)	(415)	(142)	(10,283)
EDF-owned networks	(625)	(30)	(4)	(651)
Other tangible assets	(1,261)	(137)	(89)	(1,309)
Property, plant and equipment owned by EDF	**(67,499)**	**(3,931)**	**(2,606)**	**(68,824)**
Land, buildings and land improvements	(6,957)	(158)	(11)	(7,104)
Machinery and plant other than networks	(1,143)	(43)	(18)	(1,168)
Concession networks	(1,466)	(98)	(16)	(1,548)
Other tangible assets	(11)	(5)	-	(16)
Property, plant and equipment operated under concessions	**(9,577)**	**(304)**	**(45)**	**(9,836)**
Property, plant and equipment in progress	**(32)**	**(25)**	**(24)**	**(33)**
Depreciation and impairment	**(77,108)**	**(4,260)**	**(2,675)**	**(78,693)**
NET VALUES	**58,249**	**9,222**	**6,569**	**60,902**

(1) Property, plant and equipment operated under concessions concern the Island Energy Systems public electricity distribution concessions, and hydropower concessions.

(2) Investments during the year mainly concern equipment for existing power plants under the Grand Carénage programme (for replacement of major components, particularly steam generators, and work done in connection with the 10-year and regular inspections), and construction of the EPR plant (Flamanville 3). At 31 December 2023, capitalised costs associated with the stress corrosion phenomenon amount to €570 million (see note 2.1.3).

(3) The capitalised value of the Flamanville 3 project in the financial statements at 31 December 2023 is €12,737 million (€12,423 million in assets in progress and €314 million in assets commissioned). In addition to the construction cost, this amount includes an inventory of spare parts and capitalised amounts for related projects (notably the initial comprehensive inspection and North Area development) totalling €749 million, and €1,040 million of pre-operating expenses and other tangible assets related to the project. Accumulated depreciation and amortisation recognised at 31 December 2023 in respect of assets in operation amounts to €127 million.

On 16 December 2022, EDF announced an adjustment to the schedule for the Flamanville 3 project, and the estimated cost to completion was raised from €12.7 billion to €13.2 billion in 2015 euros, excluding interim interest.

The additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR are abnormal costs that cannot be included in the production cost of an asset. They are recorded in operating expenses and amount to €495 million in 2023, comprising €454 million of services and other purchases used (see note 7 (3)) and €41 million of personnel expenses (see note 9). The cumulative total of these costs is €2.2 billion. The additional exceptional costs induced by the readjustment announced on 16 December 2022, principally relating to stress-relieving heat treatment on the repaired welds, will also be recognised in operating expenses.

Depreciation periods of nuclear plants in France

As stated in note 1.2.1, the depreciation period of nuclear power plants currently in operation in France, *i.e.* thirty-two 900MW reactors, twenty 1300MW reactors and four 1450MW reactors, is 50 years for 900MW-series plants (since 1 January 2016) and 1300MW-series plants (since 1 January 2021), and 40 years for N4-series plants which do not yet fulfil the conditions for a longer depreciation period.

Under France's multi-year energy programme (PPE, standing for *programmation pluriannuelle de l'énergie*) for the period 2019-2028, adopted in April 2020, 12 French nuclear reactors are to be shut down by 2035. As this includes the shutdowns of 2 900MW reactors in 2027 and 2028 ahead of their fifth 10-year inspection, an early shutdown scenario for 2 900MW reactors has been adopted. Its effects on nuclear provisions and depreciation in EDF's financial statements are not significant. Application of this scenario continued at 31 December 2023 while awaiting the next multi-year energy programme, which could be adopted in 2024 as part of the current revision of France's energy and climate strategy.

Depreciation period of Cordemais coal-fired plant in France

In view of France's Energy and Climate law of 8 November 2019, the end of the depreciation period for the Cordemais coal-fired plant was brought forward to 2026 at the 2021 year-end.

RTE, in its Projected Supply Estimate Report published on 20 September 2023, confirmed the need to keep the Cordemais plant in operation for the supply-demand balance in the west of France until Flamanville 3 is put into operation. EDF has started action to continue maintenance of the plant until 2027, and to limit its carbon footprint during that time. Work has therefore been done to allow the use of biomass in replacement of 20% of the coal in each of Cordemais' two reactors.

As the authorities have announced that the last remaining coal-fired plants in France should be totally converted to biomass by 2027, EDF has begun discussions with them to explore regulatory questions related to this prospect.

Until new regulatory measures are adopted, the end of the accounting depreciation period for Cordemais remains set at 2026.

Impairment tests on assets

Due to the integrated management and interdependence of the different generation facilities that make up EDF's fleet (nuclear, thermal and hydropower plants), independently of their maximum technical capacities, EDF considers the entire fleet as a single CGU. This CGU includes the Flamanville 3 plant, with net book value of €12,737 million (see note 15 (3)).

No indication of impairment was identified in 2023 for the CGU consisting of the French generation fleet.

However, in view of the rise in discount rates, the variations in electricity prices and the announcement of post-ARENH mechanisms in the electricity market, the recoverable value was updated.

The recoverable value is estimated by discounting future cash flows by the usual methodology, described in the accounting methods and principles for long-term asset impairment, over the assets' useful life, using an after-tax WACC of 7% at 31 December 2023 (up by 70bp from the 6.3% at 31 December 2022). For nuclear assets, EDF's benchmark model assumes an operating lifetime of 50 years for 900MW and 1300MW-series plants and 40 years for N4-series plants, consistent with the depreciation periods used in the financial statements at 31 December 2023, although it is EDF's strategy to keep plants in operation well beyond 50 years. The recoverable value also incorporates the most recent forecasts concerning Flamanville 3 (which will have a 60-year operating lifetime, see note 15 (3)).

For the period 2024-2025, the key assumptions concerning price and regulation take account of forward prices (significantly lower over this horizon than at the 2022 year-end) and hedges already contractualised, an ARENH volume of 100TWh and price of €42/MWh, a tariff cap for final consumers that will be funded by the French State budget in accordance with the current Finance Law, and the best estimate of the inframarginal revenue cap, considering the loss reported for 2022 (see note 8). These assumptions are consistent with the 2024 budget approved by the Board of Directors.

France's proposed law on national energy sovereignty (1) plans to introduce a new mechanism to replace the ARENH (Regulated access to historic nuclear power) scheme from 1 January 2026. Under these proposals EDF would pay a contribution consisting of a share of the nuclear plants' net energy revenues above certain thresholds, for redistribution to consumers.

At the press conference held on 14 November 2023 by France's Finance Minister Bruno Le Maire and Energy Transition Minister Agnès Pannier-Runacher, and in the document for the public consultation launched on 23 November 2023 concerning the future consumer protection mechanism, the following thresholds were stated: above €78-80/MWh and €110/MWh (both in 2022 euros), 50% and 90% respectively of revenues from nuclear generation would be payable to the State. This information was taken into account as key assumptions in estimating recoverable value at 31 December 2023.

The new market organisation aims to develop medium and long-term products in addition to the short-term products and renewable energy PPAs currently available on the wholesale electricity markets: medium-term 4 or 5-year annual baseload supply contracts allowing EDF and all electricity suppliers in France to offer supply contracts that provide customers with visibility and stability over horizons of up to 5 years.

EDF also offers certain electro-intensive customers long-term industrial partnership contracts relating to the historic nuclear fleet (Nuclear Generation Allocation Contracts).

The recoverable value resulting from the test is lower but remains well above the net book value.

The key assumptions in the test still concern:

- the operating lifetimes of nuclear assets;
- the long-term market price scenario (after the end of the ARENH scheme) and to a lesser degree the changes in forward prices over the medium-term horizon;
- the volume of nuclear power output;
- the discount rate; and
- to a lesser extent, changes in costs and investments, and the assumed capacity revenue.

Sensitivity analysis

These key assumptions were subjected to individual sensitivity analyses (a 50bp increase in the WACC; a 10TWh annual decrease in nuclear power output over the whole period; a 5% increase in investments or operating expenses over the whole period; a decline in capacity prices, and post-2026 market prices 10% below the baseline scenario price for a sustained period) and the results did not call into question the existence of a positive difference between the book value and the recoverable value.

For example, a decrease of 10TWh a year over the whole generation period would have a negative impact of €(14.5) billion on recoverable value.

A 50bp increase in the discount rate would have a negative impact of €(4.3) billion on the recoverable value.

A +10% increase in investments over the whole period would have a negative impact of €(4) billion on the recoverable value.

(1) Proposed law on France's energy sovereignty as submitted to the National Ecological Transition Council in a rectified referral of 17 January 2024.

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Note 16 Financial assets

ACCOUNTING PRINCIPLES AND METHODS

INVESTMENTS

Investments are carried at acquisition cost.

Gains and losses on sales of investments are valued using the FIFO (first in first out) method.

Transfer duties, fees and commissions and legal fees related to acquisitions of investments are included in the cost of acquisition of the asset.

Expenses of this type relating to other shares are included in expenses. Tax-regulated amortisation of acquisition costs is recorded in an excess depreciation account.

When the book value of investments is higher than their value in use, impairment is recorded equivalent to the difference.

For investments in companies consolidated by the EDF group, value in use is principally determined by reference to the entity's equity value consolidated in the Group's financial statements.

Where relevant, value in use is determined based on discounted future cash flows, calculated on the basis of the best available information at the year-end:

- for the first few years, cash flows correspond to the Budget, then the Medium-Term Plan (MTP). Over the MTP horizon, energy and commodity prices are determined based on available forward prices, taking hedges into consideration;
- beyond the MTP horizon, cash flows are estimated based on long-term assumptions developed through a financial trajectory and scenario development process that is updated annually.

These calculations may be significantly influenced by several variables:

- changes in discount rates;
- changes in market prices for energy and commodities and tariff regulations;
- changes in demand and market shares, and the attrition rate on customer portfolios;
- the useful life of facilities, or the duration of concession agreements where relevant;
- the growth rates used beyond the medium-term plans and where relevant the terminal values taken into consideration.

INVESTMENT SECURITIES

EDF holds investment securities comprising financial assets intended to finance operations at the end of the nuclear cycle, for which provisions have been accrued. These assets are managed separately from other financial assets and investments in view of their specific objective, and consist of bonds, equities, collective investment funds and "reserved" funds.

Other investments also include treasury shares that cover obligations relating to debt instruments providing access to the Company's capital, acquired under a liquidity contract with an investment services company or through an external growth operation or capital reduction.

Shares are recorded at acquisition cost. Transfer duties, professional fees, commissions, legal expenses and purchasing costs are all charged to expenses, applying the option used for other investments.

Investment securities (shares and bonds) are recorded at acquisition cost. If the carrying amount of a security is lower than the acquisition cost, the unrealised capital loss is fully covered by a provision without being netted against potential gains on other securities. The carrying amount of listed securities is assessed individually, taking the stock market price into account. For unlisted securities, the carrying amount is also assessed individually, mainly by reference to the growth prospects of the companies concerned.

OTHER FINANCIAL ASSETS

EDF grants short-term loans in foreign currencies to its subsidiaries for the purposes of the Group's activities.

In order to reduce exposure to foreign exchange risks, EDF mainly finances these loans by short-term commercial paper issues in foreign currencies and in euros, together with the use of currency hedging derivatives. Capitalised receivables are stated at nominal value. Impairment is recognised when the market value falls below the book value

16.1 Changes in financial assets

(in millions of euros)	Cumulative amount at 31/12/2023	Cumulative amount at 31/12/2022
Investments [1]	61,513	61,474
Receivables related to investments	50	51
Investment securities [2]	25,803	25,215
Other investments	86	94
Loans to subsidiaries and other financial assets [3]	36,705	34,207
Total financial assets, gross	**124,157**	**121,041**
Impairment of investments and related receivables [4]	(10,814)	(3,521)
Impairment of investment securities [5]	(1,254)	(2,084)
Total impairment	**(12,068)**	**(5,605)**
TOTAL FINANCIAL ASSETS, NET	**112,089**	**115,436**

(1) The increase in investments principally corresponds to a €52 million investment by EDF Invest in a capital increase by C91 (a company that holds a real estate asset in France).

(2) Changes in investment securities mainly correspond to acquisitions and sales of dedicated assets over the period, which generate net gains that are reinvested in the dedicated asset portfolio (see note 12).

(3) Loans to subsidiaries at 31 December 2023 total €36,680 million, principally comprising €18,155 million for EDF International in connection with funding for the HPC project in England, €7,114 million for EDF Renewables, €4,884 million for Enedis, €2,531 million for EDF Trading, €1,668 million for Dalkia and €1,577 million for EDF Energy.

(4) Following a review of the value in use of investments carried in EDF's balance sheet assets at 31 December 2023, impairment was recorded, notably €7,013 million on the investment in EDF International (€2,650 million in 2022, see notes 2.1.5 and 11 (7)). As the holding company for most of the EDF group's international investments, the value in use of the investment in EDF International is based on the contributions by various subsidiaries and subgroups to the Group's consolidated equity, taking account of the positive headroom shown by impairment tests of the various cash-generating units.

The deterioration in 2022 in the value in use of the investment in EDF International essentially resulted from a substantial downturn in the realisable value of EDF Energy in the United Kingdom, mostly attributable to the very significant increase in the discount rate, and to a lesser extent to the revised completion cost for the HPC project announced in May 2022.

In 2023, the deterioration in the value in use of the investment in EDF International resulted from the EDF group's announcement on 23 January 2024 of a revised schedule and increased completion cost for the HPC project, leading to recognition of substantial impairment by EDF Energy that markedly reduced the value in use (see note 2.1.5).

(5) The change in this item is mainly due to more favourable developments on the financial markets in 2023 than 2022, leading to reversal of impairment on investment securities and other investments during the year (see note 11 (6)).

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16.2 Subsidiaries and investments of at least 50% of capital

(in millions of euros)	Gross book value of shares owned at 31/12/2023	Impairment recorded at 31/12/2023	Net book value of shares owned at 31/12/2023	% capital owned	Equity 2022	Net income 2022	Dividends received in 2023	Sales 2022
Subsidiaries								
EDF International [1]	25,930	9,663	16,267	100	14,620	(1,534)	-	-
C3 [2]	11,196	-	11,196	100	11,486	137	130	-
EDEV [3]	6,891	-	6,891	100	6,326	23	23	nm
CTE [4]	2,705	-	2,705	50.1	5,350	413	174	-
EDF Holding SAS [5]	1,950	-	1,950	100	3,092	947	947	-
EDF Immo [6]	1,361	-	1,361	100	1,443	20	19	-
EDF Nam Theun Holding [7]	437	28	409	100	446	61	32	-
Other holding companies [8]	4,445	853	3,592	100	3,908	181	263	147
Holding companies	**54,915**	**10,544**	**44,371**				**1,588**	
France								
Enedis	2,700	-	2,700	100	7,048	1,606	1,258	15,473
Framatome	2,014	-	2,014	75.5	2,770	114	40	2,625
Dalkia	967	-	967	99.9	352	(117)	-	3,277
EDF Production Électrique Insulaire SAS	561	-	561	100	1,283	207	123	1,321
Edvance	12	-	12	80	19	13	1	635
Centrale Électrique Rhénane de Gambsheim	3	-	3	50	9	-	-	8
Other countries								
Emosson	14	14	-	50	140	-	-	-
Rheinkraftwerk Iffezheim (RKI)	3	-	3	50	84	3	-	18
Forces Motrices du Chatelôt	nm	-	-	50	8	nm	nm	4
Industrial and commercial companies	**6,274**	**14**	**6,260**				**1,422**	
Other entities (GIE EIFER)	**130**	**125**	**5**				**-**	
TOTAL SUBSIDIARIES	**61,319**	**10,683**	**50,636**				**3,010**	

nm: not material (less than €500,00).

(1) EDF International makes and manages investments in entities operating in the energy sector outside France, principally: EDF Energy, Edison, Luminus, EDF Gas Deutschland, EDF China Holding Ltd, EDF Norte Fluminense, and EDF Inc. EDF Energy carries the nuclear development projects in England, including HPC and Sizewell C.

(2) Among other investments, C3 holds 100% of EDF Investissements Groupe, a subsidiary in charge of medium and long-term financing for operations outside France.

(3) EDF Développement Environnement is a holding company for subsidiaries and investments contributing to development of the Group's areas of business in France, including energy efficiency and renovation (IZI solutions, IZI solutions Rénov, IZI confort, EDF ENR, Sowee), electric mobility (IZIVIA), nuclear plant decommissioning and management of radioactive waste (Cyclife, Orano DS), energy generation from renewable sources (EDF Renewables, Hydrostadium), local energy management (Agregio, e2m), and other activities, including Électricité de Strasbourg.

(4) CTE holds 100% of RTE.

(5) EDF Holding SAS holds EDF Trading, which provides optimisation and risk management services, and an interface with wholesale markets.

(6) EDF Immo holds 100% of Gérance Générale Foncière and Sofilo, as well as other investments.

(7) EDF Nam Theun Holding holds an investment in Nam Theun 2 Power Co.

(8) Other investments with individual values of less than €400 million.

16.3 Subsidiaries and investments under 50% of capital

(in millions of euros)	Gross book value of shares owned at 31/12/2023	Impairment recorded at 31/12/2023	Net book value of shares owned at 31/12/2023	% capital owned	Equity 2022	Net income 2022	Dividends received in 2023
Subsidiaries	**61,319**	**10,683**	**50,636**	**-**	**-**	**-**	**3,010**
Investments:							
Companies in which EDF has an interest of between 10% and 50%							
Trimet France	130	75	55	35	451	150	16
Dalkia Investissements	63	56	7	50	16	2	1
TOTAL	**193**	**131**	**62**				**17**
Companies in which EDF has an interest of less than 10%							
Force Motrice de Mauvoisin	1	-	1	9.8	120	4	nm
TOTAL	**1**	**-**	**1**				**-**
TOTAL INVESTMENTS	**194**	**131**	**63**				**17**
TOTAL SUBSIDIARIES AND INVESTMENTS, GROSS	**61,513**	**10,814**	**50,699**				**3,027**

nm: not material (less than €500,000).

16.4 Relations with subsidiaries

	EDF's receivables [1]		EDF's liabilities [1]			
(in millions of euros)	Loans	Operating receivables	Net liabilities included in current account	Operating liabilities	Financial expenses	Financial income (excluding dividends)
Company						
Atmea	168					5
CTE		490	259			
Framatome		250	647			
EDF Energy	1,577	100	94			110
EDF Renewables	7,114					247
EDF International	18,155					423
EDF Trading	2,531	1,559	2,473			152
Edison						1
Enedis	4,884	302	1,294			86
Dalkia France	1,668	94	233			71
EDF PEI	415		125			10
EDF Luminus	80	63				2
Edvance	14	59	115			
Agregio			123			
Cyclife			65			
EDF Belgium			183			
Current accounts [2]			2,727			
Investment agreement for subsidiaries' liquidities	5,326				(255)	
Group cash management agreement with subsidiaries [3]	18,355				(612)	
Tax consolidation agreement			2,293			

(1) Receivables and payables of more than €50 million.

(2) Including €1,127 million concerning Enedis, €652 million concerning Sofilo, €594 million concerning EDF PEI and €272 million concerning EDF Immo.

(3) Including €5,326 million concerning C3, €3,900 million concerning EDF Holding SAS, €2,789 million concerning EDF Trading, €2,056 million concerning EDF Energy and €1,205 million concerning Edison.

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16.5 Investment securities portfolio

(in millions of euros)	At start of year			At year-end		
	Gross book value	Net book value	Fair value	Gross book value	Net book value	Fair value
VALUE OF INVESTMENT SECURITIES PORTFOLIO	**25,215**	**23,297**	**25,495**	**25,803**	**24,717**	**28,627**

The net value of the investment securities portfolio at 31 December 2023 comprises €24,717 million of dedicated assets (see note 26.6.5).

16.6 Treasury shares

A share repurchase programme was authorised by the General Shareholders' Meeting of 6 May 2021 for a duration of 18 months, within the limit of 10% of the total number of shares making up the Company's capital. This programme was implemented in 2021 for market-making purposes through the liquidity contract.

(in millions of euros)	31/12/2022	Increase	Decrease	31/12/2023
Gross value	7	-	(7)	-
Impairment	-	-	-	-
TREASURY SHARES, NET	**7**	**-**	**(7)**	**-**

During the second half-year of 2023 EDF cancelled its 888,511 treasury shares with net value of €7 million through a capital reduction (see notes 22 (3) and 22.1), following the decision by the Chairman and CEO of 31 July 2023.

16.7 Financial loans and receivables related to investments

This item consists mainly of loans to subsidiaries:

(in millions of euros)	Liquidity			Gross value at 31/12/2023	Gross value at 31/12/2022
	< 1 year [1]	1-5 years [2]	> 5 years [3]		
Receivables related to investments	1	-	49	50	51
Loans to subsidiaries and other financial assets [4]	8,291	16,150	12,264	36,705	34,207
FINANCIAL LOANS AND RECEIVABLES RELATED TO INVESTMENTS	**8,292**	**16,150**	**12,313**	**36,755**	**34,258**

(1) Including €2.5 billion concerning EDF Trading, €2.5 billion concerning EDF Renewables and €2.1 billion concerning EDF International, corresponding to maturities of drawings on credit lines.

(2) Including €10.7 billion concerning EDF International and €3.6 billion concerning EDF Renewables, corresponding to maturities of drawings on credit lines, and €0.9 billion concerning Enedis, corresponding to maturities of loans and drawings on credit lines.

(3) Including €5.3 billion concerning EDF International and €3.7 billion concerning Enedis, corresponding to maturities of loans and drawings on credit lines, €1.5 billion concerning EDF Energy, corresponding to maturities of loans, and €1 billion concerning EDF Renewables, corresponding to maturities of drawings on credit lines.

(4) The changes are principally explained by loans made to subsidiaries in 2023: €2.7 billion to EDF Renewables, €2.5 billion to EDF International, and a repayment of €(2.6) billion received from EDF Trading.

Note 17 Inventories and work-in-progress

ACCOUNTING PRINCIPLES AND METHODS

The initial cost of inventories includes all direct material costs (including the effect of hedging), labour costs and a share of indirect production costs.

Inventory consumption is generally valued under the weighted average unit cost method. Consumption of greenhouse gas emission certificates and Energy Savings Certificates is valued under the FIFO (first in first out) method.

Inventories are carried at the lower of historical cost or net realisable value.

NUCLEAR FUEL AND MATERIALS

Inventory accounts include:

- nuclear materials, whatever their form during the fuel fabrication cycle;
- fuel components in the warehouse or in the reactor.

The stated value of nuclear fuel and materials and work-in-progress is determined based on direct processing costs including materials, labour and subcontracted services (*e.g.* fluoration, enrichment, fabrication).

In application of the concept of "loaded fuel" as defined in Article D5 94-1 of the Environment code, the cost of inventories for fuel loaded in the reactors but not yet irradiated includes expenses for spent fuel management and long-term radioactive waste management. The corresponding amounts are taken into account in the relevant provisions.

Nuclear fuel consumption is determined by component (natural uranium, fluoration, enrichment, fuel assembly fabrication) as a proportion of the expected output when the fuel is loaded in the reactor. These quantities are valued by applying the weighted average cost of inventories to each component. Inventories are periodically corrected in view of forecast spent quantities based on neutronic measurements and physical inventories.

OTHER OPERATING INVENTORIES

Other operating inventories comprise:

- fossil fuels required for operation of fossil-fired power plants;
- operating materials and equipment such as spare parts supplied under a maintenance programme (excluding capitalised strategic safety spare parts);
- greenhouse gas emission certificates and Energy Savings Certificates acquired for the generation cycle (see note 6);
- gas stocks, valued at weighted average cost, including direct and indirect purchase costs, especially transport costs;
- certificates issued under capacity obligation mechanisms (capacity guarantees in France) (see note 3.1).

Impairment of spare parts depends mainly on the turnover of these parts.

GREENHOUSE GAS EMISSION CERTIFICATES

EU Directive 2003/87/EC set up a greenhouse gas emission trading system for the European Union (the EU-ETS).

This system, which applies in all EU countries, sets an annual cap on emissions. Businesses (including EDF) receive or buy emission quotas, then the following year surrender to the European Commission a number of greenhouse gas emission certificates corresponding to their Scope 1 emissions for the year elapsed, such as direct greenhouse gas emissions from production of the goods sold (*e.g.* electricity, heat, steel, paper, etc.). Fines are payable if there is a shortfall (€100 per tonne of CO2 not covered by quotas, and an obligation to cover these amounts by quota the following year).

The cap is being progressively reduced in order to bring down the total emissions in Europe.

The legislative framework of the EU-ETS for the fourth trading period (2021-2030) has been tightened up to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015 (which set a general target of a 40% cut in emissions compared to 1990 levels for the whole EU) [1].

As part of the Fit for 55 package of legislation, the European Commission adopted laws in April 2023 raising the target for cuts in CO2 emissions to at least 62% by 2030 for sectors concerned by the EU-ETS. The new rules also introduce a reduction in the number of quotas automatically allocated to each company concerned by the Emissions Trading System.

EDF applies the accounting methods for greenhouse gas emission certificates stipulated in ANC regulation 2012-03 of 4 October 2012, incorporated into Articles 615-1 to 615-22 of ANC regulation 2014-03.

The accounting treatment of emission certificates depends on the holding intention.

Emission certificates held to comply with regulatory requirements on greenhouse gas emissions (the "Generation" model) are included in inventories at acquisition cost, and the FIFO (first in first out) method is applied. A write-down is recorded when the generation cost of the electricity that includes the cost of the rights is higher than the present value of that electricity. At year-end, a "net presentation" principle is applied as follows:

- an asset is recognised in raw materials inventories if the quantities of greenhouse gas emissions are lower than the number of emission certificates held in the portfolio. This corresponds to the certificates available to cover future greenhouse gas emissions;
- a tax liability is recorded in the opposite situation, equivalent to the rights still needed to cover emissions already produced, valued at the contractualised acquisition price for forward purchases deliverable before surrender, and at market value for the balance.

The net reporting principle assumes that the emission certificates held in the portfolio will be the ones used to offset emissions produced. However, there is a limit to the fungibility of rights at EDF, as there are no transfers of rights between the island and mainland activities. This can lead to concurrent recognition of an asset and a liability.

(1) The current EU ETS allocations trajectory does not yet include changes to be made in application of the Fit for 55 package.

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The book value of inventories by category is as follows:

(in millions of euros)	31/12/2023 Gross value	31/12/2023 Provisions	31/12/2023 Net value	31/12/2022 Gross value	31/12/2022 Provisions	31/12/2022 Net value
Nuclear fuel	9,801	(24)	9,777	8,929	(24)	8,905
Other raw materials*	445	(230)	215	351	-	351
Other supplies	2,463	(299)	2,164	2,833	(294)	2,539
Work-in-progress and other inventories	1,164	-	1,164	1,038	-	1,038
TOTAL INVENTORIES	**13,873**	**(553)**	**13,320**	**13,151**	**(318)**	**12,833**

** The decrease in Other raw materials is primarily explained by recognition of impairment of €(230) million on coal stocks in 2023, since less use was made of coal-fired facilities due to the better availability of other plants, particularly nuclear plants.*

Note 18 Other current assets and cash

ACCOUNTING PRINCIPLES AND METHODS

Trade receivables are initially stated at nominal value.

They also include the value of unbilled receivables for energy already supplied.

A write-down is recorded when, based on the probability of recovery assessed according to the type of receivable, the recoverable amount of receivables falls below their book value. Depending on the nature of the receivable, the risk associated with doubtful receivables is assessed individually or by reference to provision matrices based on credit loss histories. EDF does not bear the risks of non-payment for the delivery portion of these receivables, which is borne by Enedis.

The table below shows a breakdown of other current assets and cash by maturity:

(in millions of euros)	Liquidity < 1 year	Liquidity 1-5 years	Liquidity > 5 years	Gross value at 31/12/2023	Gross value at 31/12/2022
Advances and progress payments on orders	**448**	**150**	**158**	**756**	**727**
• Trade receivables:					
Amounts billed	4,028	-	-	4,028	2,689
Unbilled receivables [1]	11,469	-	-	11,469	18,676
• Other operating receivables [2]	3,449	69	254	3,772	5,588
Total operating receivables	**18,946**	**69**	**254**	**19,269**	**26,953**
Cash instruments [3]	1,360	530	869	2,759	3,603
Cash and cash equivalents	8,147	-	-	8,147	6,810
Prepaid expenses	468	308	361	1,137	1,089
TOTAL CURRENT ASSETS	**29,369**	**1,057**	**1,642**	**32,068**	**39,182**

(1) In 2023 this item mainly concerns receivables for energy supplied and not billed. The decrease observed principally reflects the lower level of outstanding trade receivables following implementation of a receivables securitisation programme in 2023, and a decline in receivables on EDF Trading which were particularly high in 2022 in a context of significant price rises (for electricity and gas).

(2) Including €2,639 million of receivables on the State related to taxes other than income taxes in 2023 (€2,698 million in 2022).

(3) This corresponds to unrealised gains on foreign exchange instruments, and on all debit balances relating to EDF's margin calls on derivatives and transfers of securities to its banking partners under repurchase agreements (€591 million in 2023, €108 million in 2022).

Note 19 Marketable securities

ACCOUNTING PRINCIPLES AND METHODS

Marketable securities are initially recorded as assets at acquisition cost, and restated at the lower of historical cost or present value at year-end.

For listed securities, the present value is equal to the year-end stock market price. For unlisted securities, the market value is the probable trading value taking the Company's growth prospects into consideration.

Provisions are recorded to fully cover any unrealised losses, without netting against unrecorded unrealised gains.

Gains and losses on sales of marketable securities are valued using the FIFO (first in first out) method.

Details of marketable securities are as follows:

(in millions of euros)	31/12/2023	31/12/2022	Variation
Investment funds	1,369	1,115	254
Short-term negotiable debt instruments in euros and foreign currencies (1)	372	-	372
Bonds	18,214	17,236	978
Accrued interest and other marketable securities	105	96	9
Total gross value (2)	**20,060**	**18,447**	**1,613**
Provisions	(553)	(730)	177
TOTAL NET VALUE	**19,507**	**17,717**	**1,790**

(1) The portion allocated to dedicated assets was nil at 31 December 2023 and at 31 December 2022 (see note 26.6.5).

(2) The increase in the total portfolio of marketable securities mainly results from the holding of Junior Notes issued during 2023 for the purposes of a trade receivables securitisation programme, at the value of €1,689 million. The portfolio management strategy also aims to maintain liquidity, particularly through security repurchase agreements, while achieving a positive return on investment.

Note 20 Variation in cash and cash equivalents reported in the cash flow statement

(in millions of euros)	31/12/2023	31/12/2022	Variation
Marketable securities	20,060	18,447	1,613
Cash and cash equivalents	8,738 (1)	6,918 (1)	1,820
Sub-total in balance sheet assets	**28,798**	**25,365**	**3,433**
Euro investment funds	(1,369)	(1,115)	(254)
Negotiable debt instruments *(in euros)*	(282)	-	(282)
Negotiable debt instruments *(non-euro)*	(90)	-	(90)
Shares received as guarantees	-	-	-
Bonds	(18,214)	(17,236)	(978)
Treasury shares	-	-	-
Accrued interest	(105)	(96)	(9)
Marketable securities included in financial assets in the cash flow statement	**(20,060)**	**(18,447)**	**(1,613)**
Cash advances to subsidiaries (cash pooling agreements) included in "other operating receivables" in the balance sheet	-	-	-
Cash advances from subsidiaries (cash pooling agreements) included in "other operating liabilities" in the balance sheet	(9,041)	(8,384)	(657)
Cash and cash equivalents, closing balance in the cash flow statement*	**(303)**	**(1,466)**	**1,163**
Elimination of the effect of currency fluctuations			92
Elimination of net financial income on cash and cash equivalents and other items			(240)
NET VARIATION IN CASH AND CASH EQUIVALENTS IN THE CASH FLOW STATEMENT*			**1,015**

** See the Cash flow statement*

(1) Including €591 million corresponding to all debit balances relating to margin calls on derivatives at 31 December 2023, compared to €108 million at 31 December 2022 (see note 18 (3)).

As of 2018, the cash positions of all subsidiaries in the cash flow statement are classified by reference to criteria of autonomy.

An entity is considered non-autonomous when it is a holding company, generates the majority of its sales with EDF group entities, or does not have the status of employer.

The main subsidiaries classified as non-autonomous are C3, EDF Holding and EDF International, and the main subsidiaries classified as autonomous are Enedis, PEI, EDF Trading, EDF Energy, Sofilo and GGF.

In the cash flow statement, the cash positions of autonomous subsidiaries are presented as a deduction from Cash and cash equivalents. The cash positions of non-autonomous subsidiaries are included in the components of the changes in working capital.

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Note 21 Unrealised foreign exchange losses

ACCOUNTING PRINCIPLES AND METHODS

Foreign currency receivables and payables are translated into Euros at the year-end exchange rates. The resulting translation differences are recorded in the balance sheet under "Unrealised foreign exchange gains" and "Unrealised foreign exchange losses". Provisions are recorded to cover all unrealised exchange losses on foreign currency borrowings not hedged for exchange risks. Unrealised gains are not recognised in the income statement.

Unrealised gains and losses on currency derivatives classified as hedging instruments are recorded in the balance sheet in the revaluation surplus accounts, and netted with the unrealised foreign exchange gains and losses booked in respect of the hedged items, in compliance with ANC regulation 2015-05 of 2 July 2015 on forward financial instruments and hedging operations. Realised gains and losses on hedging derivatives are recognised in the income statement symmetrically to gains and losses on the hedged item.

Foreign exchange gains and losses on trade receivables and payables are recorded in operating income and expenses.

Unrealised foreign exchange losses at 31 December 2023 amount to €1,187 million, principally reflecting:

- unrealised losses caused by currency movements (essentially in the US dollar and the pound sterling) amounting to €936 million at 31 December 2023 (€1,637 million at 31 December 2022) on liabilities and receivables in foreign currencies, and currency hedging instruments;
- the balance at 31 December 2023 of realised gains and losses on the settlement of hedging instruments with the subsidiary EDF International, amounting to €251 million (€266 million at 31 December 2022). In accordance with France's national chart of accounts, in application of the symmetry principle set out in Article 628-11, the net result (€311 million in 2019, no equivalent in 2020, 2021, 2022 or 2023) is recognised in unrealised foreign exchange losses and transferred to expenses over the residual life of the hedged item, symmetrically to the accounting treatment of gains and losses on the hedged item. A €15 million expense was accordingly recognised in the 2023 financial result (€15 million in 2022).

After elimination of the effects of foreign exchange differences on settled hedging instruments with the subsidiary EDF International, amounting to of €(251) million, and currency swaps hedging dedicated assets, amounting to €(517) million, provisions for unrealised foreign exchange losses amounted to €419 million at 31 December 2023 (see note 25 (1)).

Note 22 Changes in equity

(In millions of euros)	Capital	Reserves and premiums	Retained earnings and interim dividends	Profit or loss for the financial year	Investment subsidies	Tax-regulated provisions	Total equity
At 31 December 2021	**1,619**	**21,772**	**7,787**	**1,457**	**167**	**5,777**	**38,579**
Allocation of 2021 net income	-	7	1,450	(1,457)	-	-	-
2022 profit	-	-	-	(30,648)	-	-	(30,648)
Capital increase of 13 June 2022	66	913	-	-	-	-	979
Dividend distribution	-	-	(1,050)	-	-	-	(1,050)
Capital increase of 7 April 2022	249	2,899	-	-	-	-	3,148
Capital increase of 25 July 2022	9	94	-	-	-	-	103
Capital increase of 7 December 2022	1	9	-	-	-	-	10
Other changes [1]	-	4	-	-	51	(35)	20
At 31 December 2022	**1,944**	**25,698**	**8,187**	**(30,648)**	**218**	**5,742**	**11,141**
Allocation of 2022 net income	-	-	(30,648)	30,648	-	-	-
2023 profit	-	-	-	7,710	-	-	7,710
Dividend distribution	-	-	-	-	-	-	-
Capital increase of 2023 [2]	141	2,249	-	-	-	-	2,390
Capital reduction of 2023 [3]	(1)	(6)	-	-	-	-	(7)
Interim dividend for 2023	-	-	-	-	-	-	-
Other changes	-	1	-	-	(9)	(106)	(114)
SITUATION AU 31 DECEMBER 2023	**2,084**	**27,942**	**(22,461)**	**7,710**	**209**	**5,636**	**21,120**

(1) Investment subsidies include a €50 million French government subsidy for the SMR (Small Modular Reactor) project (see note 14).

(2) See notes 22.1 and 22.3.

(3) See notes 22.1 and 16.6.

22.1 Share capital

At 31 December 2023, EDF's share capital amounts to €2,084,365,041 comprising 4,168,730,082 fully subscribed and paid-up shares with nominal value of €0.50, owned 100% by the French State since 8 June 2023.

At the end of 2023, all of the 218,696,799 OCEANE bonds outstanding at 31 December 2022 had been converted, leading to successive capital increases totalling €140,950,086.50 after the issuance of 281,900,173 new shares (see note 2.2.7, and note (2) to the table in note 22).

On 31 July 2023, the 888,511 treasury shares were cancelled for the net value of €7 million *via* a reduction of equity, following a decision by the Chairman and CEO (see note (2) to the table in note 22, and note 16.6).

22.2 Dividends

At the General Shareholders' Meeting of 28 June 2023 it was decided not to pay out any dividend in 2023 in respect of 2022.

No interim dividend was paid for 2023.

22.3 Bonds convertible into new shares and/or exchangeable for existing shares (OCEANEs)

On 8 September 2020, EDF made an issuance of Green Bonds convertible into new shares and/or exchangeable for existing shares (*OCEANEs Vertes*) with the nominal amount of €2,400 million and an issue value of €2,569 million (see note 2.4.1 to the 2020 financial statements).

882,340 OCEANE bonds were converted into new shares during 2022, giving rise to creation of 1,137,336 shares and a €9.6 million increase in EDF's equity, including €0.57 million of share capital.

Through its Simplified Tender Offer (see note 2.2.7), the French state acquired 127,147,355 OCEANE bonds, with the result that it held 214,979,011 OCEANE bonds or 98.30% of the total portfolio of OCEANEs at 31 December 2022.

During 2023, all of the 218,696,799 OCEANE bonds existing at 31 December 2022 were converted into 281,900,173 new shares.

Following the compulsory squeeze-out on 8 June 2023, the remaining OCEANE bonds were transferred to the State, giving rise to conversion of all those bonds on 13 June 2023, and delisting of EDF's OCEANE bonds from Euronext Access.

These operations of 2023 caused an increase of €2,390 million in EDF's equity, including a €141 million increase in the share capital (see note (2) to the table in note 22).

Note 23 Additional equity

ACCOUNTING PRINCIPLES AND METHODS

Perpetual subordinated bonds issued by EDF in euros and other currencies are recorded in compliance with the French Chartered accountants' body Ordre des experts comptables opinion 28 of July 1994, taking their specific characteristics into consideration.

As a result, they are classified as additional equity, since redemption is exclusively controlled by EDF.

Issuance expenses and issue premiums on perpetual subordinated bonds are recognised in deferred charges in the balance sheet and amortised over the duration of the relevant tranche, on a pro rata basis.

The annual interest expense on these bonds is recorded as a financial expense in the income statement.

These perpetual subordinated bonds are reclassified from Additional equity to Financial liabilities when the intent to exercise a redemption option in the short term is announced.

Additional equity at 31 December 2023 amounts to a net €11,979 million and consists of:

- perpetual subordinated bonds issued by EDF in January 2013 and January 2014, valued at €2,684 million and €1,857 million respectively, net of redemptions;
- perpetual subordinated bonds issued by EDF in October 2018, valued at €1,250 million;
- perpetual subordinated bonds issued by EDF in December 2019, valued at €498 million;
- perpetual subordinated bonds issued by EDF in September 2020, valued at €2,088 million;
- perpetual subordinated bonds issued by EDF in June 2021, valued at €1,244 million;
- perpetual subordinated bonds issued by EDF in November 2022, valued at €1,000 million;
- perpetual subordinated bonds issued by EDF in June 2023, valued at €1,358 million (see note 2.2.3).

This net amount includes the effects of foreign currency variations, redemption premiums and the related amortisation.

Payments to bearers of perpetual subordinated bonds amounted to €602 million in 2023 (€569 million in 2022). This expense is recorded in "Expenses on long-term financial liabilities after hedging".

On 29 January 2023 EDF exercised its option to redeem all the perpetual subordinated bonds issued in January 2013, totalling $2,098 million. EDF consequently reclassified an amount of €1,966 million from Additional equity to Financial liabilities at 31 December 2022, considering the redemption as certain.

On 6 June 2023 EDF announced the launch of a contractual redemption offer to purchase all or some of its €1.5 billion of US dollar-denominated perpetual subordinated bonds issued in January 2014. $901 million of bonds were repurchased on 20 June 2023, bringing the nominal value of these bonds, net of this redemption, to $599 million.

EDF confirmed on 7 July 2023, when the results of the redemption offer were announced, that it was proceeding with an additional redemption of $3 million with a settlement date of 10 July 2023. After the offer closed, the nominal value of the outstanding bonds was $596 million.

EDF exercised its option to redeem the remaining $596 million of perpetual subordinated bonds issued in January 2014 at the first call date of 22 January 2024. Consequently, it reclassified a total amount of €539 million from Additional equity to Financial liabilities at 31 December 2023, as the operation was considered certain (see notes 2.2.3 and 31 (3)).

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Perpetual subordinated bonds (in millions of currency units):

Issue date*	Nominal amount net of redemptions	Currency	Redemption option	Coupon
01/2013	1,250	EUR	12 years	5.38%
01/2013	1,250	GBP	13 years	6.00%
01/2014	1,000	EUR	12 years	5.00%
01/2014	750	GBP	15 years	5.88%
10/2018	1,250	EUR	6 years	4.00%
12/2019	500	EUR	8 years	3.00%
09/2020	850	EUR	6.5 years	2.88%
09/2020	1,250	EUR	10 years	3.38%
06/2021	1,250	EUR	7 years	2.63%
12/2022	1,000	EUR	6 years	7.50%
06/2023	**1,500**	**USD**	**10 YEARS**	**9.13%**

** Date funds were received.*

Note 24 Special concession liabilities

ACCOUNTING PRINCIPLES AND METHODS

These liabilities relate to public electricity distribution concessions for the Island Energy Systems (SEI), and hydropower concessions.

SPECIAL PUBLIC ELECTRICITY DISTRIBUTION CONCESSION LIABILITIES

These liabilities represent the contractual obligations specific to the concession rules for public electricity distribution concessions, and comprise the following:

- the concession-granting authority's rights in existing assets (its right to recover all the concession assets), consisting of the value in kind of the facilities (the net book value of assets operated under concessions), less any as yet unamortised financing provided by the operator;
- the concession-granting authority's rights in assets to be replaced (the operator's obligations relating to assets due for replacement). These non-financial liabilities comprise:
  - > depreciation recorded on the portion of assets considered to be financed by the concession-granting authority,
  - > the provision for replacement, exclusively for assets due for replacement before the end of the concession. This is accrued over the asset's useful life, based on the difference between the asset's replacement value for identical capacity and functions, and the original value. The replacement value is adjusted at each year-end based on indexes from official publications, and the impact of the adjustment is spread over the residual useful life of the assets concerned. This provision is included in provisions for expenses.

When assets are replaced, the depreciation recorded on the portion of assets considered to be financed by the concession-granting authority, and the provision for replacement established for the relevant asset, are cancelled and transferred to rights in existing assets. Any excess provision is taken to income.

During the concession, the grantor's rights in assets to be replaced are thus transferred upon the asset's replacement to become the grantor's rights in existing assets, with no outflow of cash to the benefit of the grantor.

SPECIAL HYDROPOWER CONCESSION LIABILITIES

These liabilities comprise:

- the value of assets remitted for nil consideration and contributions received;
- differences arising from revaluations in accordance with French legislation for fixed assets commissioned before 1 January 1959 and before 1 January 1977;
- additional depreciation to industrial depreciation for facilities that are to be returned for nil consideration at the end of the concession but whose useful life extends beyond the concession term.

Following the changes made to the accounting treatment of hydropower concessions at 1 January 2009, the 1959 revaluation reserve is transferred to equity when the assets concerned are retired.

The net revaluation reserve generated by the 1976 revaluation is taken to income over the residual useful life of the assets concerned.

The value of assets remitted for nil consideration and contributions received is transferred to the income statement over the assets' useful lives.

Details of special concession liabilities are as follows:

(in millions of euros)	31/12/2023	31/12/2022
Value in kind of assets	138	106
Revaluation difference	710	733
Additional depreciation	491	431
Rights in hydropower concession assets	**1,339**	**1,270**
Value in kind of assets	2,218	2,131
Unamortised financing by the operator	(1,439)	(1,354)
Amortisation of grantor financing	391	376
Contributions received for concessionary plant assets under construction	6	7
Rights in public distribution concession assets*	**1,176**	**1,160**
TOTAL SPECIAL CONCESSION LIABILITIES	**2,515**	**2,430**

** Special public distribution concession liabilities concern the Island Energy Systems (SEI) public electricity distribution concessions.*

Note 25 Provisions for risks

ACCOUNTING PRINCIPLES AND METHODS

EDF recognises provisions when it has a present obligation (legal or constructive) arising from a past event, an outflow of resources will probably be required to settle the obligation, and the obligation amount can be estimated reliably.

If it is anticipated that all or part of the expenses covered by a provision will be reimbursed, the reimbursement is recognised under receivables if and only if EDF is reasonably certain of receiving it.

Provisions are determined based on the Company's expectation of the cost necessary to settle the obligation. Estimates are based on management data from the information system, assumptions adopted by the Company, and if necessary experience of similar transactions or operations, based on independent expert reports or contractor quotes. The various assumptions are reviewed for each closing of the accounts.

Other provisions notably concern:

- losses on onerous contracts; these provisions mainly concern LNG operations (a long-term regasification contract with Dunkerque LNG). Losses on such contracts are measured by comparing the costs of fulfilling the contract with the resulting economic benefits, based on market and sales assumptions;
- unrealised foreign exchange losses;
- risks relating to subsidiaries and affiliates;
- tax risks;
- litigation;
- decommissioning costs for fossil-fired and hydropower plants;
- costs of replacing assets operated under public electricity distribution concessions;
- provisions related to environmental schemes (see notes 6 and 17).

In extremely rare cases, specific litigation covered by a provision may be unmentioned in the notes to the financial statements if such disclosure could cause serious prejudice to the Company.

Changes in provisions for risks are as follows:

		Increases		Decreases			
(in millions of euros)	31/12/2022	Operating [2]	Financial	Utilisations [2]	Reversals [2]	Financial	31/12/2023
Provisions for unrealised exchange losses [1]	1,057	-	155	-	-	(793)	419
Provisions for losses on contracts	488	46	(5)	(59)	-	-	470
Provisions for other risks	368	205	-	(214)	(17)	-	342
PROVISIONS FOR RISKS	**1,913**	**251**	**150**	**(273)**	**(17)**	**(793)**	**1,231**

(1) Provisions for unrealised exchange losses amount to €419 million at 31 December 2023 (see note 21) and principally concern other borrowings after hedging (€296 million). The €638 million change in these provisions is included in the financial result (see note 11 (8)).

(2) See note 5.

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Note 26 Provisions related to nuclear generation: back-end of the nuclear cycle, plant decommissioning and last cores

ACCOUNTING PRINCIPLES AND METHODS

Decommissioning provisions for power plants in operation are associated with fixed assets.

The discount effect generated at each closing to reflect the passage of time is recorded in financial expenses.

Changes in provisions resulting from a change in discount rates, a change in the disbursement schedule or a change in cost estimate are recorded:

- as an increase or decrease in the corresponding assets, up to the net book value, if the provision was initially covered by balance sheet assets;
- in the income statement in all other cases.

Provisions related to nuclear generation mainly cover the following:

- back-end nuclear cycle expenses: provisions for spent fuel management, for waste removal and conditioning (where relevant), and for long-term radioactive waste management are established in accordance with the obligations and final contributions specific to France;
- costs for decommissioning power plants;
- costs relating to fuel in the reactor when the reactor is shut down (provisions for last cores). These correspond to the cost of the fuel stock in the reactor that is not totally spent at the time of the final reactor shutdown and cannot be reused due to technical and regulatory constraints, the cost of processing for that fuel, and the cost of removal and storage of the resulting waste.

Obligations can vary noticeably depending on France's legislation and regulations, and the technologies and industrial scenarios involved.

The provisions established by EDF for the nuclear generation fleet principally result from the French Law of 28 June 2006 on long-term management of radioactive materials and waste, and the associated implementing provisions concerning secure financing of nuclear expenses.

In compliance with the accounting principles described above:

- EDF books provisions to cover all obligations related to the nuclear facilities it operates;
- EDF also holds dedicated assets for secure financing of long-term obligations (see note 26.6).

The calculation of provisions incorporates a level of risks and uncertainties as appropriate to the operations concerned. It also includes uncertainty factors as described in note 1.2.2.

Details of changes in provisions for the back-end of the nuclear cycle, decommissioning and last cores are as follows:

(in millions of euros)	31/12/2022	Increases		Decreases		Other changes [1][3]	31/12/2023
		Operating [1]	Financial [2]	Utilisations	Reversals		
Provisions for spent fuel management	11,379	2,475	603	(913)	-	332	13,876
• *amount unrelated to the operating cycle*	*1,607*	*77*	*102*	*(21)*	-	*(5)*	*1,760*
• *amount outside the scope of the Law of 28 June 2006**	*1,195*	*9*	*60*	*(45)*	-	-	*1,219*
Provisions for long-term radioactive waste management	12,475	21	814	(212)	(113)	220	13,205
Provisions for the back-end of the nuclear cycle	**23,854**	**2,496**	**1,417**	**(1,125)**	**(113)**	**552**	**27,081**
Provisions for the back-end of the nuclear cycle within the scope of the Law of 28 June 2006*	**22,659**	**2,487**	**1,357**	**(1,080)**	**(113)**	**552**	**25,862**
Provisions for the back-end of the nuclear cycle outside the scope of the Law of 28 June 2006*	**1,195**	**9**	**60**	**(45)**	-	-	**1,219**
Provisions for nuclear plant decommissioning	17,094	294	954	(224)	-	301	18,419
Provisions for last cores	2,434	-	118	-	-	168	2,720
Provisions for decommissioning and last cores	**19,528**	**294**	**1,072**	**(224)**	-	**469**	**21,139**
TOTAL PROVISIONS RELATED TO NUCLEAR GENERATION	**43,382**	**2,790**	**2,489**	**(1,349)**	**(113)**	**1,021**	**48,220**
Provisions for the back-end of the nuclear cycle within the scope of the Law of 28 June 2006*	**42,187**	**2,781**	**2,429**	**(1,304)**	**(113)**	**1,021**	**47,001**
Provisions for the back-end of the nuclear cycle outside the scope of the Law of 28 June 2006*	**1,195**	**9**	**60**	**(45)**	-	-	**1,219**

** Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations (see below).*

(1) The change in provisions related to nuclear generation is mainly explained by signature of an agreement on the principles of the future 2024-2026 amendment to the framework agreement with Orano Recyclage for the period 2008-2040, concerning the removal, processing and recycling of spent fuel. This resulted in an increase of €2,216 million in provisions for spent fuel management (see note 29.1 (1)), recorded as follows:

- *€1,926 million in "Increases", corresponding to provisions adjusted via profit and loss;*
- *€290 million in "Other changes", corresponding to changes in provisions backed by assets.*

(2) The discount effect comprises the €2,109 million cost of unwinding the discount, and the effects of adjusting cost estimates to 2023 economic conditions (see note 26.5), which were recorded in the income statement for provisions not backed by assets at the value of €396 million (see note 11 (5)).

(3) "Other changes" also include the effects of adjusting cost estimates to 2023 economic conditions (see note 26.5) for provisions backed by assets, amounting to €405 million.

Concerning non-EDF installations:

- EDF, Orano Recyclage and the French Atomic Energy Commission (Commissariat à l'énergie atomique or CEA) signed an agreement in December 2004 which transferred the management and financing of final shutdown, decommissioning and waste recovery and reconditioning for the UP1 reprocessing facility at Marcoule to the CEA. In return, EDF paid the CEA a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs;
- EDF and Orano Recyclage signed two agreements in December 2008 and July 2010 defining the legal and financial terms for the transfer to Orano Recyclage of EDF's contractual obligations regarding its financial contribution to the dismantling of La Hague installations and the recovery and conditioning of waste. In application of those agreements, EDF paid Orano Recyclage a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs.

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26.1 Provisions for spent fuel management

EDF's currently adopted strategy with regards to the fuel cycle, in agreement with the French State, is to process spent fuel, to recycle the separated plutonium in the form of MOX fuel (Mixed OXide of plutonium and uranium) and to recycle the reprocessed uranium.

The nominal quantities to be processed by Orano Recyclage at the request of EDF, totalling approximately 1,100 tonnes per year, are determined based on the quantity of recyclable plutonium in the reactors that are authorised to load MOX fuel (currently, 24 reactors under the authorisation for creation).

Consequently, provisions for spent fuel management (€13,876 million) mainly cover the following services to be provided by Orano Recyclage:

- removal of spent fuel from EDF's generation centres, and its reception and interim storage;
- processing, including conditioning and storage of recyclable matter.

The processing expenses included in these provisions concern spent fuel that can be recycled in existing facilities, including the portion in reactors but not yet irradiated.

Expenses are mainly measured based on forecast physical flows at the closing date, with reference to the contracts with Orano Recyclage which define the terms of application of the framework agreement for the period 2008-2040. The most recent contract, signed on 5 February 2016, covered the period 2016-2023. These contracts contain price indexes that are revised annually.

Negotiations with Orano Recyclage concerning the amendment for the period 2024-2026 began in September 2020 and EDF recognised a related provision for contingencies and losses of €854 million at 31 December 2022. A further exceptional allocation of €1,026 million was made during the first half of 2023, bringing the total provision to €1,880 million. This was EDF's best assessment at that date of how the outcome of the negotiations would affect its provisions, based on EDF's latest counter-proposal to Orano Recyclage made in April 2023 (see notes 5 (1) and 29.1 (1)).

In September 2023, the negotiations achieved convergence and an agreement was notably signed laying down the principles for the future contract (2024-2026 amendment to the master agreement), leading to a €2,216 million increase in provisions for spent fuel management (replacing the provision for other expenses).

This agreement notably increases average contract fees by 39% (in 2024 euros) compared to the average defined for the period 2016-2023 (in 2020 euros). It takes account of changes in the economic conditions underlying the contract and the requirements expressed by Orano Recyclage regarding the necessary operating costs to enhance its plants' performance.

Furthermore, the provisions for spent fuel management incorporate specific provisions for the interim storage of spent fuel, which is a key issue for the back-end of the nuclear cycle because usage forecasts for Orano's interim storage facilities at La Hague for spent fuel from EDF's generation fleet suggest that the pools at La Hague could be saturated by 2030. To prevent saturation, the long-term storage capacity for spent fuel is to be increased by construction of a centralised fuel storage pool under EDF's supervision. Commissioning of the new pool is scheduled for 2034 and it will be operated by EDF. The following measures will also be taken to address storage needs.

For the period until the centralised storage pool is built, studies of transitional solutions were launched by Orano in 2019 in association with EDF and the Nuclear Safety Authority (Autorité de sûreté nucléaire – ASN). The preferred solution is densification of the existing pools at Orano's La Hague site. A supplementary solution would be to use a dry storage facility for plutonium (MOX) fuel and reprocessed uranium (RepU). The need for interim storage is accentuated by production issues over the last few years at Orano's Melox plant, which are gradually receding but affect the pace of processing in the short and medium term, with the result that the pre-recycling quantities to be stored are temporarily increased.

Studies of the transitional solutions continued, notably on densification of the existing pools at Orano's La Hague site with the submission in December 2022 to the ASN of the application file for a notable modification. Development studies regarding this solution are expected to continue until 2024.

The provisions for spent fuel management also cover long-term storage of spent fuel that cannot currently be recycled in industrial facilities that already exist or are under construction: plutonium fuel (spent MOX fuel) or uranium fuel derived from processing (spent RepU), and fuel from Creys-Malville and Brennilis until fourth-generation reactors become available. Dedicated assets are held in association with these provisions, which are unrelated to the operating cycle as defined by the law of 2006 (see note 26.6). The provision is founded on a scenario assuming construction of a centralised storage pool at La Hague, to be managed by EDF as nuclear operator. This project was presented during the public debate on the National Plan for Managing Radioactive Matter and Waste (PNGMDR) in 2019-2020, and was subject to a specific public consultation organised by France's National Public Debate Commission (CNDP) that began on 22 November 2021 and ended on 8 July 2022. On 7 October 2022 EDF published a document on the lessons of the consultation and the Company's responses, entitled "*Enseignements de la concertation préalable et suites données par EDF*".

In 2023 EDF set up a formal structure for continuous exchanges and dialogue, under the supervision of guarantors appointed by the CNDP. EDF also stated that at this stage, it is moving ahead with the project. More than 30 meetings with the public were held during 2023. This consultation procedure is continuing, ahead of a public inquiry that is expected to take place in 2025. The application for authorisation to create the installation is due to be filed at the end of the first quarter of 2024. In September 2023, EDF and Orano also concluded an agreement defining the terms on which Orano will make land available for the project.

In total, provisions for specific storage solutions for spent fuel amount to €219 million for the cost of densification of Orano's pools at La Hague, and €1,760 million for interim storage of spent MOX fuel and spent RepU, first at La Hague then in the centralised storage pool (these fuels cannot be recycled in existing facilities or facilities currently under construction).

Finally, in 2018, the Board of Directors approved resumption of reprocessed uranium recycling, which had been suspended in 2013 pending availability of a new industrial schema. The corresponding contracts were signed with the respective suppliers in the second quarter of 2018. The first assemblies were made at the Framatome plant in Romans sur Isère and loaded in 2023 into a 900MW reactor that is already authorised. Subject to completion of technical modifications and issuance of the necessary authorisations by the safety authority, other 900MW reactors and certain 1300MW reactors will be loaded with assemblies based on reprocessed uranium by 2027. Since 2021, the provision for storage of reprocessed uranium included in the provisions for spent fuel management (€439 million) has been based on a 50-year operating lifetime for nuclear plants for the considered series, following the extension of the depreciation period of 1300MW-series plants from 40 to 50 years.

26.2 Provisions for long-term radioactive waste management

Provisions for long-term radioactive waste management concern the following future expenses:

- interim storage, removal and storage of radioactive waste packages resulting from spent fuel processing;
- direct storage, after long-term interim storage where relevant, of spent fuel that cannot be recycled in existing installations: specifically plutonium (MOX) fuel or uranium fuel derived from processing, and fuel from Creys-Malville and Brennilis;
- characterisation, processing, conditioning and interim storage of radioactive waste resulting from decommissioning and certain operating waste, and removal and final storage of this radioactive waste;
- EDF's share of the costs of studies, construction, operation and maintenance, shutdown and surveillance of existing and future storage centres.

The volumes of waste concerned by provisions include existing packages of waste and all waste to be conditioned, resulting in particular from plant decommissioning or spent fuel processing at La Hague (comprising all fuel in reactors at 31 December, irradiated or otherwise). These volumes are regularly reviewed, in keeping with the data declared for the purposes of the national waste inventory, undertaken by ANDRA.

The provisions for long-term radioactive waste management break down as follows:

(in millions of euros)	Storage centres concerned	31/12/2023	31/12/2022
Very low-level and low and medium-level waste	Very low-level waste: CIRES – Morvilliers (ANDRA) Low and medium-level waste: CSA – Soulaines (ANDRA)	3,176	2,958
Long-lived low-level waste	Project under examination: Soulaines (ANDRA)	369	363
Long-lived medium and high-level waste	Geological storage centre (Cigéo project)/ ICEDA conditioning and interim storage facility	9,660	9,154
PROVISIONS FOR LONG-TERM RADIOACTIVE WASTE MANAGEMENT		**13,205**	**12,475**

Very low-level and low and medium-level waste

Basis for estimation

Very low-level waste and low and medium-level waste come from nuclear facilities in operation or in the process of being decommissioned:

- very low-level waste mainly comes from nuclear plant decommissioning, and generally takes the form of metals (large components, piping, support structures, etc.) or rubble (concrete, earth, etc.). This type of waste is stored at surface level at the Morvilliers storage centre managed by ANDRA, commissioned in 2003;
- low and medium-level waste (gloves, filters, resins, materials, etc.) is stored at surface level at the Soulaines storage centre managed by ANDRA, commissioned in 1992.

The cost of removing, processing and storing short-lived waste (very low-level and low and medium-level) is assessed on the basis of:

- current contracts with transporters, and ANDRA for operation of the existing storage centres;
- the costs of the plant run by the subsidiary Cyclife France (the Centraco site at Marcoule, commissioned in 1999) for processing some of this waste that can be melted or incinerated prior to storage in the ANDRA's centres;
- an estimate of the cost of a centralised facility for interim storage, segmentation and conditioning of major components such as steam generators.

For the management of very low-level waste, the regulations (decrees issued by the Ministry for the Ecological Transition) governing recycling of very low-level metallic waste in France were published in the *Journal officiel* of 15 February 2022. EDF is thus continuing with the development of a segmentation and fusing facility to process and recycle the very low-level metallic waste resulting from decommissioning of nuclear plants. This project, called Technocentre, is led by EDF in collaboration with Orano, with a target commissioning date of 2031. In line with France's 5th National Plan for Managing Radioactive Matter and Waste, a roadmap setting out the objectives and timetable for the Technocentre project was sent to the DGEC in early 2023. The project was referred to the National Commission of Public Debate in mid-January 2024.

Developments in 2022

In 2022, the annual review of cost estimates incorporated the most recent assumptions regarding management of this waste. This had no significant impact on provisions.

Developments in 2023

As in 2022, the 2023 annual review of cost estimates incorporated the most recent assumptions regarding management of this waste, and had no significant impact on provisions. It should be noted that this review took account of the effects of France's Finance Law for 2024, which introduces a general tax on polluting activities in order to encourage recycling of very low-level metallic waste, and reduces the INB tax on storage centres once they are permanently shut down. These steps will modify the storage costs invoiced by ANDRA.

Long-lived low-level waste

Long-lived low-level waste belonging to EDF essentially consists of graphite waste from the ongoing decommissioning of the former UNGG (natural uranium graphite gas-cooled) nuclear plants.

As this waste has a long lifetime but is lower-level than long-lived medium and high-level waste, specific subsurface storage requirements apply under the French Law of 28 June 2006.

Following the initial geological investigations, in July 2015 ANDRA remitted a report on a proposed storage centre for long-lived low-level waste on a site located in the Soulaines region (Aube) in France. This report was submitted to the ASN for its opinion. Uncertainties remain about the site's capacity to accommodate all of the waste included in the baseline inventory of the long-lived low-level waste storage facility.

Further studies were planned under the 2016-2018 period of the National Plan for Managing Radioactive Matter and Waste (PNGMDR), concerning both the feasibility of this storage centre and the search for additional waste management solutions. The ASN's opinion on management of this waste, issued on 6 August 2020, and the 5th PNGMDR for 2022-2026 (decree 2022-1547 and the implementation decision were published in the *Journal officiel* of 10 December 2022) set ANDRA the deadline of 2023 to produce a file presenting the technical and safety options selected for storage of long-lived low-level waste at the Vendeuvre-Soulaines site. The file is currently being finalised by ANDRA, to be sent to the ASN in early 2024.

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The initial results of the studies conducted by EDF to characterise the radiological inventory of graphite waste in more detail suggest that it should be possible to store the graphite resulting from decommissioning of the first UNGG reactor to be dismantled (Chinon A2) not at the proposed Vendeuvre-Soulaines centre, but at the Aube storage centre for short-lived low-level waste. ANDRA has issued a preliminary opinion declaring that graphite waste falls within the scope of this centre's radiological specifications. Analyses of the nature of packages and waste concerned are continuing.

Long-lived medium and high-level waste

Long-lived medium and high-level waste essentially comes from processing of spent fuel, and to a lesser extent waste resulting from nuclear plant decommissioning (metallic components that have been inside the reactor).

The Cigéo project for an industrial geological storage centre

The French Law of 28 June 2006 requires reversible storage in deep geological layers for long-lived medium and high-level waste.

On 15 January 2016 the Ministry of Ecology, Sustainable Development and Energy issued a ministerial order setting the target cost for the Cigéo storage project at €25 billion under 2011 year-end economic conditions. The cost as defined constitutes an objective to be met by ANDRA, in compliance with safety standards set by the ASN, working in close cooperation with the operators of nuclear installations. This cost is expected to be updated by 2025.

The provisions for storage of long-lived medium and high-level waste, totalling €8,805 million (including preliminary interim storage of radioactive waste resulting from spent fuel processing, removal to the storage site, and direct storage of spent fuel that cannot be recycled in existing installations), are based on the cost objective for storage, taking account of producers' shares that depend on the volumes and characteristics of the waste.

In application of this ministerial order, the cost of the Cigéo project will be regularly updated, at least at each key milestone in the course of the project's development (authorisation to create the facility, commissioning, end of the "pilot industrial phase", safety reviews) in accordance with the opinion of the ASN.

This project has seen the following developments since 2016:

- 2016: in April 2016, ANDRA sent the ASN a safety option report (DOS), and the law of 11 July 2016 clarified the concept of reversibility;
- 2018: in January 2018, the ASN issued its opinion on the DOS. It considered that the Cigéo project had reached satisfactory overall technological maturity at that stage. This opinion included a requirement for examination of alternatives to the proposal to store bituminous waste at Cigéo with no processing;
- 2019: in September 2019, a group of experts appointed by the DGEC to draw up a report on current bituminous waste management concluded that various options were feasible (storage or neutralisation) but stressed the importance of continuing the studies in order to identify the most appropriate option. A quadripartite research programme involving producers and ANDRA was started, to support the application for authorisation to create the facility. The research will continue while the application is being examined for the Decree authorising
- 2020: a detailed design review by a group of independent experts, organised at the request of the DGEC, reported its conclusions. While issuing a generally favourable opinion for ANDRA's submission, the experts made a certain number of recommendations for finalisation of the detailed design studies and the application for authorisation to create the centre, calling for closer involvement of EDF, Orano and the CEA on these matters.

  Also in 2020, the French Finance Law for 2021, published in the *Journal officiel* of 30 December 2020, included a change to the tax treatment of this project (based on storage tax instead of the standard tax regime). At the 2023 year-end, the measures related to this law still remain to be defined and supervised by the French government to prevent any related cost increase for the Cigeo project;
- 2021: after its filing by ANDRA in August 2020, its examination by the government departments and a public inquiry from 15 September to 23 October 2021, the application for a *déclaration d'utilité publique* (DUP) officially recognising the public utility of the Cigéo storage centre received a favourable opinion from the inquiry commissioners on 20 December 2021;
- 2022: on 8 July 2022, the DUP decree was published.

The delivery horizon for the first waste packages was also clarified. It should begin between 2035 and 2040 according to the ANDRA report of October 2022 summarising the consultations on the pilot industrial phase and governance of the Cigéo project, whereas at the end of 2021, producers were working on the hypothesis that the first waste packages would be received in 2031. Consequently, the provision was updated in 2022 to reflect this deferred reception date for the first packages, with no significant impact.

ANDRA filed an application to the Ministry for the Energy Transition in January 2023 for authorisation to create the Cigeo centre, and on 22 June 2023 the ASN published an announcement confirming that the application was admissible. This made it possible to begin technical examination of the application: the first meeting of the Permanent Group of experts is scheduled to take place in April 2024, the second in late 2024 and the third in mid-2025, with the ASN opinion expected in September 2025. In October 2023, following a request from the Council of State for a ruling, France's Constitutional Council confirmed that the project is constitutional and preserves the rights of future generations.

The decree authorising creation is expected in 2027.

ICEDA

The provision established for long-lived medium and high-level waste also includes €855 million to cover the conditioning and interim storage of long-lived medium-level waste, principally at the ICEDA conditioning and storage facility (*installation de conditionnement et d'entreposage des déchets activés*).

This facility, constructed at the Bugey power plant, received its first waste packages in September 2020 after the ASN authorised its commissioning on 28 July 2020. The ASN's decision approving and governing the conditioning of long-lived medium-level waste into packages at the ICEDA facility was formally received on 19 July 2021. Since then, the facility has completed five waste conditioning operations, including packaging of active operating waste from Fessenheim which arrived in September 2023.

26.3 Provisions for nuclear plant decommissioning

EDF bears full technical and financial responsibility for decommissioning of the basic nuclear facilities (*installations nucléaires de base* or INB) it operates. The final shutdown and decommissioning process is governed by legal provisions and regulations set out in Articles L. 593-20 to L 593-25 and R.593-65 to R.593-74 of the Environment Code. It involves the following operations for each INB:

- a definitive shutdown declaration, to be made at least two years prior to the planned shutdown date;
- since the Energy Transition Law of 17 August 2015, the final shutdown of the INB, which takes place during its operating phase, is considered separately from its dismantling, as a significant modification of lesser importance (simply requiring a declaration by the operator to the Minister and the ASN);
- a dismantling plan compiled by the operator and sent to the minister in charge of nuclear safety, which after examination by the authorities and a public inquiry, leads to a decree prescribing dismantling that authorises the start of dismantling operations;
- key-stage progress reviews submitted for the ASN's approval, with a safety file specific to the dismantling operations to be performed;
- an internal control process concerning significant modifications introduced by the operator in the case of operations that must be declared to or approved by the ASN;
- finally, once these operations are complete, declassification of the facility, which removes it from the scope of the laws governing basic nuclear facilities.

The decommissioning scenario adopted by EDF complies with France's Environment Code, which requires as short a period as possible to elapse between final shutdown and dismantling in economically acceptable conditions and in compliance with the principles laid down in Article L. 1333-1 of the Public Health Code (radioprotection) and section II of Article L. 110-1 of the Environment Code (protection of the environment). The intended end-state is industrial use: the sites will be restored to their original condition and will be reusable for industrial purposes.

The ongoing dismantling operations concern plants that were constructed and operated before the nuclear fleet currently in operation, known as "first-generation" plants, the Superphenix plant, and the Irradiated Materials Workshop in Chinon. These operations cover four different technologies: a heavy water reactor (Brennilis), a sodium-cooled fast-neutron reactor (the Superphenix at Creys-Malville), natural uranium graphite gas-cooled (UNGG) reactors (at Chinon, Saint-Laurent and Bugey) and a pressurised water reactor (PWR, at Chooz).

For the Fessenheim PWR plant, the dismantling application is currently under examination by the ASN, and the operations completed concern the pre-dismantling phase.

Each of these operations is a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no international experience. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists. Decommissioning of the PWR is benefiting from past experience (essentially in the US and limited). The Chooz plant also has the specificity of being partly located in a cave: this means it is also a unique operation, generating experience that is not immediately transposable and involves specific challenges.

Based on the ongoing decommissioning operations at permanently shut-down plants (particularly the experience gained from the Chooz PWR), the studies conducted for the Summary Preliminary Plan for the two 900MW reactors at Fessenheim, and the preparatory work for dismantling of Fessenheim, it was possible at the end of 2021 to establish a detailed reference estimate of future decommissioning costs for the nuclear fleet currently in operation ("second-generation" plants). However, neither EDF nor any other operator has yet begun a decommissioning programme on a scale comparable to the current PWR fleet, and as a result the estimates include both opportunities and risks, especially associated with the scale effect.

The decommissioning provisions cover future decommissioning expenses as described above (excluding the cost of removing waste from the site and storing it, which is covered by the provisions for long-term waste management).

Details of changes in provisions for nuclear plant decommissioning are as follows:

		Increases		Decreases		Other	
(In millions of euros)	31/12/2022	Operating [1]	Financial	Utilisations [1]	Reversals	changes [2]	31/12/2023
Provisions for decommissioning nuclear plants in operation	12,125	-	585	(9)	-	301	13,002
Provisions for decommissioning permanently shut-down nuclear plants	4,969	294	369	(215)	-	-	5,417
TOTAL PROVISIONS FOR NUCLEAR PLANT DECOMMISSIONING	**17,094**	**294**	**954**	**(224)**	**-**	**301**	**18,419**

(1) Operating increases essentially correspond to improvements made during the year to the cost estimation methodology for provisions not backed by assets, detailed below. Decreases for utilisation correspond to decommissioning expenses paid in 2023.

(2) Other changes in provisions for decommissioning nuclear plants in operation principally include the effects of adjusting cost estimates to 2023 economic conditions (see note 26.5), and other cost estimate revisions described below for provisions backed by assets.

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For nuclear power plants currently in operation (PWR pressurized water reactor plants with 900MW, 1300MW and N4 reactors)

History of the calculation of provisions and the 2014-2015 Audit commissioned by the DGEC

Until 2013, provisions were estimated based on a 1991 study by the French Ministry of Trade and Industry, which set an estimated benchmark cost for decommissioning expressed in €/MW, confirming the assumptions defined in 1979 by the PEON commission. These estimates were confirmed from 2009 by a detailed study of decommissioning costs conducted by EDF at the representative site of Dampierre (four 900MW units), and the results of that study were corroborated by an intercomparison with the study carried out by consultants La Guardia, based mainly on the Maine Yankee reactor in the United States.

In 2014 the Dampierre study was reviewed by EDF to make sure that the previous calculations were still valid in view of recent developments and experience, both internationally and internally, which called the past estimates into question. For this review, the decommissioning provisions for plants in operation were based on costs resulting from the Dampierre study, in order to incorporate the Company's best estimates and experience from inside and outside France. This change of estimate had no significant impact on the level of provisions at 31 December 2014.

Between June 2014 and July 2015, an audit of decommissioning costs for EDF's nuclear fleet currently in operation was conducted by specialised consulting firms, at the request of the DGEC. On 15 January 2016 the DGEC published a summary of the audit report. It stated that although estimating the cost of decommissioning nuclear reactors is a demanding exercise due to relatively limited past experience, the prospects of changes in techniques and the distant timing of the expenditure, overall, the audit confirmed EDF's estimate of decommissioning costs for its nuclear fleet currently in operation. The DGEC also made a number of recommendations to EDF following this audit.

Revision in 2016 and current basis for estimation

In 2016, EDF revised the decommissioning estimate, in order to incorporate the recommendations resulting from the audit commissioned by the DGEC, and past experience gained from dismantling operations for first-generation reactors (particularly Chooz A).

A detailed analytical approach was used to revise this estimate, identifying all costs for the engineering, construction work, operation and waste processing involved in future decommissioning of reactors currently in operation. This led to figures based on detailed timetables for plant decommissioning. The approach adopted provided a more thorough assessment of costs specific to the first-of-their-kind units, estimated for each series based on transposition coefficients applied to the baseline costs for the initial 900MW unit, and the series and mutualisation effects, as these costs and effects are inherent to the fleet's size and configuration. In 2021, the reference estimate of decommissioning costs for the first 900MW unit was updated based on preliminary studies conducted in preparation for the decommissioning of Fessenheim, and experience gained at the beginning of the pre-dismantling phase.

The natures of the principal series and mutualisation effects used to arrive at the estimate are explained below.

Series effects (effects of work at a first-of-a-kind site on the following sites of the same series) are mainly of two types:

- first, in a fleet using the same technology, many studies do not need to be repeated each time;
- second, in a fleet using the same technology, robots and tooling can be largely reused from one site to another.

Mutualisation effects (effects between units on the same site, whether in operation or being decommissioned) are of several different types:

- some of them relate to the fact that several reactors may share common buildings and facilities on the same site, and these buildings and facilities will not have to be dismantled twice;
- certain costs are not higher when two or four reactors are dismantled on the same site. This is usually the case for surveillance costs, common equipment, and the cost of maintaining safe operating conditions on the site.

Due to mutualisation effects, dismantling a pair of reactors on the same site costs less than dismantling two standalone reactors on two different sites. In France, unlike other countries, there are no single reactors but sites with two or four, and in one case six reactors.

Series and mutualisation effects reduce the estimated decommissioning cost by 9% and 7% respectively compared to an estimate for the PWR fleet currently in operation that ignores these effects. Series and mutualisation effects vary depending on the series: they are greater when there are more units in a series (series effect) and more units on a site (mutualisation effect), leading to a combined effect (series and mutualisation effect) of over 16% for the 900MW series.

In particular, series and mutualisation effects explain why it is not appropriate simply to compare the average dismantling cost per reactor between the French fleet and other countries' nuclear fleets.

Conversely, the estimates only marginally reflect changes in productivity and the learning effect. The DGEC-ordered external audit of the decommissioning cost for the fleet currently in operation considered that this approach resulted in a prudent estimation method.

For reasons of prudence, the estimate also includes an assessment of risks and uncertainties as follows:

- incorporation of uncertainties relating to each "elementary" block of costs, the schedule, series effects, mutualisation effects, transposition coefficients and fleet expenses;
- incorporation of risks, corresponding to the completion risks (which are identifiable and quantifiable, but only contingent). From the 2023 year-end, the financial consequences of these risks are based on valuation of a register of identified risks that incorporates the schedule impact (referring notably to an adapted version of the Fessenheim project risk register, rather than applying a flat-rate increase as previously).

The above method for assessing risks and uncertainties led to an overall margin of some 19.3% for the whole PWR fleet currently in operation (22.4% for the reference Fessenheim cost estimate).

Since its in-depth revision in 2016 this cost estimate has been reviewed annually. The reviews have led to non-significant annual adjustments.

EDF also confirms its analyses through an international intercomparison, taking care to identify and characterise a number of factors that could distort direct comparisons, for example differences in the scope concerned by the cost estimate, or national and regulatory contexts.

Developments in 2022

The annual review of the estimate did not lead to any significant impact on provisions.

Developments in 2023

The annual review of the estimate in 2023 took into consideration methodological changes and experience acquired from Fessenheim, principally:

- methodological changes (which also apply to provisions for decommissioning permanently shut-down power plants and long-term waste management) regarding the assessment of requirements for research and engineering, a first reference [1] to the risk of obsolescence in existing equipment that is needed for dismantling, and the implementation of an analytical method for assessment of scheduling risks that was already applied in 2022 to most decommissioning projects for permanently shut-down power plants;
- inclusion of an assumption that decommissioning of the 900MW series will begin with pairs of reactors (as opposed to the previous assumption of independent start dates for each reactor), following experience gained from preparations for the Fessenheim decommissioning;
- an update to property costs (covering general operation and maintenance of the non-industrial sections of the plants), particularly by reference to the most recent cost figures for the Fessenheim site;
- reference to a register of risks identified in the PWR fleet (instead of the previous practice of assigning standard values to risks), applying the valuation methods used for other plants being decommissioned (based in particular on an adapted version of the Fessenheim project risk register);
- revised extrapolation coefficients (transposition and mutualisation) for operating purchase costs, based on historical data for the currently active fleet.

Overall, the above factors in the annual cost estimate review had a non-significant impact on provisions for decommissioning of nuclear power plants currently in operation.

Based on the estimates of the different types of cost, the cost to completion (in 2023 euros) amounts to approximately €0.56 billion for one reactor at Fessenheim, compared to an average cost of €0.42 billion per unit for the entire PWR fleet when the series and mutualisation effects described above are taken into account.

For permanently shut-down nuclear power plants

Decommissioning of shut-down reactors involves pilot operations corresponding to four different technologies, each with clear specificities: a PWR reactor at Chooz A located in a cave, UNGG (natural uranium graphite gas-cooled) reactors at Bugey, Saint-Laurent and Chinon, a heavy water reactor at Brennilis, a sodium-cooled fast neutron reactor at Creys-Malville, and the first-of-a-kind second-generation PWR reactor at Fessenheim.

Basis for estimation

The decommissioning costs are based on estimates that take account of accumulated industrial experience, unforeseeable and regulatory developments, and the latest available figures. They have been revised annually since 2015.

The industrial scenario for dismantling of the UNGG reactors was reviewed in depth in late 2015, leading in particular to a switch from "underwater" to "in-air" dismantling, which involves:

- an essentially remote-controlled dismantling process;
- qualification of tools and the remote operation platform on an "industrial demonstrator", which was inaugurated in 2022;
- dismantling of the initial first-of-a-kind reactor (Chinon A2), and putting the 5 other reactors into a safe storage configuration.

Under this strategy, dismantling operations for the reactor caissons (including the site decontamination and rehabilitation phase) should be completed between 2063 and 2093, depending on the reactors.

Updating the industrial decommissioning scenario for first-generation power plants, particularly UNGG plants, led to a €590 million increase in the provision at 31 December 2015.

From 2016 to 2021

The amendment made in 2015 to the industrial scenario for dismantling of the UNGG reactors was presented to the ASN's commissioners on 29 March 2016, and examined by the ASN until 2019. It was reviewed by international experts, examined by the IRSN, and was the subject of three hearings before the ASN's commissioners, before the ASN issued two decisions dated 3 March 2020. These decisions and the discussions prior to their adoption by the ASN showed that there was convergence on most major technical questions: the dismantling technique ("in-air"), the usefulness of setting up an industrial demonstrator to develop the tools required for these complex operations, the timetable for dismantling the Chinon A2 reactor, and the need to gain experience from operations on a first reactor.

Regarding the timetable of operations, in draft decisions issued for public consultation in 2019, the ASN asked for this work to be brought forward compared to EDF's proposed schedule, so that dismantling operations on the five reactors after Chinon A2 would begin "no later than 31 December 2055".

In view of this request for a shorter timescale, the nuclear provisions were increased in 2019 by a total €108 million: €77 million for decommissioning provisions for permanently shut-down nuclear power plants and €31 million for provisions for long-term radioactive waste management (for long-lived low-level waste, very low-level and low and medium-level waste).

The ASN's decisions concerning dismantling of the UNGG reactors were published in March 2020 and did not contradict the principles of the draft decisions of 2019. Consequently, the nuclear provisions for decommissioning of UNGG plants were not subjected to any particular reestimation in 2020, and reflect the best estimate of the industrial and technical scenario.

Finally, in accordance with its powers under Article 594-4 of the Environment Code, in June 2020 the DGEC commissioned an external audit of the estimated cost of dismantling operations for EDF's permanently shut-down nuclear facilities (the UNGG plants and management of its long-lived low-level waste, Superphenix and Brennilis), conducted by a consortium of specialist firms. This audit took place from December 2020 to July 2021, and the audit report was posted on the Ministry for the Ecological Transition website in November 2021. Its conclusions (confirming the ASN's observations during its inspection of complex project management, the conclusions of which were released in the first quarter of 2021) highlight "an organisation with a structural focus on execution of dismantling projects", an "annual estimation and revision process [that] is robust, and provides good traceability for the assumptions used and the original data", and "a long-term industrial approach to overcome the small number of technological challenges that remain". Finally, the report states that apart from a non-significant correction (taken into account in the 2021 provisions), "the provisions are coherent with the basic scenarios of the projects and cover the full scope of expenses for the scope audited", and were found to be of "adequate scale" through testing the scale of EDF's expenses and provisions.

(1) Following an initial survey, 3 major families of equipment to prioritise were identified and are being modernised: lifting equipment, fire detection equipment, and instrumentation and control equipment. A further general study of obsolescence, based on systematic screening of machines and equipment, is in process and will continue in 2024.

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Developments in 2022

In 2022, following the recommendations made by the DGEC-commissioned audit to confirm scheduling risk assessments and the uncertainty levels concerning estimates, an analytical methodology for assessment of scheduling risks and uncertainties (applied to most of decommissioning projects currently in process) and an additional level of uncertainty for estimates "based on expert assessment" (used in provisions for decommissioning and radioactive waste management) were introduced. This led to an increase of €116 million to decommissioning provisions for permanently shut-down nuclear plants.

The provision for decommissioning of Chooz A was also increased by €37 million to take account of confirmed experience, regarding unforeseen events and delays observed during the dismantling of the reactor vessel (slower segmentation, and unavailability of the bridge crane). As a result of this experience, the vessel dismantling work has been prolonged by 18 months, and a risk of a further 14-month delay on the overall timetable has been identified.

For UNGG plants, the annual review of cost estimates took into consideration delays in obtaining the dismantling decrees (which are now expected in late 2026 rather than late 2025 as previously). This did not have a significant impact on the provisions.

Over a short-term horizon, consideration was given to expectations that the rises in certain commodity, energy and transport prices will exceed forecast inflation, particularly given the types of purchases relating to decommissioning expenses. This had an impact of €33 million on provisions for decommissioning of permanently shut-down nuclear plants.

Developments in 2023

The annual review in 2023 of the cost estimate for decommissioning of permanently shut-down power plants took into consideration methodological changes regarding the assessment of requirements for research and engineering, the risk of obsolescence in existing equipment that is needed for dismantling (such as maintenance and lifting equipment), and the general application of an analytical method for estimating schedule risks and uncertainties that was already applied in 2022 to most current decommissioning projects. These factors led to an €182 million increase in provisions.

It should also be noted that provisions for decommissioning of permanently shut-down power plants were increased by €41 million to reflect property costs (covering general operation and maintenance of the non-industrial sections of the plants), after the estimate for those costs was updated.

At 31 December 2023, the gross amounts estimated under year-end economic conditions (amounts still to be spent) and the present value of those amounts are as follows, presented by type of reactor technology:

(in millions of euros)	Costs based on year-end economic conditions	Amounts in provisions at present value
Pressurised water reactor – PWR – Chooz A	340	297
Pressurised water reactor – PWR – Fessenheim*	994	825
Natural uranium graphite gas-cooled reactors – UNGG – Bugey, Saint-Laurent, Chinon	6,172	3,196
Heavy water reactor – Brennilis	392	341
Sodium-cooled fast neutron reactor – Superphenix at Creys Malville	637	561

* *Excluding interim storage and processing of steam generators.*

Provisions for decommissioning of permanently shut-down nuclear plants also cover dismantling costs for related facilities such as the APEC Fuel Storage Workshop at Creys-Malville and the BCOT Operational Hot Unit at Tricastin.

Compared to decommissioning costs for the PWR technology, the cost at completion (all costs both settled and remaining) for decommissioning of the other reactors is higher, to different extents depending on their specific characteristics:

- costs are around twice as high for Brennilis (completion cost of approximately €1.0 billion for one reactor) due to its compactness, the fact that the core is encased in concrete and thus difficult to access, the absence of a fuel pool, which complicates remote-controlled segmentation, and the presence of zircaloy (a fire hazard), meaning that segmentation work takes longer and must be more closely supervised;
- costs are around twice as high for UNGG reactors (completion cost of approximately €7.3 billion for six reactors), because they require removal of 20 times more material than a PWR due to their size, and contain graphite which is hard to access and requires special handling such that specific remote-controlled equipment must be developed;
- costs are around four times as high for Superphenix (completion cost of approximately €2.1 billion for one reactor), due to processing of sodium for which elimination is very sensitive, and the size of the facilities, especially the reactor (with a vessel 20 times bigger than the vessel of the 1300MW PWR).

The following progress has been made on permanently shut-down plants:

- Chooz A: the reactor was shut down in 1991 and nuclear dismantling began in 2007 after the dismantling decree was issued. The final stage of dismantling began in 2016 and involves segmentation, conditioning and removal of reactor vessel internals, to be followed by dismantling of the vessel itself. Difficulties were encountered on the site until 2022 (the Covid crisis, unavailability of the bridge crane), but work has now progressed and the reactor building pool was fully emptied by the summer of 2023. Segmentation of the vessel itself will begin in 2025 and end in 2026. A partnership agreement with the French national research agency CNRS was signed on 7 September 2022 for reuse of the caverns for research on neutrinos. Reconfiguration of the cavern is due to be completed in 2033 with a view to transferring it to the CNRS. The plant should be declassified by the end of 2035;
- Fessenheim: the two pressurised water reactors were shut down definitively on 22 February 2020 and 30 June 2020 respectively, in accordance with the law and before the end of their technical operating lifetime. The dismantling plan was sent to the Minister for the Ecological Transition and the ASN in December 2020. In early 2022, the Mission de la sûreté nucléaire et de la radioprotection (MSNR) and the ASN formally acknowledged reception of an expanded version of this plan. The IRSN issued its opinion on 1 June 2023. Its report does not note any evidence of divergence of technical matters or approach in either the safety demonstration or the impact study. Based on EDF's commitments and the IRSN report, the Permanent Group of experts, at its meeting of 22 June 2023, only made one recommendation: "the Permanent Group of experts recommends that EDF should, before implementing dismantling operations for the vessels and their internals, present a file justifying the technical and organisational design and operation measures chosen to control the risks of dissemination of radioactive substances and exposure of workers to ionising rays associated with these operations".

According to the ongoing schedule, the dismantling decree for the Fessenheim installations is expected to be issued in early 2026. Issuance of the decree prescribing the dismantling operations will mark the start of Fessenheim's dismantling phase. At 31 December 2023, progress on the pre-dismantling operations (including full defueling and total chemical decontamination of both primary circuit reactors) was in line with the provisional schedule;

- UNGG reactors: these six reactors were shut down between 1973 and 1994 and received their dismantling decrees between 2008 and 2010 (except for Chinon A1 and A2). Defuelling and circuit draining have been completed for all these reactors, and dismantling operations are in process for the conventional and nuclear buildings in the periphery of the "reactor caissons". Following the ASN's decision of 2020, applications for dismantling permits were submitted for all these reactors in December 2022, to obtain new decrees allowing continuation of dismantling operations under an "in-air" strategy (these are expected for the end of 2026 at the earliest). Opening of the top part of the first UNGG reactor caisson – Chinon A2 – is expected in 2034: the initial extractions of vessel internals and graphite blocks are due to start in 2041 and last 14 years. In parallel, the other UNGG sites are finalising work to put the sites into a safe storage configuration (by 2037). A safe storage configuration state means that 80% of surfaces have been dismantled and the reactor caissons are safe while awaiting the full benefit of experience on dismantling the caisson of the Chinon A2 first-of-a-kind unit. Opening of subsequent caissons is scheduled to begin from 2056;
- Superphenix: this plant was shut down in 1998 and received its dismantling decree in 2006. The following key stages have been completed: defuelling, dismantling of the turbine hall, drainage of the circuits, processing and elimination of the sodium used for cooling in all circuits, filling the reactor vessel, opening and extracting the vessel caps, and the start of dismantling of the core vessel cap (which weighs several hundred tonnes). The next stages are dismantling the vessel internals (due to be completed in 2026), electromechanical dismantling in the reactor building, then decontamination (the plant is expected to be declassified in 2034);
- Brennilis: this plant was shut down in 1985 and received a partial dismantling decree in 2011 allowing dismantling of all installations peripheral to the "reactor block". The following key stages have been completed: defuelling, dismantling of the turbine hall, the fuel building, auxiliary buildings, heat exchangers and the effluent treatment station. On 26 September 2023 the Brennilis plant received its "full dismantling" decree allowing work to begin on dismantling the reactor block and demolition of the containment building, with site rehabilitation expected in 2040.

26.4 Provisions for last cores

These provisions cover the future expenses resulting from scrapping fuel that will only be partially irradiated when the reactor is shut down. They are estimated based on:

- the cost of the loss on fuel in the reactor that is not totally spent at the time of final reactor shutdown and cannot be reused due to technical and regulatory constraints ("front-end" expenses);
- the cost of fuel processing, and waste removal and storage operations ("back-end" expenses). These costs are estimated in a similar way to provisions for spent fuel management and long-term radioactive waste management.

These unavoidable costs are components of the cost of nuclear generating unit shutdown and decommissioning. As such, they are fully covered by provisions from the commissioning date and an asset associated with the provision is recognised. In a decision of 11 December 2020, France's Council of State challenged the tax-deductibility of the consequences of immediate recognition of a provision for dismantling of the last core ("front-end" last core expenses). In a ruling of 31 March 2023, the Council of State definitively confirmed that this nuclear provision is not tax-deductible.

In 2022, provisions for last cores were adjusted after experience with core management at Fessenheim and its optimisation was finalised. The main consequence was an update to the masses of unused heavy metals included in the calculation of the last core provisions for the entire fleet, resulting in a €(145) million decrease in provisions.

In 2023, provisions for last cores were increased by €103 million after the costs of processing operations were updated (see note 26.1).

26.5 Discount rate, inflation and sensitivity analyses

26.5.1 Calculation of the discount rate and inflation rate

The discount rate is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (OAT bond 0-20 year curve) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) – with yields that become close to the UFR after 50 years – plus a curve of the spread of corporate bonds rated A to BBB. Based on the disbursement outflows expected to meet nuclear obligations, a single equivalent discount rate is deduced by applying the discount rates from the interest rate curve constructed in this way to each flow as appropriate to its maturity. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions.

The UFR was defined by the European Insurance and Occupational Pensions Authority (EIOPA) for very long-term insurance liabilities that will involve disbursements beyond market horizons. The UFR calculated for 2023 (taking into account a 2% inflation rate) is 3.35%. This is used in the calculation methodology, in compliance with the decision by the French authorities, which in the ministerial order of 1 July 2020 amending the order of 21 March 2007 on secure financing of nuclear expenses (see below) changed the formula of the regulatory ceiling for the discount rate, such that it now refers to the UFR instead of the arithmetic 48-month average of the TEC 30-year rate. The UFR is considered more relevant for nuclear provisions in view of the very long-term maturities. The sovereign yield curve at 31 December 2023 indicates rates in a range of [2.2%; 3%] ([2.7%; 3.3%] in 2022) for outflows between 0 and 20 years, [3%; 3.2%] ([3.3%; 3.4%] in 2022) for outflows between 20 and 50 years, and a rate moving towards 3.35% (3.43% in 2022) for outflows after 50 years.

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This calculation methodology for the discount rate provides the best assessment of the time value of money with regard to nuclear provisions, which are characterised by very long-term disbursement outflows, well beyond market horizons. This assessment is largely achieved through:

- use of an interest rate curve based on observed year-end market data with liquid horizons, converging over nonliquid horizons towards a very long-term rate with no cycle effect, *i.e.* yield data for all the maturities associated with nuclear provisions;
- use of a very long-term rate (calculated UFR) produced by an independent body and now adopted by the French authorities in setting the formula for the regulatory ceiling, to take account of long trends in yield movements, in coherence with the distant disbursement horizon;
- references to spreads on corporate bonds rated A to BBB, in order to construct a robust spread curve since there are few AA-rated bonds, particularly on long maturities, whereas most "Investment Grade" bonds are BBB-rated and the great majority of them have longer maturities.

The inflation assumption is based on an inflation curve constructed by reference to inflation-indexed market products and economic forecasts, in long-term coherence with the inflation assumption underlying the UFR (2%).

The discount rate determined is thus 4.5% at 31 December 2023 (4.8% at 31 December 2022), assuming inflation of 2.0% (2.3% at 31 December 2022), *i.e.* a real discount rate of 2.5% at 31 December 2023 (2.5% at 31 December 2022).

The decrease in the discount rate reflects the observed decrease in OAT bond rates at the very end of 2023, and to a lesser degree the narrower corporate bond spreads compared to 31 December 2022, as the markets anticipated the incipient downturn in inflation.

The decrease in the inflation rate assumption reflects the lower inflation forecasts in France. A 2% long-term inflation rate is still used given the ECB's target level, consistent with the inflation assumption underlying the UFR (Ultimate Forward Rate).

Furthermore, as inflation in 2023 was much higher than long-term inflation and the actual inflation rate consequently exceeded the initial inflation forecast (corresponding to long-term inflation), cost estimates were adjusted to 2023 year-end economic conditions, with a total impact of €801 million on provisions for decommissioning, spent fuel management and waste management.

26.5.2 Regulatory discount rate limit

The discount rate must comply with two regulatory limits. Under Article D5 94-4 of the Environment Code and the ministerial order of 1 July 2020 on secure financing for nuclear expenses (which amended the initial ministerial order of 21 March 2007), it must be lower than:

- a regulatory maximum, expressed in real value, *i.e.* net of inflation; this value is equal to the unrounded value representative of expectations concerning the real long-term interest rate, as used for the calculation of the Ultimate Forward Rate ("real" UFR) applicable at the date concerned published by the European Insurance and Occupational Pensions Authority (EIOPA), plus 150bp. In compliance with the ministerial order of 27 December 2023 amending the order of 1 July 2020, this limit is applicable from 2023 (before this order was issued, it was to be calculated under a transitional formula until 2023 and the target formula was only due to apply from 2024);
- and the expected rate of return on assets covering the liability (dedicated assets).

The maximum discount rate calculated by reference to the UFR in application of the order that took effect on 27 December 2023 is 2.85% at 31 December 2023 (2.85% at 31 December 2022).

The real discount rate used in the financial statements at 31 December 2023, calculated by the method presented above, is 2.5%.

26.5.3 Analyses of sensitivity to macro-economic assumptions

Sensitivity to assumptions concerning costs, inflation rate, long-term discount rate, and disbursement schedules can be estimated through comparison of the gross amount estimated under year-end economic conditions with the present value of the amount.

Provisions related to nuclear generation within the scope of the Law of 28 June 2006 (in millions of euros)	31/12/2023 Cost based on year-end economic conditions	31/12/2023 Present value	31/12/2022 Cost based on year-end economic conditions	31/12/2022 Present value
Spent fuel management	18,998	12,657	16,194	10,184
Amount unrelated to the operating cycle	*3,658*	*1,760*	*3,417*	*1,607*
Long-term radioactive waste management	38,467	13,205	36,996	12,475
Back-end nuclear cycle expenses	**57,465**	**25,862**	**53,190**	**22,659**
Decommissioning of nuclear plants in operation	23,335	13,002	21,381	12,125
Decommissioning of shut-down nuclear plants	8,832	5,417	8,219	4,969
Last cores	4,668	2,720	4,189	2,434
Decommissioning and last core expenses	**36,835**	**21,139**	**33,789**	**19,528**
PROVISIONS RELATED TO NUCLEAR GENERATION WITHIN THE SCOPE OF THE LAW OF 28 JUNE 2006*	**47,001**		**42,187**	

** Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations.*

The cumulative disbursements of nuclear expenses (based on gross values at year-end economic conditions) are distributed as follows:

Provisions related to nuclear generation within the scope of the Law of 28 June 2006 (in millions of euros)	2023 Costs based on year-end economic conditions: Disbursement expected within 10 years	Disbursement expected after 10 years*	Total
Spent fuel management	10,117	8,881	18,998
Amount unrelated to the operating cycle	*611*	*3,047*	*3,658*
Long-term radioactive waste management	5,633	32,834	38,467
Back-end nuclear cycle expenses	**15,750**	**41,715**	**57,465**
Decommissioning of nuclear plants in operation	483	22,852	23,335
Decommissioning of shut-down nuclear plants	3,503	5,329	8,832
Last cores	722	3,946	4,668
Decommissioning and last core expenses	**4,708**	**32,127**	**36,835**

** Over a 20-year and 50-year horizon, 22% and 43% respectively of cumulative disbursements (at year-end economic conditions) will concern long-term radioactive waste management provisions, and 35% and 96% respectively will concern decommissioning provisions.*

For additional information, the table below shows the estimated impact of a +/-20 base point variation in the discount rate on the present value of provisions for the back-end of the nuclear cycle, decommissioning of nuclear plants and last cores:

(in millions of euros)	Amounts in provisions at present value 31/12/2023	Sensitivity to discount rate: Balance sheet provision +0.20%	Balance sheet provision -0.20%	Pre-tax net income +0.20%	Pre-tax net income -0.20%
Back-end nuclear cycle expenses					
• spent fuel management	13,876	(232)	246	194	(206)
• long-term radioactive waste management	13,205	(722)	810	565	(642)
Decommissioning and last core expenses					
• decommissioning of nuclear plants in operation	13,002	(571)	601	-	-
• decommissioning of shut-down nuclear plants	5,417	(163)	174	163	(174)
• last cores	2,720	(93)	99	-	-
TOTAL	**48,220**	**(1,781)**	**1,930**	**922**	**(1,022)**
Amount covered by dedicated assets	*33,989*	*(1,571)*	*1,710*	*801*	*(895)*

The impact of a +/-10 base point variation in discount rates on the present value of provisions for the back-end of the nuclear cycle, decommissioning and last cores is estimated at €(908)/945 million, including €473/(497) million on the pre-tax net income.

26.6 Dedicated assets

26.6.1 Regulations

Articles L. 594-1 and following of France's Environment Code and their implementing regulations require assets (dedicated assets) to be set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste. These regulations govern the way dedicated assets are built up, and the management and governance of the funds themselves. Dedicated assets are clearly identified and managed separately from the Company's other financial assets and investments. They are also subject to specific monitoring and control by the Board of Directors and the administrative authorities.

The law requires the realisable value of dedicated assets to be higher than the value of the provisions corresponding to the present value of the long-term nuclear expenses defined in France's Environment Code.

The Decree of 1 July 2020 codified the regulatory obligations concerning dedicated assets in Articles D5 94-1 and following of the Environment Code, complemented by the ministerial order of 21 March 2007 amended by the order of 1 July 2020.

The decree of 22 November 2023 updated the rules for investing in dedicated assets. It set certain limits depending on disbursement schedules, and introduced new rules regarding concentration risks. In particular, the shares of CTE, the entity that has held 100% of the capital of RTE since 31 December 2017 (see note 26.6.2 below), are no longer subject to any specific restriction. This decree also broadens the options for investing in unlisted assets, such that the ministerial authorisation granted on 31 May 2018 allowing EDF to increase the portion of unlisted assets in its dedicated assets from 10% to 15% subject to conditions is no longer relevant.

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Since the decree of 1 July 2020, EDF is no longer obliged to add to dedicated assets when the coverage rate of obligations, determined by the ratio of the assets' realisable value to the amount of the provisions concerned, is above 100%, and withdrawals from assets are not authorised unless that rate is above 120%. The decree also increased the maximum period for allocating funds to dedicated assets in the event of undercoverage, subject to authorisation by the administrative authority, to 5 years (instead of 3 years previously).

26.6.2 Strategic allocation and composition of dedicated assets

Given the regulations governing dedicated assets, they form a highly specific category of assets.

Dedicated assets are structured and managed according to a strategic allocation defined by the Board of Directors and reported to the administrative authorities. The strategic allocation is designed to meet the overall objective of long-term coverage of obligations, and determines the structure and management of the portfolio as a whole. It takes into account regulatory constraints concerning the nature and liquidity of the dedicated assets, the financial outlook for the equity and bond markets, and the diversifying contribution of unlisted assets.

Several changes have been made to this strategic allocation in order to pursue the diversification into unlisted assets, particularly in 2010 when the shares in RTE (now held *via* CTE) were allocated to dedicated assets, and in 2013 when an unlisted asset portfolio (consisting of infrastructures, real estate and debt or equity funds) was set up. This portfolio is managed by EDF's "EDF Invest" Division.

On 29 June 2018 the Board of Directors validated the principle of strategic allocation for dedicated assets:

- yield assets (target of 30% of dedicated assets), consisting of infrastructure assets, including the shares of CTE, and real estate property;
- growth assets (target of 40% of dedicated assets), consisting of equity funds investing in listed or unlisted equities;
- fixed-income assets (target of 30% of dedicated assets), consisting of listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

These targets should be reached gradually by 2025.

EDF Invest manages yield assets, but through unlisted investment funds it also manages growth and fixed-income assets.

At 31 December 2023 the total realisable value of assets managed by EDF Invest is €9,482 million, including €8,657 million for yield assets.

26.6.3 Growth assets and fixed-income assets

Certain growth and fixed-income assets take the form of bonds held directly by EDF. Others consist of specialised collective investment funds on leading international markets and French general-purpose investment funds (FIVGs), managed by independent asset management companies. They take the form of open-end funds and "reserved" funds located in France, established for the Company.

The listed equity funds consist of international equities (mainly in North America but also in Europe, Asia-Pacific and emerging countries). Listed bonds and listed bond funds consist of sovereign and corporate bonds.

These investments are structured and managed in line with the strategic allocation, which takes into consideration international stock market cycles, for which the statistical inversion generally observed between equity market cycles and bond market cycles – as well as between geographical areas – has led EDF to define a long-term investment policy with appropriate allocation between growth assets and fixed-income assets.

Growth assets also include a small portion of funds invested in unlisted equities, and fixed-income assets also include a small portion of funds invested in unlisted debt. These funds are mainly managed by EDF Invest (see note 26.6.2).

In the course of operational asset monitoring, the Group applies long-term, specific management rules defined and supervised by its governance bodies (maximum investment ratios, volatility analyses and assessment of individual fund manager quality).

26.6.4 Yield assets

The yield assets managed by EDF Invest consist of assets related to investments in infrastructures and real estate, made either directly by EDF Invest or by investment funds under delegated management arrangements.

Yield assets particularly include EDF's investments in CTE, Teréga, Energy Assets Group, Porterbrook, Autostrade per l'Italia, Q-Park, Aéroports de la Côte d'Azur, Madrileña Red de Gas (MRG), Géosel, Orange Concessions, Norlys Fiber, Databank, Nam Theun Power Company, companies that own wind and solar power plants (in the United States, Canada, and the United Kingdom) and companies that own real estate assets (Central Sicaf, Ecowest, Clariane & Partenaires Immobilier, Issy Shift, 92 France, LF Memphis).

26.6.5 Valuation of dedicated assets

Dedicated assets are classified in the balance sheet according to their accounting nature: investments, investment securities, and marketable securities.

Details of the portfolio at 31 December 2023 are as follows:

		31/12/2023		31/12/2022	
(in millions of euros)	Notes	Net book value	Realisable value	Net book value	Realisable value
Yield assets		**6,956**	**8,657**	**7,314**	**8,772**
Investments (including CTE) [1]	16.2	6,510	8,199	6,860	8,327
Unlisted equity funds (EDF Invest) [2]	16.5	443	455	433	424
Cash instruments (Derivatives)	18 & 30	3	3	21	21
Growth assets		**10,319**	**14,036**	**9,990**	**12,251**
Equities – shares in investment funds	16.5	9,730	13,392	9,480	11,625
Unlisted equity funds (EDF Invest) [3]	16.5	588	589	505	553
Cash instruments (Derivatives)	18 & 30	1	55	5	73
Fixed-income assets		**13,972**	**14,192**	**12,886**	**12,881**
Bonds	16.5	12,277	12,488	11,103	11,101
Unlisted debt funds (EDF Invest) [2]	16.5	226	236	204	215
Cash portfolio	16.5	1,095	1,104	1,412	1,414
Diversified debt funds	16.5	358	363	160	163
Cash instruments (Derivatives)	18 & 30	16	1	7	(12)
TOTAL DEDICATED ASSETS [3]		**31,247**	**36,885**	**30,190**	**33,904**

(1) Including EDF's 50.1% investment in CTE, the Company that holds 100% of the shares in RTE. The realisable value of CTE has been determined by an independent assessor, in the same way as for EDF Invest's other assets.

(2) All EDF Invest funds are to be considered together, as their net book value totals €1,257 million (€1,142 million at 31 December 2022) for a realisable value of €1,280 million (€1,192 million at 31 December 2022).

(3) Limiting the value of certain investments in compliance with Article 16 of Decree 2007-243 concerning calculation of the regulatory realisable value of dedicated assets has no effect at 31 December 2023 or 2022.

Net book value and fair value include unmatured accrued interest.

26.6.6 Coverage of long-term nuclear obligations

At 31 December 2023, by the regulatory calculations provisions are 108.5% covered by dedicated assets. The potential regulatory caps on the realisable value of certain investments set in the Environment Code were not applicable at 31 December 2023.

As the coverage of provisions by dedicated assets was above 100%, EDF had no obligation to add to the dedicated asset portfolio in 2023 and no allocation was made during the year.

At 31 December 2022, by the regulatory calculations provisions were 107.1% covered by dedicated assets (and the regulatory caps were again not applicable).

The long-term nuclear obligations concerned by the regulations for dedicated assets related to nuclear generation are included in EDF's financial statements at the following values:

(in millions of euros)	31/12/2023	31/12/2022
Provisions for spent fuel management – portion unrelated to the operating cycle as defined in the regulations	1,760	1,607
Provisions for long-term radioactive waste management	13,205	12,475
Provisions for nuclear plant decommissioning	18,419	17,094
Provisions for last cores – portion for future costs of long-term radioactive waste management	605	473
PRESENT COST OF LONG-TERM NUCLEAR OBLIGATIONS	**33,989**	**31,649**

26.6.7 Changes in dedicated assets in 2023

High-risk assets rose in value in 2023, partly making up for the downturn in 2022, due to a favourable economic environment: in the United States particularly, economic growth was very resilient despite tougher financial conditions, and most importantly, the rapid ebb in inflation allowed the central banks to put an end to the cycle of quantitative tightening.

Despite the decline in interest rates observed at the end of the year, equity and bond performances were excellent in 2023.

The listed equities portfolio grew by 18.43% in 2023. In detail, the net performance in euros was 22.69% on North American equities, 14.38% in Europe, 19.20% in Japan and 5.22% in emerging countries.

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The bond portfolio grew by more than 8.59% in 2023 despite significantly fluctuating interest rates. The portfolio benefited from tactical management of interest rate sensitivity, and good performances by credit in general. The sovereign bond portfolio registered growth of 8.02%, the Euro investment grade credit portfolio achieved 9.04%, and the short-term high-yield credit portfolio 6.54%.

EDF Invest continued to extend its portfolio of unlisted assets in 2023, purchasing minority stakes in infrastructures and real estate (logistics, offices), and investing in private equity and private debt funds.

In the second half of 2023, EDF Invest acquired 50% of the Memphis office building in Paris (see the EDF Invest press release of 20 December 2023) and completed the purchase of a 50% share of logistics warehouses in Sweden (Nordic Logistic) on 31 January 2024. In October 2023, EDF Invest signed an agreement as part of a consortium to acquire a stake in the Norwegian electric ferry operator Fjord1. This transport infrastructure investment was completed on 8 February 2024.

At 31 December 2023, dedicated assets registered an overall performance of €1,449 million, comprising €1,349 million in financial result and €100 million in exceptional result. This is principally explained by dividends and interest received (€952 million), reversals of provisions on bonds and investment funds due notably to favourable market trends (€416 million), and gains on sales of investment securities (€100 million).

Note 27 Other provisions for decommissioning

Other provisions for decommissioning principally concern fossil-fired power plants.

The costs of decommissioning fossil-fired power plants are calculated using regularly updated studies based on estimated future costs, measured by reference to the charges recorded on past operations and the most recent estimates for plants still in operation.

The increase over the year is mainly explained by a re-estimation of decommissioning costs incorporating the latest experience gained from recent operations.

Note 28 Provisions for employee benefits

ACCOUNTING PRINCIPLES AND METHODS

In accordance with the statutory regulations for companies in France's electricity and gas sector (IEG), EDF's employees are entitled to post-employment benefits (pension plans, retirement indemnities, etc) and other long-term benefits (*e.g.* long-service awards).

CALCULATION AND RECOGNITION OF EMPLOYEE BENEFIT OBLIGATIONS

EDF recognises post-employment benefits granted to personnel as provisions.

Obligations under defined-benefit plans are calculated by the projected unit credit method, which determines the present value of entitlements earned by employees at year-end to post-employment benefits and long-term benefits, taking into consideration the prospects for wage increases and the country's specific economic conditions.

Post-employment benefit obligations are mainly valued using the following methods and assumptions:

- retirement age, determined on the basis of the applicable rules for each plan, and the requirements to qualify for a full pension;
- career-end salary levels, with reference to employee seniority, projected salary levels at the time of retirement based on the expected effects of career advancement, and estimated trends in pension levels;
- forecast numbers of pensioners, determined based on employee turnover rates and mortality data;
- reversion pensions where relevant, taking into account both the life expectancy of the employee and his/her spouse and the marriage rate for IEG sector employees;
- a discount rate that depends on the duration of the obligations, determined at the year-end date by reference to the market yield on high-quality corporate bonds or the rate on government bonds whose duration is coherent with EDF's commitments to employees.

The amount of the provision takes into account the present value of the fund assets that cover these benefits, which is deducted from the benefit obligations.

Any actuarial gain or loss on post-employment benefit obligations in excess of 10% (the "corridor") of the obligations or fund assets, whichever is the highest, is recognised in the income statement progressively over the average residual working life of the Company's employees.

For other long-term benefits, actuarial gains and losses and the full past service cost are directly included in the provision, without application of the "corridor" rule.

The net expense booked during the year for employee benefit obligations includes:

- the current service cost, corresponding to additional benefit entitlements earned during the year;
- the net interest expense, corresponding to interest on obligations net of the expected return on fund assets;
- the income or expense corresponding to the actuarial gains and losses on long-term benefits and amortisation of actuarial gains or losses on post-employment benefits;
- the past service cost, including the income or expense related to amendments or settlements of benefit plans or introduction of new plans.

POST-EMPLOYMENT BENEFIT OBLIGATIONS

Since the financing reform for the IEG sector system took effect on 1 January 2005, the CNIEG (*Caisse nationale des IEG*, the sector's specific pension body) has managed not only the special IEG pension system, but also the industrial accident, invalidity and death insurance system for the sector.

The CNIEG is a social security body governed by private law, formed by the Law of 9 August 2004. It has legal entity status and reports to the French government, operating under the joint supervision of France's ministers for the Budget, Social Security and Energy.

Under the funding arrangements introduced by the Law, EDF establishes pension provisions to cover entitlements not funded by France's standard systems (CNAV, AGIRC-ARRCO), to which the IEG system is affiliated, or by the CTA (*contribution tarifaire d'acheminement*) levy on gas and electricity transmission and distribution services.

As a result of the system affiliation mechanism, any change (whether favourable or unfavourable to employees) in the standard French pension system that is not passed on to the IEG pension system is likely to cause a variation in the amount of the provisions recorded by EDF to cover its obligations.

The benefit obligations covered by pension provisions include:

- specific benefits of employees in the deregulated or competitive activities;
- specific benefits earned by employees from 1 January 2005 for the regulated activities (island public electricity distribution) (benefits earned before that date are financed by the CTA levy).

CNIEG management expenses payable by EDF for the administration and payment of retired employees' pensions are also included.

Under the pension reform law of 14 April 2023, the special IEG pension system has been discontinued for employees joining the sector from 1 September 2023. These employees will be affiliated to the standard French pension systems (CNAV, AGIRC-ARRCO) but will still be entitled to other benefits associated with IEG status (energy at preferential prices, family benefits, etc) (see note 2.3.2).

In addition to pensions, other benefits are granted to retired IEG status employees (including those hired from 1 September 2023), as detailed below:

- benefits in kind (energy): Article 28 of the IEG national statutes entitles such employees and current employees to benefits in kind in the form of supplies of electricity or gas at preferential prices. The obligation for supplies of energy to employees of EDF and Engie corresponds to the probable present value of kWh to be supplied to beneficiaries or their dependants during their retirement, valued on the basis of the unit cost (which mainly depends on the marginal production cost, the cost of delivery, and taxes). It also includes the balancing payment made under the energy exchange agreement with Engie;
- retirement gratuities: these are paid upon retirement to employees due to receive the statutory old-age pension, or to their dependants if the employee dies before reaching retirement. These obligations are almost totally covered by an insurance policy;
- bereavement benefit: this is paid out upon the death of an inactive or disabled employee, in order to provide financial assistance for the expenses incurred at such a time (Article 26 § 5 of the National Statutes). It is paid to the deceased's principal dependants (statutory indemnity equal to three months' pension, subject to a ceiling) or to a third party that has paid funeral costs (discretionary indemnity equal to the costs incurred);
- bonus pre-retirement paid leave: all employees eligible to benefit immediately from the statutory old-age pension and aged at least 55 at their retirement date are entitled to 18 days of bonus paid leave during the last twelve months of their employment;
- other benefits include help with the cost of studies, time banking for pre-retirement leave, and pensions for personnel sent on secondment to companies not covered by the IEG system.

OTHER LONG-TERM BENEFIT OBLIGATIONS

These benefits concern employees currently in service, and include:

- annuities following incapacity, invalidity, industrial accident or work-related illness. Like their counterparts in the general national system, IEG employees are entitled to financial support in the event of industrial accident or work-related illness, and invalidity and incapacity annuities and benefits. The obligation is measured as the probable present value of future benefits payable to current beneficiaries, including any possible reversions;
- long-service awards;
- specific benefits for employees who have been in contact with asbestos.

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Changes in provisions for employee benefits were as follows:

(in millions of euros)	31/12/2022	Increases		Decreases		31/12/2023
		Operating (1) (4)	Financial (3)	Operating (2) (4)	Financial (5)	
Provisions for post-employment benefits	11,167	592	880	(690)	(368)	11,581
Provisions for long-term benefits	925	82	34	(87)	-	954
PROVISIONS FOR EMPLOYEE BENEFITS	**12,092**	**674**	**914**	**(777)**	**(368)**	**12,535**

(1) Including €292 million for the current service cost, €278 million of vested benefits relating to the past service cost (impact of the French pension reform (see note 2.3.2)), €102 million for amortisation of actuarial losses, and €2 million of unvested benefits relating to past service cost.

(2) Including €(701) million for employers' contributions, €(46) million of vested benefits relating to the past service cost (impact of the French pension reform (see note 2.3.2)), and €(30) million for actuarial gains.

(3) See note 11.

(4) See note 5.

(5) For the expected return on fund assets.

Details of changes in the provisions:

(in millions of euros)	Obligations	Fund assets	Obligations net of fund assets	Unrecognised past service cost	Unrecognised actuarial gains and losses	Provision in the balance sheet
Balance at 31/12/2022	**23,713**	**(9,203)**	**14,510**	**(9)**	**(2,409)**	**12,092**
Net expense for 2023	1,438	(368)	1,070	2	72	1,144
Change in unrecognised past service cost	(10)	-	(10)	10	-	-
Change in unrecognised actuarial gains and losses	(99)	(617)	(716)	-	716	-
Contributions to funds	-	(20)	(20)	-	-	(20)
Benefits paid	(1,109)	428	(681)	-	-	(681)
BALANCE AT 31/12/2023	**23,933**	**(9,780)**	**14,153**	**3**	**(1,621)**	**12,535**

Actuarial gains and losses on obligations amount to €(99) million for 2023, reflecting:

- the €1,868 million change in the discount rate;
- the €(1,082) million change in the inflation rate;
- the €(885) million change in experience adjustments, principally due to changes in assumptions about the social security ceiling and revaluation of CNAV and AGIRC-ARRCO pensions.

Post-employment and long-term employee benefit expenses:

(in millions of euros)	31/12/2023	31/12/2022
Past service cost	292	574
Interest expense (discount effect) (1)	914	419
Expected return on fund assets	(368)	(220)
Amortisation of unrecognised actuarial gains and losses – post-employment benefits	9	197
Change in actuarial gains and losses – long-term benefits	63	(89)
Past service cost – vested benefits (2)	232	-
Past service cost – unvested benefits	2	2
NET EXPENSES FOR POST-EMPLOYMENT BENEFITS AND LONG-TERM BENEFITS	**1,144**	**883**
including:		
Operating expenses (3)	598	684
Financial expenses	546	199

(1) The interest expenses (discount effect) of €914 million are €495 million higher than at 31 December 2022, as a result of the increase in the discount rate between 1 January 2022 (1.3%) and 1 January 2023 (3.9%).

(2) This amounts to €232 million at 31 December 2023 (no equivalent in 2022) as a result of the French pension reform that took effect in 2023.

(3) In 2023, this amount corresponds to increases of €674 million to operating provisions, net of reversals for actuarial gains and losses (€30 million) and vested benefits relating to the past service cost (€46 million).

28.1 Provisions for post-employment benefits

Details of these provisions are shown below:

(in millions of euros)	31/12/2022	Increases		Decreases		31/12/2023
		Operating	Financial	Operating	Financial	
Pensions	7,242	454	686	(494)	(353)	7,535
CNIEG expenses	466	5	14	(23)	-	462
Benefits in kind (energy)	2,546	73	129	(116)	-	2,633
Retirement gratuities	100	26	19	(30)	(15)	100
Other benefits	813	34	32	(28)	-	851
PROVISIONS FOR POST-EMPLOYMENT BENEFITS	**11,167**	**592**	**880**	**(690)**	**(368)**	**11,581**

(in millions of euros)	Obligations	Fund assets	Unrecognised past service cost	Unrecognised actuarial gains and losses	Provision in the balance sheet
Pensions	17,838	(9,351)	-	(952)	7,535
CNIEG expenses	380	-	-	82	462
Benefits in kind (energy)	3,362	-	-	(729)	2,633
Retirement gratuities	522	(414)	3	(11)	100
Other benefits	877	(15)	-	(11)	851
PROVISIONS FOR POST-EMPLOYMENT BENEFITS AT 31/12/2023	**22,979**	**(9,780)**	**3**	**(1,621)**	**11,581**

(in millions of euros)	Obligations	Fund assets	Unrecognised past service cost	Unrecognised actuarial gains and losses	Provision in the balance sheet
Pensions	17,832	(8,812)	-	(1,778)	7,242
CNIEG expenses	339	-	-	127	466
Benefits in kind (energy)	3,310	-	-	(764)	2,546
Retirement gratuities	503	(377)	-	(26)	100
Other benefits	805	(14)	(9)	32	813
PROVISIONS FOR POST-EMPLOYMENT BENEFITS AT 31/12/2022	**22,789**	**(9,203)**	**(9)**	**(2,410)**	**11,167**

28.2 Provisions for other long-term benefits for current employees

The amount of obligations for other long-term benefits awarded to current employees is identical to the corresponding balance sheet provisions.

Details are as follows:

(in millions of euros)	31/12/2022	Increases		Decreases	31/12/2023
		Operating	Financial	Operating	
Annuities following work-related accident and illness	797	61	28	(81)	805
Long service awards	111	21	5	(5)	132
Other	17	-	1	(1)	17
PROVISIONS FOR OTHER LONG-TERM BENEFITS FOR CURRENT EMPLOYEES	**925**	**82**	**34**	**(87)**	**954**

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28.3 Fund assets

Fund assets, managed under an asset/liability model, amount to €9,780 million at 31 December 2023 (€9,203 million at 31 December 2022) and concern the coverage of retirement gratuities and the specific benefits of the special pension system.

The value of fund assets increased during the year, mainly as a result of more favourable trends on the financial markets.

Investments under the contracts concerned break down as follows:

(in millions of euros)	31/12/2023	31/12/2022
TOTAL FUND ASSETS	**9,780**	**9,203**
Assets funding special pension benefits	**9,351**	**8,812**
(%)		
Equities	31%	33%
Monetary bonds	67%	65%
Real estate assets	2%	2%
Assets funding retirement gratuities	**414**	**377**
(%)		
Equities	41%	31%
Monetary bonds	59%	69%
Assets funding other benefits	**15**	**14**

28.4 Actuarial assumptions

The main actuarial assumptions used for provisions for post-employment benefits and long-term employee benefits under the IEG system are summarised below:

- the discount rate is 3.40% at 31 December 2023 (3.90% at 31 December 2022);
- the inflation rate is estimated at 2.00% at 31 December 2023 (2.30% at 31 December 2022);
- the average residual period of employment is 19.89 years;
- the staff turnover rate is considered non-significant;
- the "tarif agent" (special energy price for EDF employees) includes changes in taxes based on that tariff;
- the expected return on fund assets covering past specific benefits under the special pension system is 4.10% for 2023 (1.72% for 2022);
- the expected return on fund assets covering retirement gratuities is 4.27% for 2023 (1.45% for 2022).

The discount rate used for employee benefit obligations is determined by applying the yield rate on high-quality corporate bonds of appropriate duration to maturities corresponding to the future disbursements resulting from these obligations. For longer durations, the calculation also takes into consideration data from a wider selection of corporate bonds adjusted for comparability with the high-quality bonds, as the panel of bonds with these durations is limited.

Changes in the economic and market parameters used led EDF to set the discount rate at 3.40% at 31 December 2023 (3.90% at 31 December 2022). The decrease in the discount rate essentially relates to the decrease in risk-free rates observed at the end of 2023.

The inflation assumption is based on an inflation curve constructed from economic forecasts and inflation-indexed market products.

As a result of changes in the economic and market parameters, the assumed average inflation rate used as the EDF group's benchmark for Euro zone countries is 2.00% at 31 December 2023 (2.30% at 31 December 2022).

The obligations are based on wage increase assumptions that are differentiated by age group and employee category, with an average annual rise of 3.10% including inflation for a projected full career.

Wage law projections from 2024 onwards are based on average wage increases observed in the IEG sector in recent years (adjusted for non-recurring effects).

The mortality table used to calculate obligations is based on the INSEE 2013-2070 generation table (produced by the French statistics office), corrected for differences in mortality between the general French population and the population covered by the IEG regime.

Note 29 Provisions for other expenses and contingent liabilities

29.1 Provisions for other expenses

(in millions of euros)	31/12/2022	Increases	Decreases		Other	31/12/2023
		Operating	Utilisations	Reversals		
Provisions for:						
• personnel expenses	40	42	(28)	(2)	-	52
• replacement of assets operated under concessions	278	13	-	(1)	(4)	286
• other expenses*	1,373	1,062	(1,944)	(11)	-	480
PROVISIONS FOR OTHER EXPENSES	**1,691**	**1,117**	**(1,972)**	**(14)**	**(4)**	**818**

** A provision for other expenses of €854 million was recognised at 31 December 2022 in connection with negotiations with Orano Recyclage concerning the amendment to the recycling agreement for the period 2024-2026. A further allocation of €1,026 million was made during the first half of 2023 in view of the ongoing negotiations, bringing the total provision to €1,880 million at 30 June 2023. Following the signature in September 2023 of an agreement on the principles for the future 2024-2026 amendment to the master agreement with Orano Recyclage for 2008-2040 concerning removal, processing and recycling of spent fuel, this €1,880 million provision was cancelled and an amount of €2,216 million was allocated to the provision for spent fuel management based on the costs associated with the future 2024-2026 amendment, replacing the provision for other expenses previously booked (see notes 5 and 26.1).*

29.2 Contingent liabilities and assets

ACCOUNTING PRINCIPLES AND METHODS

A contingent liability is:

- a potential obligation arising from past events, which will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control; or
- a present obligation arising from past events that is not recognised in the financial statements because an outflow of resources representing economic benefits is unlikely to be necessary to extinguish the obligation, or because the amount of the obligation cannot be measured reliably.

A contingent asset is a potential asset arising from past events, whose existence will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control.

The principal contingent liabilities and assets at 31 December 2023 are the following:

Tax inspections

For the period 2008 to 2019, the French tax authorities questioned the tax-deductibility of certain long-term nuclear liabilities.

Following several judgements and legal proceedings, the Council of State definitively confirmed in a ruling of 31 March 2023 that these nuclear liabilities are not tax-deductible. The accounting and financial consequences of a first, similar decision by the Council of State had been taken into account in the Company's financial statements since 2020.

For the years 2012 to 2019, the French tax authorities questioned the tax-deductibility of other long-term nuclear provisions. In a ruling of 29 August 2022, Montreuil Administrative Court validated the Company's position for one of the contested provisions, but upheld the tax adjustment for the other.

In execution of this decision, the Company filed an appeal against the unfavourable part of the ruling and paid €297 million in 2022 (see note 13.2 to the 2022 financial statements). The Minister has also appealed against the part of the ruling that was favourable to the Company.

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ARENH dispute – *Force majeure*

In the crisis caused by the Covid-19 pandemic, some suppliers requested total suspension of their ARENH deliveries, or partial suspension to the extent of the decrease in electricity consumption by their customer portfolio during the crisis, citing the *force majeure* clause contained in the master ARENH agreement signed with EDF.

Seven cases concerning the substance of the matter were brought by suppliers, claiming compensation from EDF for the prejudice caused by its allegedly unlawful refusal to apply the *force majeure* clause. The suppliers concerned are Hydroption, Vattenfall, Priméo Energie Grands Comptes and Priméo Energie Solutions, Arcelor Mittal Energy, Plüm Energy et Entreprises et Collectivités, TotalEnergies and Ekwateur.

On 13 April 2021, the Paris Commercial Court issued a first judgement on the merits in the Hydroption case, ordering EDF to pay the claimant €5.88 million in damages. The court considered that the conditions for *force majeure* were fulfilled and concluded that in continuing its ARENH deliveries against Hydroption's wishes EDF had committed a breach of contract for which it could be held liable. On 15 October 2021, the Paris Court of Appeal overturned the Commercial Court's judgement insofar as it held EDF liable and ordered it to pay damages to Hydroption, considering that the exemption clause of *force majeure* was not established, and that EDF was not obliged to satisfy a request for suspension of the contract. On 2 December 2021, the Toulon Commercial Court placed Hydroption SAS in liquidation. The liquidator filed an appeal before the Court of Cassation on 19 January 2022. In a ruling of 22 March 2023, the Court of Cassation overturned and cancelled all the terms of the Paris Court of Appeal's verdict, solely on procedural grounds, and sent the case back before the Court of Appeal. EDF thus filed a new appeal before that court, where a hearing before a different panel of judges is scheduled for 26 February 2024.

On 30 November 2021 the Paris Commercial Court issued two more judgements on the merits in the cases brought by TotalEnergies et Ekwateur, ordering EDF to pay damages of €53.9 million to TotalEnergies and €1.8 million to Ekwateur. EDF has appealed against these two judgements.

On 6 December 2022, the Paris Commercial Court issued two further judgements on the merits in the cases brought by Priméo Energie Grands Comptes and Priméo Energie Solutions, ordering EDF to pay these two companies damages of €1.7 million and €2.4 million respectively. EDF has appealed against these two judgements and the proceedings are ongoing.

On 27 March 2023, the Commercial Court confirmed Plüm's withdrawal from the litigation with EDF. On 24 May 2023, the same court dismissed Arcelor Mittal's claims. A certificate of non-appeal was received on 8 November 2023 and these two matters are now closed.

On 16 January 2024, the Paris Commercial Court issued a judgement on the merits of the Vattenfall case, ordering EDF to pay the Company €5 million in damages. EDF may appeal this judgement within one month of its notification.

Investigations by France's Competition Authority (ADLC)

At 31 December 2022 France's Competition Authority (the ADLC) was investigating the EDF group in relation to three separate matters (the referral concerning heat networks, the Plüm complaint, the Xélan complaint).

Following the ex-officio referral to the ADLC on 4 November 2019 concerning the formation of a partnership for heat network operations by EDF, Dalkia, Électricité de Strasbourg, ES Services Energétiques and EDEV, the ADLC issued its decision on 7 December 2023, dismissing the whole of the case.

There were no significant developments in the other ADLC investigations.

Labour litigation

EDF is a party in a number of labour lawsuits. EDF considers that none of these lawsuits, individually, is likely to have a significant impact on its financial results or financial position. However, because they relate to situations that could concern a large number of EDF's employees, any increase in such litigations could have a potentially negative impact on EDF's financial position.

Additionally, EDF regularly undergoes inspections by social security bodies such as URSSAF. A URSSAF inspection of the years 2020 to 2022 was completed in 2023, and the Company expects to receive the conclusions during the first half of 2024.

Litigation with E-Pango

On 14 December 2023 the alternative energy supplier E-Pango filed a claim against EDF, RTE and Enedis before the Paris Commercial Court for full compensation of the prejudice allegedly caused by the termination of its Balance Responsible Entity agreement with RTE. Following that termination E-Pango's authorisation to purchase electricity for resale was suspended, and as a result its customers were switched to a fallback contract with EDF as the temporary supplier.

E-Pango considers that its agreement with RTE was wrongfully terminated, and argues that it was a deliberate exclusion strategy by RTE, with the support of Enedis, for the benefit of EDF.

E-Pango is therefore claiming full compensation for its prejudice, valued at approximately €150 million based particularly on the end of its supply business, and the loss of the economic value of its competitive position.

Given the slightness of E-Pango's case against EDF, the chances that EDF will be cleared of all liability are considered high.

The case has been deferred to 12 February 2024.

Inframarginal revenue cap in Belgium

In Belgium, the inframarginal revenue cap applicable from 1 August 2022 to 30 June 2023 is currently being challenged before the courts, notably regarding the legitimacy of possible retroactive application prior to 1 December 2022. This revenue cap was introduced as part of the European mechanism for capturing inframarginal rents on electricity production, adopted by the European Union on 6 October 2022 (see note 8). The legal challenge is currently under examination by the European authorities.

Note 30 Liabilities

(in millions of euros)	Maturity < 1 year	Maturity 1 -5 years	Maturity > 5 years	Gross value at 31/12/2023	Gross value at 31/12/2022
Liabilities					
Bonds	2,924	11,097	37,393	51,414	48,214
Borrowings from financial institutions	1,026	13,453	664	15,143	17,675
Other borrowings	8,595	5	-	8,600	19,960
Other financial liabilities:					
• advances on consumption	-	9	25	34	27
• other	2,929	2,542	1	5,472	6,637
Financial liabilities (see note 31)	**15,474**	**27,106**	**38,083**	**80,663**	**92,513**
Advances and progress payments received (1)	**2,520**	**-**	**-**	**2,520**	**8,164**
Trade payables and related accounts (2)	9,980	-	57	10,037	16,743
Tax and social security liabilities (3)	7,625	-	-	7,625	6,697
Liabilities related to fixed assets and related accounts	2,520	-	-	2,520	2,244
Other liabilities (4)	30,310	3	3,223	33,536	28,535
Operating, investment and other liabilities	**50,435**	**3**	**3,280**	**53,718**	**54,219**
Cash instruments (5)	**1,737**	**563**	**613**	**2,913**	**4,434**
Deferred income (6)	**632**	**1,054**	**1,681**	**3,367**	**2,949**
TOTAL LIABILITIES	**70,798**	**28,726**	**43,657**	**143,181**	**162,279**

(1) Advances and progress payments received principally include monthly standing order payments by EDF's residential and business customers, amounting to €1,808 million at 31 December 2023 (€7,423 million at 31 December 2022). The decrease in this item is principally explained by the implementation in 2023 of a trade receivables securitisation programme.

(2) The decrease in 2023 mainly concerns liabilities payable to EDF Trading, due to the context of rising prices for electricity and gas at the end of 2022.

(3) At 31 December 2023, the increase in tax and social security liabilities is principally correlated with the rise in VAT collected on sales. This item also includes an amount of €49 million for the TICFE-CSPE to be collected on energy delivered but not yet billed (€60 million at 31 December 2022), since a decrease in the TICFE-CSPE rate has applied since 1 February 2022 for all consumers on regulated-tariff and market-price contracts, as part of the French government's tariff cap measures (see note 3.1).

(4) Mainly the amount of current accounts, underwriting and cash pooling agreements with subsidiaries. At 31 December 2023, other liabilities also include a liability of €2,030 million relating to the CSPE compensation for public energy service charges, compared to €6,074 million at 31 December 2022.

(5) Cash instruments notably include unrealised losses on foreign exchange instruments, and all credit balances for EDF's margin calls on derivatives and transfers of securities under repurchase agreements with banking partners (€1,163 million at 31 December 2023, compared to €1,734 million at 31 December 2022).

(6) Deferred income at 31 December 2023 comprises the partner advances made to EDF under nuclear plant financing plans and the associated long-term contracts, amounting to €2,089 million (€1,777 million in 2022), and the balance of the advance paid to EDF in 2010 under the agreement with the Exeltium consortium. This advance is transferred to the income statement progressively on a straight-line basis over the term of the contract (24 years).
Deferred income also includes the initial payment under the Fessenheim compensation protocol received on 14 December 2020, which is recognised as income in profit and loss as and when the expenses are incurred.

EDF's public service charges

The amount of public service charges to be compensated to EDF for 2023 is €14,126 million, explained as follows:

- an amount of €(2,193) million for purchase obligations in 2023. These expenses are negative because of high market prices, which were above the price of EDF's purchase obligations (see note 4);
- an amount of €13,992 million for the sales revenue shortfall caused by the cap on sale prices to final customers. The electricity tariff cap gave rise to compensation of €12,446 million and the electricity buffer gave rise to compensation of €1,458 million, while the compensation for the gas tariff cap amounted to €88 million (see note 3.1);
- an amount of €2,297 million for surplus generation costs in non-interconnected and solidarity zones.

The amounts received in 2023 out of the State's General Budget totalled €10,010 million, corresponding to the €2,053 million balance outstanding for the year 2022, and payments of €7,957 million for the year 2023.

At 31 December 2023, EDF therefore recognised an operating liability of €2,030 million payable to the State (€6,074 million at 31 December 2021).

The compensation mechanism for public energy service charges in France is presented in note 4.

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Note 31 Financial liabilities

ACCOUNTING PRINCIPLES AND METHODS

Bond redemption premiums and any issue premiums are amortised in equal portions prorated to the duration of the bond (straight-line method), regardless of the redemption pattern, applying the option allowed by Article 212-10 of the French national chart of accounts.

For the specific case of the OCEANE bond issue of September 2020, EDF decided to apply the "two separate operations" method for recognition of the issue premium, and the accrued interest method for amortisation, as allowed by Article 212-10 of the national chart of accounts.

Commissions and external costs paid by EDF upon issuance of borrowings and included in "Deferred charges" are spread on a straight-line basis over the term of the related instruments.

(In millions of euros)	Balance at 31/12/2022	New borrowings	Repayments	Translation adjustments (realised and unrealised)	Other	Balance at 31/12/2023
Bonds *(in euros)*	2,882	-	-	-	(2,390)	492
Bonds *(non-euro)*	11,569	3,330	-	(528)	-	14,371
Euro-Medium Term Notes (EMTN) *(in euros)*	19,173	3,250	(2,000)	-	-	20,423
Euro-Medium Term Notes (EMTN) *(non-euro)*	14,590	1,532	-	6	-	16,128
Bonds [1]	**48,214**	**8,112**	**(2,000)**	**(522)**	**(2,390)**	**51,414**
Long-term loans *(in euros)*	15,142	1,000	(2,685)	-	-	13,457
Long-term loans *(non-euro)*	2,333	-	(563)	(84)	-	1,686
Short-term loans *(in euros)*	200	-	(200)	-	-	-
Borrowings from financial institutions [2]	**17,675**	**1,000**	**(3,448)**	**(84)**	**-**	**15,143**
Negotiable debt instruments *(in euros)*	9,598	-	(4,549)	-	-	5,049
Negotiable debt instruments *(non-euro)*	1,088	-	(1,100)	12	-	-
Contractual financial borrowings	9,274	23,159	(28,883)	1	-	3,551
Other borrowings [3]	**19,960**	**23,159**	**(34,532)**	**13**	**-**	**8,600**
Total borrowings	**85,849**	**32,271**	**(39,980)**	**(593)**	**(2,390)**	**75,157**
Advances on consumption	**27**	**-**	**-**	**-**	**7**	**34**
Miscellaneous advances	5,712	1,356	(4,009)	59	439	3,557 [4]
Bank overdrafts	37	-	-	-	762	799
Deferred bank debits	18	-	-	-	6	24
Interest payable	870	-	-	-	222	1,092
Other financial liabilities	**6,637**	**1,356**	**(4,009)**	**59**	**1,429**	**5,472**
TOTAL FINANCIAL LIABILITIES	**92,513**	**33,627**	**(43,989)**	**(534)**	**(954)**	**80,663**

(1) The increase in bonds results from issues of multi-tranche senior bonds in the total amount of €8,112 million (see notes 2.2.1, 2.2.2, 2.2.4, 2.2.5 and 2.2.6), partly offset by bond redemptions of €(2,000) million and a foreign exchange effect of €(522) million. Also, after the tender offer by the French state and its request to convert the last outstanding OCEANE bonds after the compulsory squeeze-out of 8 June 2023, the bond liability was reduced by €(2,390) million and equity was reinforced accordingly (see note 22.3).

(2) The decrease in these borrowings in 2023 is notably explained by early repayments of drawings on bilateral credit lines amounting to €(3.1) billion, partly offset by new drawings on bilateral credit lines amounting to €1 billion.

(3) The change in other borrowings principally comprises €(5,638) million resulting from redemption of negotiable debt instruments net of issuances (compared to a positive €5,579 million in 2022), and €(5,722) million from transfers of bonds to several banks under repurchase agreements, which gave rise to a cash outflow.

(4) This amount mainly includes €539 million (USD 596 million) corresponding to the redemption option exercised by EDF on 22 January 2024 for the 2014 USD bond issue following the reclassification by EDF from "Additional equity" to "Financial liabilities" since the redemption was considered certain (see notes 2.2.3 and 23). It also includes an amount of €2,551 million (€3,630 million in 2022) of security deposits received as guarantees by EDF which are required to complete transactions on the purchase obligation market, and €304 million relating to factoring programmes.

31.1 Breakdown of loans by currency, before and after hedging instruments

(in millions of euros)	Debt structure in balance sheet				Impact of hedging instruments		Debt structure in balance sheet after hedging			
	Non-Euro	In Euros	% non-Euro	% of debt	Non-Euro	In Euros	Non-Euro	In Euros	% non-Euro	% of debt
TOTAL I – EUROS		**42,972**	**100**	**57**		**25,600**		**68,572**	**100**	**91**
CAD	500	341	1	-	(500)	(341)	-	-	-	-
CHF	875	945	3	1	(875)	(945)	-	-	-	-
GBP	8,034	9,245	29	12	(3,649)	(4,199)	4,385	5,046	77	7
HKD	2,416	280	1	-	(2,416)	(280)	-	-	-	-
JPY	193,000	1,235	4	2	(193,000)	(1,235)	-	-	-	-
NOK	1,000	89	-	-	(1,000)	(89)	-	-	-	-
USD	22,155	20,050	62	28	(20,455)	(18,511)	1,700	1,539	23	2
TOTAL II – NON-EURO CURRENCIES		**32,185**	**100**	**43**		**(25,600)**		**6,585**	**100**	**9**
TOTAL I+II		**75,157**		**100**		**-**		**75,157**		**100**

The nominal value of hedging instruments included in off-balance sheet commitments (see note 33.1) has no effect on loans presented in the balance sheet.

31.2 Breakdown of loans by type of interest rate before and after hedging

(in millions of euros)	Debt structure in balance sheet			Impact of hedging instruments	Debt structure in balance sheet after hedging		
	Total	% 31/12/2023	% 31/12/2022	Total	Total	% 31/12/2023	% 31/12/2022
Long-term borrowings and EMTN	53,042			(24,644)	28,398		
Short-term borrowings	8,036				8,036		
Borrowings at fixed rate	**61,078**	**81**	**74**	**(24,644)**	**36,434**	**48**	**49**
Long-term borrowings and EMTN	13,514			24,644	38,158		
Short-term borrowings	565				565		
Borrowings at floating rate	**14,079**	**19**	**26**	**24,644**	**38,723**	**52**	**51**
TOTAL	**75,157**	**100**	**100**	**-**	**75,157**	**100**	**100**

Note 32 Unrealised foreign exchange gains

Unrealised foreign exchange gains at 31 December 2023 amount to €310 million (€575 million at 31 December 2022), of which €130 million concern a bond in pounds sterling that is entirely hedged by cross-currency swaps and €66 million concern bonds in US dollars that are entirely hedged by cross-currency swaps.

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Other information

Note 33 Financial instruments

ACCOUNTING PRINCIPLES AND METHODS

DERIVATIVES

EDF uses derivatives in order to minimise the impact of foreign exchange risks and interest rate risks.

These derivatives comprise interest rate and currency derivatives such as futures, forwards, swaps and options traded on the over-the-counter market.

The application at 1 January 2017 of ANC regulation 2015-05 concerning forward financial instruments and hedging operations led to recognition of unrealised gains on the foreign exchange optimisation portfolio, and the unrealised gain or loss on currency derivatives classified as hedging instruments, in the balance sheet in the revaluation surplus accounts created by the regulation. These accounts are netted with the unrealised foreign exchange gains or losses booked in respect of the hedged items.

Hedging derivatives correct the foreign exchange result or interest income on the corresponding asset or liability. If the foreign exchange risk is fully hedged, no provision is recorded. If it is only partly hedged, a provision is recorded for the entire unhedged portion of the unrealised loss.

For other instruments, when there is no hedging relationship, a provision is recorded for unrealised losses and unrealised gains are not recognised.

Instruments in the portfolio at the year-end are included in off-balance sheet commitments at the nominal value of the contracts.

COMMODITY CONTRACTS

Forward financial instruments on commodities are traded for hedging purposes. Gains and losses on these operations are included in sales or in the cost of energy purchases, symmetrically to the hedged items, in accordance with ANC regulation 2015-05 concerning forward financial instruments and hedging operations, which has been applicable since 1 January 2017.

Instruments in the portfolio at the year-end are included in off-balance sheet commitments at the quantities to be delivered or received under the contracts.

33.1 Off-balance sheet commitments related to currency, interest rate and commodity derivatives

EDF uses financial instruments to limit the impact of foreign exchange rate risks and interest rate risks.

(in millions of euros)	31/12/2023 To be received (notional)	31/12/2023 To be given (notional)	31/12/2022 To be received (notional)	31/12/2022 To be given (notional)
1 – Interest rate transactions				
Short-term interest rate swaps				
EUR	-	-	-	-
Long-term interest rate swaps				
EUR	19,677	19,677	16,196	16,196
USD	5,801	5,801	4,335	4,335
GBP	3,556	3,556	3,794	3,794
CAD	341	341	-	-
Sub-total	**29,375**	**29,375**	**24,325**	**24,325**
2 – Exchange rate transactions				
Forward transactions and forex options				
EUR	48,176	40,688	47,257	42,586
CAD	209	412	168	391
USD	24,546	26,657	28,772	27,583
GBP	12,951	16,481	11,990	16,577
CHF	468	713	255	557
ILS	382	382	757	757
PLN	208	256	206	250
JPY	188	1,201	388	851
CNY	997	991	1,095	1,095
MXN	162	162	128	128
BRL	566	566	257	257
NOK	329	329	-	-
Other currencies	282	387	277	387
Long-term currency swaps				
EUR	4,294	42,481	3,785	36,262
JPY	1,235	51	1,244	57
CAD	683	-	-	-
USD	21,648	1,871	18,143	1,891
GBP	18,632	2,897	17,298	2,208
CHF	945	-	559	-
ILS	65	65	77	77
PLN	-	31	10	24
NOK	89	-	95	-
HKD	280	-	291	-
Sub-total	**137,335**	**136,621**	**133,052**	**131,938**
3 – Securitisation swaps	-	-	-	-
4 – Operations on marketable securities	-	-	-	-
Purchases and sales of stock options				
TOTAL FINANCIAL OFF-BALANCE SHEET COMMITMENTS	**166,710**	**165,996**	**157,377**	**156,263**
5 – Commodity swaps				
Oil products *(in thousands of barrels)*	4,616	4,616	5,392	5,392
Coal *(in millions of tonnes)*	-	-	-	-
Electricity products *(in TWh)*	24	38	15	11

The amounts shown in the above table are the nominal values of contracts originally in euros or translated into euros using 2023 year-end exchange rates (regardless of whether they are classified as hedges). For commodities, the amounts shown are the nominal hedged volume in the relevant unit of measurement.

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33.2 Impacts of financial instrument transactions on net income

(in millions of euros)	2023	2022
Instruments not classified as hedges		
Interest rate instruments*	294	252
Forex instruments	161	(607)
Instruments classified as hedges		
Interest rate instruments	128	730
Forex instruments	(42)	(95)

** Including interest on swaps.*

33.3 Fair value of derivative financial instruments

The fair value of currency and interest rate swaps was calculated by discounting future cash flows using year-end market exchange and interest rates, over the remaining term of the contracts (market value includes accrued interest).

The book value of derivatives presented at nominal value in off-balance sheet commitments includes accrued interest, equalisation payments and premiums paid or received, plus translation adjustments, which are already booked in EDF's accounts. The difference between the resulting book value and market value of these instruments is the unrealised gain or loss.

The market value of derivative financial instruments presented at nominal value in off-balance sheet commitments at 31 December 2023 as calculated by EDF is as follows:

(in millions of euros)	Book value	Fair value
Interest rate hedges		
• Interest rate swaps	49	442
Exchange rate hedges		
• Forward exchange transactions, currency swaps and forex options	41	149
• Cross Currency Swaps	436	1,043
Commodity hedges		
• Coal	-	-
• Electricity products	-	763
• Oil products	-	(29)
TOTAL	**526**	**2,368**

Note 34 Other off-balance sheet commitments and operations

At 31 December 2023, off-balance sheet commitments related to operations, financing and investments (other than electricity supply commitments and partnership agreements) comprise the following:

	Maturity					
(in millions of euros)	< 1 year	1 -5 years	5 -10 years	> 10 years	31/12/2023	31/12/2022
Off-balance sheet commitments given	**20,012**	**19,469**	**9,540**	**10,184**	**59,205**	**69,483**
Operating commitments	9,044	14,247	9,193	8,733	41,217	49,606
• *Fuel and energy purchase commitments*	*5,583*	*10,034*	*8,780*	*7,027*	*31,424*	*38,545*
• *Other operating commitments*	*3,461*	*4,213*	*413*	*1,706*	*9,793*	*11,061*
Investment commitments	3,971	3,269	347	23	7,610	6,401
Financing commitments	6,997	1,953	-	1,428	10,378	13,476
Off-balance sheet commitments received	**5,504**	**10,687**	**259**	**301**	**16,751**	**16,379**
Operating commitments	1,218	736	259	301	2,514	2,572
Investment commitments	31	15	-	-	46	79
Financing commitments	4,255	9,936	-	-	14,191	13,728

34.1 Commitments given

In almost all cases, commitments given are reciprocal, and the third parties concerned are under an obligation to supply EDF with assets or services related to operating, investing and financing transactions.

At 31 December 2023, these commitments mature as follows:

	Maturity					
(in millions of euros)	< 1 year	1 -5 years	5 -10 years	> 10 years	31/12/2023	31/12/2022
Electricity purchases and related services	3,760	3,740	3,815	5,090	16,405	23,694
Nuclear fuel purchases	1,823	6,294	4,965	1,937	15,019	14,851
FUEL AND ENERGY PURCHASE COMMITMENTS	**5,583**	**10,034**	**8,780**	**7,027**	**31,424**	**38,545**

Electricity purchases and related services

Electricity purchase commitments mainly concern:

- Island Energy Systems (SEI), which have given commitments to purchase electricity generated from bagasse and coal, and electricity generated by the plants of EDF's subsidiary PEI;
- hedging contracts: these are forward purchases, for which the volumes and prices are set in contracts with EDF Trading.

In addition to the obligations reported above and under Article 10 of the Law of 10 February 2000, in mainland France EDF is obliged to purchase, at the producer's request and subject to compliance with certain technical features, the power produced by co-generation plants and renewable energy generation units (wind turbines, small hydro-electric plants, photovoltaic power, etc).

The additional costs generated by this obligation are compensated, after validation by the CRE, by the CSPE. These purchase obligations total 50TWh for 2023 (50TWh in 2022), including 5TWh for cogeneration (6TWh in 2022), 23TWh for wind power (22TWh in 2022), 14TWh for photovoltaic power (13TWh in 2022) and 2TWh for hydropower (3TWh in 2022).

Nuclear fuel purchases

Commitments for purchases of nuclear fuel arise from supply contracts for the nuclear plants intended to cover EDF's needs for uranium and fluoration, enrichment and fuel assembly fabrication services.

34.2 Commitments received

34.2.1 Operating commitments

These commitments mainly comprise:

- operating lease commitments received as lessor;
- operating guarantees received;

34.2.2 Financing commitments

These commitments correspond to the total value of credit lines available to EDF from various banks.

34.1.1 Fuel and energy purchase commitments

In the course of its ordinary generation and supply activities, EDF has entered into long-term contracts for purchases of electricity, other energies and commodities and nuclear fuel, for periods of up to 20 years.

34.1.2 Other operating commitments

These are commitments undertaken by EDF when it signs orders relating to operations or contracts in progress, related guarantees, and commitments as lessee under irrevocable operating leases principally for premises, equipment and vehicles. The corresponding rents are subject to renegotiation at intervals defined in the contracts.

34.1.3 Investment commitments

Investment commitments essentially comprise commitments for acquisitions of property, plant and equipment.

Until the final investment decision is made for the EPR 2 project, the related off-balance sheet commitments reflect EDF's unavoidable commitments, not the total value of the contracts signed.

34.1.4 Financing commitments

These are financing commitments made by EDF to its subsidiaries. The decrease in these commitments principally concerns EDF Trading (€(1,900) million comprising €(1,400) million to finance purchase obligations and €(500) million to finance margin calls on the energy market) and EDF International (€(970) million relating to the financing of the HPC project).

- operating sale commitments, essentially concerning engineering services for the HPC project and and the licence agreement between EDF and Nuward concerning patents and knowhow for the Nuward SMR project;
- personnel secondment commitments for Edvance.

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34.3 Other types of commitment

34.3.1 Electricity supply commitments

In the course of its business, EDF has signed long-term electricity sale contracts, principally:

- long-term contracts with a number of European electricity operators, for a specific plant or for a defined group of plants in the French nuclear generation fleet, corresponding to installed power capacity of 3GW;
- in execution of France's "NOME" Law on organisation of the French electricity market, EDF has a commitment to sell some of the energy generated by its existing nuclear power plants to other suppliers on the French market, until 31 December 2025. This has concerned a maximum volume of up to 120TWh each year since enactment of the law of 16 August 2022.

34.3.2 Gas purchases and related services

Gas purchase commitments are given by EDF in connection with its expanding gas supply business.

Gas purchases for supply, delivery and storage are mostly undertaken through long-term contracts and forward purchases from EDF Trading.

In 2020, EDF signed a 5-year purchase contract for 0.5 billion m^3 of gas per year from Norway.

In 2014, EDF signed a contract for LNG imports from the United States, for an annual supply of 0.8 million tonnes of LNG (1 billion m^3 of natural gas per year) over a 20-year period starting from May 2020.

In 2020 EDF also signed a 20-year purchase contract for LNG from the United States (1 million tonnes per year, *i.e.* 1.4 billion m^3 of natural gas). Deliveries under this contract are due to begin in 2026.

Under the contract with the Dunkerque LNG methane terminal, EDF also benefits from approximately 61% of the terminal's regasification capacities until 2037, in return for payment of an annual premium of approximately €150 million. A provision for onerous contracts has been recorded in connection with this contract since 2018.

In 2023 EDF signed a purchase contract with Edison for 12.36 billion m^3 of LNG from the United States over the period 2023-2026.

Note 35 Related parties

35.1 Relations with the French State

Following the compulsory squeeze-out on 8 June 2023 and the purchase of treasury shares, the French State holds 100% of the capital of EDF at 31 December 2023, and is thus entitled in the same way as any majority shareholder to control decisions that require approval by the shareholders.

In accordance with the legislation applicable to all companies having the French State as their majority shareholder, EDF is subject to certain inspection procedures, in particular economic and financial inspections by the State, audits by the French Court of Auditors (Cour des comptes) or Parliament, and verifications by the French General Finance Inspectorate (Inspection générale des finances).

The public service contract between the French State and EDF was signed on 24 October 2005. This contract is intended to form the framework for public service missions assigned to EDF by the lawmaker for an unlimited period. The Law of 9 August 2004 does not stipulate the duration of the contract.

35.2 Relations with Engie

Concerning the common service of LPG distribution and supply in the cities of Ajaccio and Bastia in Corsica, following adoption of Article 96 of France's Finance Law for 2022, decree 2023-554 of 30 June 2023 introducing a simplified modification of Corsica's multi-year energy programme stipulated that the Corsican LPG networks would cease operations on 31 December 2038 and set out measures for progressive discontinuation of use from 2024.

Another decree, 2023-872 of 12 September 2023, defines the terms on which the State will bear part of the costs associated with conversion of the LPG uses to electricity or renewable energies.

The tender procedures for the Ajaccio and Bastia concessions are still in process. The CRE is currently examining the offers made by Engie with a view to awarding the concessions by the summer of 2024.

These developments have no impact for EDF at this stage, but once the concession renewals are finalised EDF will be required to work on some pilot sectors, to determine the schedule for progressive discontinuation of LPG use over the next 15 years. Ultimately, the prospect of ending LPG distribution operations and converting uses to electricity will need investments to reinforce the electricity distribution networks.

35.3 Relations with public sector entities

EDF's relations with public sector entities mainly concern Orano.

Transactions concern:

- the front-end of the nuclear fuel cycle (uranium supplies, conversion and enrichment services);
- the back-end of the nuclear fuel cycle (transportation, storage, processing and recycling services for spent fuel).

Front-end of the cycle

Several important agreements exist between EDF and Orano:

- for supplies of natural uranium: Orano Mining contracts;
- for fluoration and enrichment of natural uranium into uranium 235: an Orano Chimie-Enrichissement contract.

Back-end of the cycle

Relations between EDF and Orano Recyclage concerning transportation, processing and recycling of spent fuels are described in note 26.

Note 36 Management compensation

The Company's key management and governance personnel are the Chairman and CEO and the directors. In application of the law, directors representing the employees receive no remuneration for their services.

The total gross compensation (salaries and all types of benefits, excluding employer contributions) paid by the Company to its key management and governance personnel in 2022 and 2023 was as follows:

(in euros)	2023	2022
Jean-Bernard LEVY, Chairman and CEO [1]	n.a	407,333
Luc REMONT, Chairman and CEO [2]	450,000	47,727 [3]
Directors [4]	530,163 [5]	437,367 [6]

(1) Jean-Bernard Lévy exercised the functions of director and Chairman and CEO of EDF until the appointment of Luc Rémont as Chairman and CEO on 23 November 2022. The remuneration paid to him for 2022 was prorated until the date of his resignation, and comprises fixed annual compensation and benefits in kind.

(2) At its meeting of 16 February 2023 the Board of Directors decided to keep Luc Rémont's gross fixed annual compensation at €450,000 for 2023, the same as the gross fixed annual compensation set for the Chairman and CEO for 2022.The Chairman and CEO received no benefits in kind in 2023.

(3) Prorated from the time of Luc Rémont's appointment as EDF's Chairman and CEO on 23 November 2022.

(4) The General Shareholders' Meeting of 28 June 2023 approved the Board of Directors' proposal to set the annual budget for directors' fees at €460,000 for 2023 in application of Article L. 225-45 of the French Commercial Code, plus an additional budget of €90,000 for certain directors for their participation in a working group and an ad hoc Board committee.

(5) This amount includes directors' fees paid in 2023 to directors whose terms of office ended during 2022, amounting to a total €36,294.

(6) This amount includes directors' fees paid in 2022 to directors whose terms of office ended during 2021 or 2022, amounting to a total €109,140.

Note 37 Subsequent events

Apart from the point reported below and the events mentioned in notes 2.1.4, 3.1, 26.6.7 and 29.2, no event has arisen subsequent to the year-end.

37.1 Acquisition by EDF of Assystem's minority stake in Framatome

On 25 January 2024 EDF acquired the 5% stake in Framatome held by the minority shareholder Assystem, for €205 million.

This acquisition raised EDF's investment in the Framatome Group to 80.5% from the completion date.

6.4 Statutory Auditors' report on the financial statements

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For the financial year ended on 31 December 2023

This is a free translation into English of the Statutory Auditors' report issued in French and is provided solely for the convenience of English speaking readers. This report includes information specifically required by European regulations or French law, such as information about the appointment of Statutory Auditors. This report should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France.

To the Shareholders,

Opinion

In compliance with the engagement entrusted to us by your General Meeting, we have audited the accompanying financial statements of Électricité de France SA ("EDF" or "the Company") for the financial year ended on 31 December 2023.

In our opinion, the financial statements give a true and fair view of the assets and liabilities and of the financial position of the Company at 31 December 2023 and of the results of its operations for the year then ended in accordance with French accounting principles.

The audit opinion expressed above is consistent with our report to the Risk and Audit Committee.

Basis for opinion

Audit framework

We conducted our audit in accordance with professional standards applicable in France. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under these standards are further described in the "Responsibilities of the Statutory Auditors relating to the audit of the financial statements" section of our report.

Independence

We conducted our audit engagement in compliance with the independence rules provided for in the French Commercial Code (*Code de commerce*) and the French Code of Ethics (*Code de déontologie*) for Statutory Auditors for the period from 1 January 2023 to the date of our report, and, in particular, we did not provide any non-audit services prohibited by Article 5(1) of Regulation (EU) No. 537/2014.

Justification of assessments – Key audit matters

In accordance with the requirements of Articles L.821-53 and R.821-180 of the French Commercial Code relating to the justification of our assessments, we inform you of the key audit matters relating to the risks of material misstatement that, in our professional judgement, were the most significant in our audit of the financial statements, as well as how we addressed those risks.

These matters were addressed as part of our audit of the financial statements as a whole, and therefore contributed to the opinion we formed as expressed above. We do not provide a separate opinion on specific items of the financial statements.

Measurement of provisions related to nuclear generation in France – back-end of the nuclear cycle, plant decommissioning and last cores – and dedicated assets

Notes 1.2.2, 16 and 26 to the financial statements

Description of risk

At 31 December 2023, the provisions recorded to cover obligations relating to nuclear power plants for which EDF is the operator in France amounted to €48,220 million, of which €27,081 million related to the back-end of the nuclear cycle (management of spent fuel and radioactive waste) and €21,139 million related to the decommissioning of nuclear power plants and last cores.

Measurement of these provisions depends on the regulatory context which is described in Notes 1.2.2 and 26 to the financial statements. It requires defining technical and financial assumptions and using complex calculation models.

These are updated and the assumptions used in the models are reviewed at least once a year. The assumptions used reflect Management's best estimate at the reporting date of the impacts of the applicable regulations and the implementation of decommissioning, spent fuel management and radioactive waste storage and disposal processes. They also take into account changes in the main financial parameters, *i.e.* inflation and discounting. In particular, as in 2022, they reflect the impacts of the adjustment to the economic conditions connected to the inflationary context. As in previous years, changes in provisions also reflect expenses and fuel costs incurred during the year.

Furthermore, in accordance with the provisions of the French law of 28 June 2006 on the sustainable management of radioactive materials and waste, and its implementing regulations on securing the financing of nuclear liabilities, the Company is required to allocate so-called "dedicated" assets to secure the financing of its long-term obligations.

How our audit addressed this risk

We analysed the measures for recognizing provisions related to nuclear generation in France. We gained an understanding of the industrial scenarios for decommissioning nuclear power plants and the technical solutions adopted for managing spent fuel and radioactive waste. We assessed the compliance of the methods for determining the provisions with regard to the applicable accounting, legal and regulatory requirements.

We verified the integrity of the calculation models used by the Company and assessed the assumptions used in terms of costs, forecast cash outflows, progress of field work compared to expenses incurred and financial parameters (discount and inflation rates).

We also verified the type of costs used to determine the provisions and assessed the reconciliation of forecast costs and forecast cash outflows were consistent with the industrial scenarios used as well as the available studies and quotes, taking into account changes during the year.

We also assessed the appropriateness of:

- margins for risks and uncertainties included the provisions to take account of the degree of control over the decommissioning techniques to be performed and the uncertainties involved in assessing future costs on the basis of their measurement;
- the series and pooling effects used in the quotes to calculate the cost of decommissioning nuclear power plants in operation, and feedback from the preparation to decommission the reactors at the Fessenheim power plant from 2021 onwards, with a view to taking them into account for other nuclear power plants.

The law stipulates that the realisable value of the dedicated assets must be greater than the value of the provisions corresponding to the discounted cost of the obligations financed by these assets (see Note 26.6 to the financial statements).

Dedicated assets include (i) so-called yield assets, comprising infrastructure assets, including CTE securities and property; (ii) so-called growth assets, comprising listed and unlisted equity funds; and (iii) so-called fixed income assets, comprising listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

Their realisable value was €36,885 million (for a net carrying amount of €31,247 million) at 31 December 2023.

We deemed the measurement of the provisions relating to nuclear generation and of the dedicated assets to be a key audit matter owing to:

- the sensitivity of the assumptions on which the measurement of these provisions is based, particularly in terms of assumptions and industrial scenarios for decommissioning, spent fuel reprocessing and waste storage, the costs, uncertainties and contingencies taken into account, inflation and long-term discount rates, the depreciation period of nuclear power plants in operation and forecast cash outflows; a change in these parameters could lead to a material revision in the amounts provisioned; and
- the negative impacts on the Company's financial position (cash earmarked to increase the amount of dedicated assets) in the event of an increase in nuclear provisions in France, a decrease in the realisable value of dedicated assets or a change in the regulatory coverage rate of nuclear provisions by dedicated assets,
- it being specified that the measurement of provisions covers and includes uncertainties related to the fact that certain scenarios and technical solutions have never been implemented.

With regard to the inflation and discount rates and the methods used by Management to calculate them, as described in Note 26.5 to the financial statements, we verified their compliance with accounting standards and the regulatory framework applicable since 2020. We reconciled the data used for this purpose with available market data and benchmarks.

With regard to dedicated assets, we reconciled their realisable value shown in Note 26.6.5 to the financial statements with depositary statements, stock market values or, where applicable, with valuations carried out by external experts appointed by the Company.

Lastly, we verified the reconciliation of data relating to the determination of provisions with the financial statements and the appropriateness of the disclosures provided in the notes to the financial statements, in particular regarding the sensitivity of the measurement of provisions relating to nuclear power generation to changes in macro-economic and technical assumptions (see Note 26.5.3 to the financial statements).

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Measurement of equity investments

Notes 1.2.6 and 16 to the financial statements

Description of risk

At 31 December 2023, the net carrying amount of equity investments was €50,699 million. Equity investments are recorded at acquisition cost, including transfer taxes, fees, commissions and legal costs directly related to the acquisition.

As stated in Note 16 to the financial statements, equity investments are measured at the end of each reporting period on the basis of their value in use. When the carrying amount of equity investments is greater than their value in use, an impairment loss is recorded corresponding to the difference.

The value in use is calculated:

- by reference to the value of the entity's consolidated shareholders' equity in the consolidated financial statements;
- where the value of consolidated shareholders' equity is less than the net carrying value of the investments, on the basis of projected discounted future cash flows, calculated using the best information available at the reporting date. For the first few years, the flows correspond to the Budget and then to the Medium-Term Plan (MTP). Beyond the MTP timeframe, cash flows are estimated on the basis of long-term assumptions developed as part of a financial trajectory and scenario process that is updated annually.

Estimating the value in use of equity investments requires significant judgement by Management in selecting valuation methods and the factors to be considered, which may be historical (*e.g.* shareholders' equity) or forecast (*e.g.* cash flow assumptions).

In view of the significant amount represented by equity investments and the judgement required to estimate value in use and the sensitivity of these estimates to changes in the data and assumptions on which they are based, we considered the measurement of equity investments to be a key audit matter.

How our audit addressed this risk

Our audit procedures mainly consisted in:

- reviewing, on the basis of information provided by Management, the valuation methods used by the Company;
- comparing the data used to perform impairment tests on investments with the accounting data of subsidiaries, where applicable;
- reviewing the methods and assumptions used to determine the value in use of equity investments (shareholders' equity or cash flow assumptions);
- with regard to cash flows, checking that the forecasts are consistent with (i) budget data and the Medium-Term Plan for the first few years and, beyond that, with the long-term assumptions made by the Company; (ii) past performance; and (iii) the expected useful life of the assets;
- verifying the accuracy of the calculation of values in use used by the company;
- assessing the appropriateness of the information provided in note 16 to the financial statements.

Specific verifications

In accordance with professional standards applicable in France, we have also performed the specific verifications required by French legal and regulatory provisions.

Information given in the management report and in the other documents provided to the shareholders with respect to the Company's financial position and the financial statements

We have no matters to report as to the fair presentation and the consistency with the financial statements of the information given in the Board of Directors' management report and in the other documents provided to the shareholders with respect to the Company's financial position and the financial statements.

We attest to the fair presentation and the consistency with the financial statements of the information about payment terms referred to in Article D.441-6 of the French Commercial Code.

Report on corporate governance

We attest that the Board of Directors' report on corporate governance sets out the information required by Articles L.225-37-4 and L.22-10-10 of the French Commercial Code.

Other verifications and information pursuant to legal and regulatory requirements

Presentation of the financial statements to be included in the annual financial report

In accordance with professional standards applicable to the Statutory Auditors' procedures for annual and consolidated financial statements presented according to the European single electronic reporting format, we have verified that the presentation of the financial statements to be included in the annual financial report referred to in paragraph I of Article L.451-1-2 of the French Monetary and Financial Code (*Code monétaire et financier*) and prepared under the Chairman and Chief Executive Officer's responsibility, complies with this format, as defined by European Delegated Regulation No. 2019/815 of 17 December 2018.

On the basis of our work, we conclude that the presentation of the financial statements to be included in the annual financial report complies, in all material respects, with the European single electronic reporting format.

It is not our responsibility to ensure that the financial statements to be included by the Company in the annual financial report filed with the AMF correspond to those on which we carried out our work.

Appointment of the Statutory Auditors

We were appointed Statutory Auditors of Électricité de France SA by the General Meetings held on 6 June 2005 for KPMG SA and on 28 June 2023 for PricewaterhouseCoopers Audit.

At 31 December 2023, KPMG SA and PricewaterhouseCoopers Audit were in the 19th and 1st consecutive year of their engagement, respectively.

Responsibilities of Management and those charged with governance for the financial statements

Management is responsible for preparing financial statements giving a true and fair view in accordance with French accounting principles, and for implementing the internal control procedures it deems necessary for the preparation of financial statements that are free of material misstatement, whether due to fraud or error.

In preparing the financial statements, Management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern, and using the going concern basis of accounting, unless it expects to liquidate the Company or to cease operations.

The Risk and Audit Committee is responsible for monitoring the financial reporting process and the effectiveness of internal control and risk management systems, as well as, where applicable, any internal audit systems, relating to accounting and financial reporting procedures.

The financial statements were approved by the Board of Directors.

Responsibilities of the Statutory Auditors relating to the audit of the financial statements

Objective and audit approach

Our role is to issue a report on the financial statements. Our objective is to obtain reasonable assurance about whether the financial statements as a whole are free of material misstatement. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with professional standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions taken by users on the basis of these financial statements.

As specified in Article L.821-55 of the French Commercial Code, our audit does not include assurance on the viability or quality of the Company's management.

As part of an audit conducted in accordance with professional standards applicable in France, the Statutory Auditors exercise professional judgement throughout the audit. They also:

- identify and assess the risks of material misstatement in the financial statements, whether due to fraud or error, design and perform audit procedures in response to those risks, and obtain audit evidence considered to be sufficient and appropriate to provide a basis for their opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of the internal control procedures relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates made by Management and the related disclosures in the notes to the financial statements;
- assess the appropriateness of Management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. This assessment is based on the audit evidence obtained up to the date of the audit report. However, future events or conditions may cause the Company to cease to continue as a going concern. If the Statutory Auditors conclude that a material uncertainty exists, they are required to draw attention in the audit report to the related disclosures in the financial statements or, if such disclosures are not provided or are inadequate, to issue a qualified opinion or a disclaimer of opinion;
- evaluate the overall presentation of the financial statements and assess whether these statements represent the underlying transactions and events in a manner that achieves fair presentation.

Report to the Audit Committee

We submit a report to the Risk and Audit Committee which includes, in particular, a description of the scope of the audit and the audit programme implemented, as well as the results of our audit. We also report any significant deficiencies in internal control that we have identified regarding the accounting and financial reporting procedures.

Our report to the Audit Committee includes the risks of material misstatement that, in our professional judgement, were the most significant for the audit of the financial statements and which constitute the key audit matters that we are required to describe in this report.

We also provide the Risk and Audit Committee with the declaration provided for in Article 6 of Regulation (EU) No. 537/2014, confirming our independence within the meaning of the rules applicable in France, as defined in particular in Articles L.821-27 to L.821-34 of the French Commercial Code and in the French Code of Ethics for Statutory Auditors. Where appropriate, we discuss any risks to our independence and the related safeguard measures with the Audit Committee.

Paris La Défense and Neuilly-sur-Seine, 15 February 2024

The Statutory Auditors

KPMG SA		**PricewaterhouseCoopers Audit**	
Marie Guillemot	Jacques-François Lethu	Séverine Scheer	Cédric Haaser

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6.5 Dividend policy

6.5.1 Dividends and interim dividends paid in the last three financial years

The amount of dividends and interim dividends paid in the last three financial years was as follows:

Financial year	Number of shares	Dividend per share *(in euros)*	Total dividends paid[1] *(in euros)*	Dividend payment date
2020	3,099,923,579	0.21[2]	652,259,998.76[3]	7 June 2021
2021	3,736,934,708	0.58[4]	1,997,314,793.63[5]	13 June 2022

(1) After deduction of treasury shares.

(2) i.e. €0.231 in 2020 for the shares benefiting from the increased dividend.

(3) The remaining €652,259,998.76 of the dividend for 2020, paid on 7 June 2021, comprised €616,146,887.12 in new shares and €36,113,111.64 in cash.

(4) i.e. €0.638 in 2021 for the shares benefiting from the increased dividend.

(5) Of which €947,074,231.20 in interim dividends paid on 2 December 2021 for that year comprising €898,992,407.92 in new shares, €48,081,668.10 in cash and a balancing payment of €155.18. The remaining €1,050,240,562.43 of the dividend for 2021, paid on 13 June 2022, comprised €978,699,524.40 in new shares, €71,540,908.35 in cash and a balancing payment of €129.68.

The General Meeting of Shareholders of 28 June 2023 did not vote to distribute an interim dividend for the 2022 financial year.

The Board of Directors, at its meeting of 15 February 2024, decided to propose to the General Meeting of Shareholders, which will be called to approve the financial statements for the financial year ended on 31 December 2023 and which will be held on 11 June 2024, that no dividend be paid for the financial year ended on 31 December 2023.

6.5.2 Dividend policy, increased dividend

The dividend policy formulated by the Board of Directors takes the Group's investment needs, the economic context and any other relevant factor into account.

In accordance with the amendment to the articles of association adopted by the General Meeting of 24 May 2011, the first increased dividend was paid in 2014 for the 2013 financial year. Shareholders holding their shares in registered form for at least two years are entitled to an increased dividend. The number of shares eligible for the 10% increased dividend may not exceed 0.5% of the share capital for a single shareholder.

On 21 November 2014, the General Meeting amended the articles of association to the effect of authorising it to approve the payment of any dividend, interim dividend, reserves or premium that is distributed or any reduction in capital, through delivery of the Company's assets, including financial securities.

6.5.3 Unclaimed dividends

Dividends not claimed within five years of their payment date lapse in favour of the French State.

6.6 Other information

6.6.1 Table of results for the last five financial years

	2023	2022	2021	2020	2019
Capital at year end					
Share capital *(in millions of euros)*	2,084	1,944	1,619	1,550	1,552
Capital contributions *(in millions of euros)*					
Number of ordinary shares in existence	4,168,730,082	3,887,718,420	3,238,676,748	3,099,923,579	3,103,621,086
Number of priority dividend shares (with no voting rights) in existence					
Maximum number of future shares to be created					
by conversion of bonds					
by exercise of subscription rights					
Operations and net income for the financial year *(in millions of euros)*					
Sales excluding taxes	90,291	87,129	53,001	44,315	46,155
Income before tax, employee profit-sharing, depreciation, amortisation and provisions	23,182	(22,745)	9,177	8,051	7,639
Income tax	1,831	(147)[2]	1,410	(406)[2]	605
Employee profit-sharing for the year					
Income after tax, employee profit-sharing, depreciation, amortisation and provisions	7,710	(30,648)	1,457	222	1,593
Dividends			1,997[1]	652	
Interim dividends			947		457
Earnings per share *(euros/share)*					
Income after tax and employee profit-sharing but before depreciation, amortisation and provisions	5.12	(5.81)	2.40	2.73	2.27
Income after tax, employee profit-sharing, depreciation, amortisation and provisions	1.85	(7.88)	0.45	0.07	0.51
Dividend per share			0.58[3][4]	0.21[3]	
Interim dividend per share			0.30	0	0.15
Employees					
Average number of employees over the year	63,186	61,607	62,035	62,462	63,530
Total payroll expense for the year *(in millions of euros)*	4,244	3,981	3,720	3,694	3,654
Amounts paid for social benefits for the year (social security, Company benefit schemes, etc.) *(in millions of euros)*	2,827	2,634	2,687	2,745	2,799

(1) Including interim dividends paid out.
(2) Amount corresponding to a tax income.
(3) i.e. €0.231 for the shares benefiting from the increased dividend.
(4) i.e. €0.638 for the shares benefiting from the increased dividend.

6.6.2 Significant change in the financial or trading position

The significant events occurring between the last day of the 2023 financial year and the date of the filing of this Universal Registration Document are mentioned in note 23 "Subsequent events" of the appendix to the consolidated financial statements of the financial year ended on 31 December 2023 for events which occurred before 15 February 2024, when the Board of Directors approved the financial statements and, for events which occurred after 15 February 2024, in section 5.2 "Subsequent events" of this Universal Registration Document.

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6.6.3 Information on payment terms for suppliers and customers (Article L. 441-6-1 of the French Commercial Code)

Within the framework of the LME Act as amended by Act no. 2015-990 promoting growth, activity and equal economic opportunities, EDF publishes the amounts, including VAT, of debts and receivables due at the end of the financial year. These amounts are broken down by tranche of overdue payments and posted respectively to the amount including VAT of purchases and sales for the financial year.

	Article D. 441 I.-1°: overdue invoices which have been received but not paid at the closing date of the financial year						Article D. 441 I.-2°: overdue invoices which have been issued but not paid at the closing date of the financial year					
(in millions of euros)	0 day	1 - 30 days	31 - 60 days	61 - 90 days	91 days and more	Total (1 day and more)	0 day	1 - 30 days	31 - 60 days	61 - 90 days	91 days and more	Total (1 day and more)
(A) Period overdue												
Number of invoices	121,084					4,504	4,818,538					8,666,104
Total amount of invoices (including VAT)	3,121	16	8	2	13	39	2,512	379	165	184	789	1,516
% of the total amount of purchases of the year	3.4	0	0	0	0	0						
% of total amount of sales of the year (including VAT)							2.5	0.4	0.2	0.2	0.8	1.5
(B) Invoices excluded from (A) relating to payables and receivables in dispute or unrecognised												
Number of invoices excluded						0						0
Total amount of invoices excluded						0						0
(C) Reference payment terms applied (contractual or statutory – Article L. 441-6 or Article L. 43-1 of the French Commercial Code)												
Payment terms used for calculating periods overdue	Legal and contractual deadlines						Legal deadlines					

6.6.4 Amount of inter-company loans granted

In accordance with the provisions of Articles L. 511-6, 3 *bis* and R. 511-2-1-3 of the French Monetary and Financial Code, the amounts of inter-company loans granted are as follows:

(in millions of euros)	2023	2022
Company		
EDF International	18,155	15,690
EDF Renewables	7,114	4,364
Enedis	4,884	3,980
EDF Trading	2,531	5,120
Dalkia France	1,668	2,045
EDF Energy	1,577	2,146
PEI	415	492
Atmea	168	162
EDF Luminus	80	80
Cyclife Holding	28	31

6.6.5 Information on existing branches – as required by Article L. 231-1 of the French Commercial Code

At 31 December 2023, the Group had 219 secondary establishments registered with the French Trade and Companies Registers stated in the Company's "K-bis" document, and operated on French territory through several thousand different offices which do not fulfil the independent management criterion to qualify as a branch.

EDF's branches[1] outside mainland France are listed below:

- Saint-Barthélemy;
- Saint-Pierre-et-Miquelon;
- Saint-Martin;
- Saint-Denis de la Réunion;
- Cayenne;
- Pointe-à-Pitre;
- Bahrain;
- Benin;
- Cambodia;
- Cape Verde;
- Fort de France;
- United Arab Emirates: Abu Dhabi and Dubai;
- Japan;
- Kyrgyzstan;
- China: Taishan;
- Gabon;
- India;
- Indonesia;
- Qatar;
- Poland;
- Czech Republic;
- New Caledonia;
- Togo.

(1) In fiscal terms, this is a list of permanent establishments located outside France.

6.7 Information on the allocation of the funds raised as part of EDF's green financing

Since 2013, the Group has conducted nine Green Bond issues for a total of around €11 billion in order to support its development in low-carbon energies.

After two initial bond issues chiefly intended to finance the building of new wind and solar power projects by its subsidiary EDF Renewables (€1.4 billion in November 2013 and US$1.25 billion in October 2015), the Group expanded its Green Bond Framework to finance investments in the renovation and modernisation of its hydropower assets in mainland France. The new Framework was first applied to a €1.75 billion issue in October 2016 and then to a ¥26 billion issue in two tranches in January 2017. The Group further extended the scope of its Green Bond Framework in early 2020 by opening it up to international hydropower assets, energy efficiency projects and biodiversity conservation projects. In this context, the Group issued Green Bonds for an amount of €2.4 billion in September 2020, and Green Bonds for an amount of €1.85 billion in November 2021(1). The Group expanded the scope of its Framework in July 2022, renaming it the Green Financing Framework to include any type of financing product in addition to bonds. This Framework is compatible with the European taxonomy, including the Nuclear Delegated Act which came into force in July 2022. The scope of investments has also been extended to electricity distribution projects and nuclear generation projects. In this context, EDF completed a €1.25 billion bond issue in October 2022, as well as a CHF325 million bond issue in August 2023. In addition, a Green Evergreen REPO contract was signed on 19 July 2023 for €565 million. In November 2023, EDF issued its first Green Bond dedicated to the refinancing of investments in existing nuclear reactors in France as part of the extension of their lifespan.

The commitments made by EDF in the context of these bond issues follow the four Green Bond Principles(2) guiding (i) the use of proceeds, (ii) the existing processes for evaluating and selecting Eligible Projects, (iii) the management of proceeds, and (iv) the reporting procedures. A detailed description of these commitments can be found in the EDF Green Bond Framework of January 2020 available on the Sustainable Finance page of the Company's website.

This section provides a summary of these commitments and how EDF has fulfilled them as at the end of 2023.

Use of proceeds

As part of its Green Bond issuances, EDF has committed to allocating the funds raised to finance new investments in certain eligible projects (hereinafter referred to as the "Eligible Projects"):

- the construction or acquisition of a portfolio of renewable energy power generation projects including wind, solar, hydro, storage, biomass and geothermal projects;
- investments in existing hydroelectric facilities, including renovation and heavy maintenance; modernisation and automation; and development of existing facilities (including power increases);
- energy efficiency projects, including projects to reduce energy consumption, modernise lighting, heating and cooling network projects and projects involving the creation of charging stations for electric vehicles;
- biodiversity preservation projects, such as actions to mitigate the impact of EDF's activities on biodiversity, site restoration or re-naturalisation and research and development;
- electricity distribution projects including investments in the distribution grid connected to the European system, connections of renewable energy production facilities, infrastructure supporting the electrification of transport (including electric vehicle charging stations) and smart meters;
- nuclear generation projects: investments in new construction projects and existing works, including research and development, demonstration and deployment of innovative reactors that generate energy from nuclear processes with minimal fuel cycle waste, projects authorised by the competent authorities for no later than 2045 for the construction and safe operation of power plants and for the extension of the lifespan of existing reactors.

The Green Bond Framework provides that the funds may finance projects which would not have benefited from financing through a Green Bond within three years before the issue of the Green Bond (look-back clause). Similarly, the funds can be used to acquire a portfolio of renewable energy projects.

Assessment and selection of financed Eligible Projects

Each Eligible Project to be funded is assessed against the environmental and social eligibility criteria(3) ("E&S criteria") specified in Appendix 1 of the Green Bond Framework. This assessment is based on six elements, including (1) compliance with ethical, transparent and sustainable human resources criteria; (2) monitoring of the project's environmental impact; (3) promotion of occupational health and safety; (4) responsible supplier relations; (5) a commitment to organise a consultation process for each new project; and (6) compliance with the taxonomy criteria.

Only projects meeting the E&S criteria qualify for Green Bond financing.

Compliance with these criteria is certified by Deloitte (auditor) in accordance with the requirements of the Green Bond Framework. On this basis, the Finance Departments of the Group entities in question designate the Eligible Projects that are financed.

Management of proceeds

Proceeds raised are managed according to a strict ring-fencing principle in order to ensure that their use is exclusively and effectively reserved for financing Eligible Projects.

Once received by EDF's Finance and Investment Department, proceeds from each bond issue are invested and tracked in a dedicated sub-portfolio of treasury assets until allocated to Eligible Projects. Proceeds are invested in priority in treasury assets identified as Socially Responsible Investments (SRI).

The Finance Divisions of the corresponding entities notify EDF's Treasury Division, on an ongoing basis or at regular intervals, of the proceeds needed to cover investments related to the selected projects. Based on this information, the Treasury Division adjusts the amounts available in the dedicated treasury asset sub-portfolios.

(1) EDF issued a €1.75 billion Green Bond on 29 November 2021, which was tapped up by €100 million on 6 December 2021.
(2) The Green Bond Principles, updated in June 2018, are voluntary guidelines for the issuance of Green Bonds. They recommend transparency and disclosure and promote integrity to support the development of the Green Bond market. For more information, see http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles.
(3) The E&S criteria for each project type are presented in the appendix to the EDF Green Bond Framework of September 2016 and January 2020.

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Reporting

Effective use of proceeds

All the proceeds raised in November 2013 under the first Green Bond issued by EDF for €1.4 billion were allocated by June 2015. All the proceeds raised in October 2015 under the second Green Bond issued for US$1.25 billion were allocated by the end of 2017. All the proceeds raised in October 2016 under the third Green Bond issued for €1.75 billion were allocated by the end of 2019. All the proceeds raised in January 2017 under the fourth Green Bond issued in two tranches for ¥26 billion were allocated by mid-2020. All the proceeds raised in September 2020 under the fifth Green Bond issued for €2.4 billion were allocated by the end of 2021.

All the proceeds raised in November 2021 in the amount of €1.75 billion under the sixth Green Bond issued by EDF, increased by €100 million in the context of a tap-up in December 2021, which generated net proceeds of €1.85 billion, were fully allocated to Eligible Projects as of the end of 2023.

All the proceeds raised in October 2022 in the amount of €1.25 billion under the seventh Green Bond issued by EDF, and the funds received within the framework of the Green Repo in the amount of €565 million, as well as the funds raised in August 2023 under the eighth Green Bond were allocated to electricity distribution projects.

All the proceeds raised in November 2023 in the amount of €1 billion under the ninth Green Bond issued by EDF were allocated to nuclear projects.

Allocation of proceeds as at 31 December 2023	Nominal value at issuance	Funds allocated as at 31/12/2023	Funds allocated to Eligible Projects	Number of Green Financing funded projects	Share of investment financed *via* Green Financing proceeds
Green Bond no. 1 – November 2013	€1.4 billion	€1.4 billion	*of which renewable capacities: €1.4 billion*	13[1]	59%
Green Bond no. 2 – October 2015	$1.25 billion	$1.25 billion	*of which renewable capacities: $1.25 billion*	7[1][2]	58%
Green Bond no. 3 – October 2016	€1.75 billion	€1.75 billion	*of which renewable capacities: €1,248 million*	10[2][3]	54%
			of which hydroelectric projects: €502 million	600 operations	100%
Green Bond no. 4 – January 2017	¥26,000 million	¥26,000 million	*of which renewable capacities: ¥14,021 million*	7[3]	15%
			of which hydroelectric projects: ¥11,979 million	207 operations	87%[4]
Green Bond no. 5 – September 2020	€2.4 billion	€2.6 billion[6]	*of which renewable capacities: €2,421 million (including €1,461 million in look back)*	32 projects[3] + 3 portfolio redemptions	78%
			of which hydroelectric projects: €110 million	153 operations[5]	100%
			of which biodiversity projects, led by EDF Hydro: €28 million (including €16 million in look back)	39 projects	100%
Green Bond no. 6 – November 2021	€1.85 billion	€1.85 billion[7]	*of which renewable capacities: €1.644 billion*	12	
			of which hydroelectric projects: €189 million	272	53%
			of which biodiversity projects: €23 million	14	98%
Green Bond no. 7 – October 2022	€1.25 billion	€1.25 billion	*of which electricity distribution projects: €1.25 billion (in look back)*	Projects as detailed in the table below	100%
Green Repo – July 2023	€565 million	€565 million	*of which electricity distribution projects: €565 million (in look back)*	Projects as detailed in the table below	100%
Green Bond no. 8 – August 2023	*CHF325 million*	*CHF325 million*	*of which electricity distribution projects: CHF325 million*	Projects as detailed in the table below	100%
Green Bond no. 9 – November 2023	€1 billion	€1 billion	*of which projects in existing nuclear reactors in France: €1 billion (in look back)*	Projects as detailed in the table below	100%

(1) Including the Roosevelt Project, financed by Green Bonds 1 and 2.

(2) Including the Red Pine Project, financed by Green Bonds 2 and 3.

(3) Including the Milligan and Las Majadas Projects, financed by Green Bonds 3, 4 and 5 and the Big Beau Solar Project financed in part by the sustainable securities loan transaction.
A REPO green evergreen contract was signed on 1 October 2021 for €50 million. This green contract was set up to finance the surplus portion of EDF Renewables' "Big Beau" project compared to the funds received under Green Bond 5. It was refinanced by Green Bond 6.

(4) Share of total investments financed by EDF, including half of the investment in the Romanche-Gavet Project.

(5) Including 31 operations already partly financed by a previous Green Bond.

(6) The issue premium of Green Bond no. 5 enabled EDF to receive a total amount of €2,559 million.

(7) Of which €1.139 billion allocated at 31 December 2022.

At 31 December 2023, the following Eligible Projects had been chosen by EDF Renewables for financing under the Green Bonds issued in November 2013 (GB1), October 2015 (GB2), October 2016 (GB3), January 2017 (GB4), September 2020 (GB5) and November 2021 (GB6):

Projects	Type and capacity	Location	Expected year of commissioning	Green Bond Financing
CID Solar	PV Solar, 27MW	US (California)	In service	GB1
Cottonwood	PV Solar, 33MW	US (California)	In service	GB1
Catalan wind farm	Onshore wind, 96MW	France (Pyrénées-Orientales)	In service	GB1
Heartland	Biogas, 20MW	US (Colorado)	In service	GB1
Hereford	Onshore wind, 200MW	US (Texas)	In service	GB1
La Mitis	Onshore wind, 25MW	Canada (Quebec)	In service	GB1
Le Granit	Onshore wind, 25MW	Canada (Quebec)	In service	GB1
Longhorn North	Onshore wind, 200MW	US (Texas)	In service	GB1
Pilot Hill	Onshore wind, 175MW	US (Illinois)	In service	GB1
Rivière du Moulin	Onshore wind, 350MW	Canada (Quebec)	In service	GB1
Spinning Spur 2	Onshore wind, 161MW	US (Texas)	In service	GB1
Spinning Spur 3	Onshore wind, 194MW	US (Texas)	In service	GB1
Roosevelt	Onshore wind, 250MW	US (New Mexico)	In service	GB1 and GB2
Great Western	Onshore wind, 225MW	US (Oklahoma)	In service	GB2
Kelly Creek	Onshore wind, 184MW	US (Illinois)	In service	GB2
Salt Fork	Onshore wind, 174MW	US (Texas)	In service	GB2
Slate Creek	Onshore wind, 150MW	US (Texas)	In service	GB2
Tyler Bluff	Onshore wind, 126MW	US (Texas)	In service	GB2
Red Pine	Onshore wind, 200MW	US (Minnesota)	In service	GB2 and GB3
Bluemex Power 1	PV Solar, 120MW	Mexico (Sonora)	In service	GB3
Copenhagen Wind Farm	Onshore wind, 80MW	US (New York)	In service	GB3
Nicolas Riou	Onshore wind, 112MW	Canada (Quebec)	In service	GB3
Rock Falls	Onshore wind, 154MW	US (Oklahoma)	In service	GB3
Stoneray Power Partners	Onshore wind, 100MW	US (Minnesota)	In service	GB3
Valentine Solar	PV Solar, 135MW	US (California)	In service	GB3
Glaciers Edge	Onshore wind, 203MW	US (Iowa)	In service	GB3
Milligan	Onshore wind, 300MW	US (Nebraska)	In service	GB3, GB4 and GB5
Las Majadas	Onshore wind, 273MW	US (Texas)	In service	GB3, GB4 and GB5
Maverick 1	PV Solar, 180MW	US (California)	In service	GB5
Maverick 4	PV Solar, 132MW	US (California)	In service	GB5
Desert Harvest	PV Solar, 114MW	US (California)	In service	GB5
Desert Harvest 2	PV Solar, 111MW	US (California)	In service	GB5
Coyote	Onshore wind, 242MW	US (Texas)	In service	GB5
Champagne Picardie	Onshore wind, 73MW	France	In service	GB5 (look back)
Les Taillades	Onshore wind, 27MW	France	In service	GB5 (look back)
Pays d'Anglure	Onshore wind, 22MW	France	In service	GB5 (look back)
Montagne Ardéchoise	Onshore wind, 16MW	France	In service	GB5 (look back)
Blyth	Offshore wind, 42MW	United Kingdom	In service	GB5 (look back)
Mashabai Sadeh	PV Solar, 60MW	Israel	In service	GB5 (look back)
Romney	Onshore wind, 60MW	Canada (Ontario)	In service	GB5 (look back)
Courant-Nachamps	Onshore wind, 21MW	France	In service	GB5 (look back)
Demange	Onshore wind, 20MW	France	In service	GB5 (look back)
Faydunes	Onshore wind, 14MW	France	In service	GB5 (look back)
Joncels Futuren	Onshore wind, 6MW	France	In service	GB5 (look back)
Coteaux	Onshore wind, 38MW	France	In service	GB5 (look back)
Mazurier	Onshore wind, 13MW	France	In service	GB5 (look back)
Mottenberg	Onshore wind, 16MW	France	In service	GB5 (look back)
Espiers	Onshore wind, 18MW	France	In service	GB5 (look back)
Clanlieu	Onshore wind, 13MW	France	In service	GB5 (look back)
Luxel	Solar project portfolio	France	In service	GB5 (look back)

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Projects	Type and capacity	Location	Expected year of commissioning	Green Bond Financing
NnG	Offshore wind, 450MW	United Kingdom	In service	GB5 (look back)
Atlantic Offshore	Offshore wind, up to 2.3GW	US (New Jersey)	In service	GB5 (look back)
Gorzyca	Onshore wind, 24MW	Poland	In service	GB5
Parnowo	Onshore wind, 12.5MW	Poland	In service	GB5
Ustka	Onshore wind, 28.6MW	Poland	In service	GB5
Roussac	Onshore wind, 16.5MW	France	In service	GB5
Big Beau	Solar power, 166MW	United States	In service	GB5
King Creek 1	Onshore wind, 184.4MW	US (Texas)	In service	GB6
King Creek 2	Onshore wind, 209MW	US (Texas)	In service	GB6
Arrow Canyon	Solar power and storage, 364.8MW	US (Nevada)	In service	GB6
Fox Squirrel	Solar power, 753MW	US (Ohio)	2024	GB6
Ottmarsheim	Solar power 15.6MW	France	In service	GB6
Habsheim	Solar power 30MW	France	In service	GB6
Pays de Caux	Onshore wind 13MW	France	In service	GB6
OUPIA 2 Repowering	Onshore wind 20.7MW	France	In service	GB6
Desert Quarzite	Solar – Battery 527MW	US (California)	2025	GB6
Serra do serido 2	Onshore wind 238MW	Brazil	2024	GB6
Serra das almas	Onshore wind 184.4MW	Brazil	2024	GB6
Cypress I	Solar power 200MW	Canada	In service	GB6

The Eligible Projects selected by Luminus for financing as at 31 December 2023 as part of the January 2017 (GB4) and September 2020 (GB5) Green Bond issues can be broken down as follows:

Projects	Type and Capacity	Location	Year come into service	Green Bond Financing
Geel-West	Onshore wind, 11MW	Belgium	In service	GB4
Villers 4	Onshore wind, 45MW	Belgium	In service	GB4
Turnhout	Onshore wind, 12MW	Belgium	In service	GB4
Monsin	Hydropower, 18MW	Belgium	In service	GB4
Tinlot	Onshore wind, 10MW	Belgium	In service	GB5
Lommel	Onshore wind, 17MW	Belgium	In service	GB5

The Eligible Projects selected by EDF ENR for financing as at 31 December 2023 as part of the September 2020 Green Bond issue (GB5) can be broken down as follows:

Projects	Type and Capacity	Location	Year come into service	Green Bond Financing
ITER	PV shade, 2MW	France	In service	GB5
Bugey RTE	PV shade, 4MW	France	In service	GB5

The Eligible Projects selected by EDF Hydro (excluding biodiversity projects which are detailed further below) for financing as at 31 December 2023 as part of the Green Bond issues of October 2016, January 2017 and September 2020 can be broken down as follows:

Projects	**Number of operations by type**	**Capacity in question** (in GW)	**Amounts** (in millions of euros)
Renovation and heavy maintenance	586	9.6	342
Modernisation and automation	309	15.9	80
Development of existing structures	33	1.2	277
TOTAL (EXCL. DUPLICATION)	**928**	**17.1**	**699**

The Eligible Projects selected by EDF Hydro (excluding biodiversity projects which are detailed below) for financing as at 31 December 2023 as part of the issue of November 2021 can be broken down as follows:

Projects	**Number of operations by type**	**Capacity in question** (in GW)	**Amounts** (in millions of euros)
Renovation and heavy maintenance	249	11.4	164
Modernisation and automation	15	2.3	17
Development of existing structures	8	0.5	8
TOTAL (EXCL. DUPLICATION)	**272**	**11.9**	**189**

Impact of financed Eligible Projects

The tables below show the main impacts associated with the projects that received Green Bond financing:

- for renewable energy power generation and biodiversity conservation projects:
  - > the electricity generation capacity built under each project,
  - > the additional electricity generation expected from each project,
  - > the estimated CO_2 emissions avoided as a result of injecting this additional electricity generation into the electricity networks; and
- *for distribution network projects:*
  - > the number of kilometres of lines installed,
  - > the number of charging infrastructure connections,
  - > the number of new meters installed, and
  - > the renewable capacity connected.

Renewable energy electricity generation projects:

These impacts are presented in aggregate: gross data correspond to the aggregate impact of every project that received financing from the Green Bond in question; while the net values correspond to the sum total of the impact of each Eligible Project weighted by the share of project investment amount financed by the Green Bond in question.

		Total capacity of projects financed at 31 December 2023 (in MW)		**Expected output** (in TWh/year)		**Estimated CO_2 emissions avoided** (in millions of tonnes/year)	
		Gross[1]	**Net**[2]	**Gross**[1]	**Net**[2]	**Gross**[1]	**Net**[2]
Green Bond no. 1 – November 2013		1,529	976	6.0	4.1	2.21	1.55
Green Bond no. 2 – October 2015		1,107	815	4.6	3.3	2.53	1.83
Green Bond no. 3 – October 2016	EDF Renewables	1,450	962	5.3	3.5	2.42	1.61
	EDF Hydro	903	903	0.2[3]	0.2[3]	0.01[3]	0.01[3]
Green Bond no. 4 – January 2017	EDF Renewables + Luminus	137	86	0.4	0.26	0.17	0.12
	EDF Hydro + Luminus	142	133	0.1	0.05	0.01	0.01
Green Bond no. 5 – September 2020	EDF Renewables + EDF ENR + Luminus	1,762	1,412	4.7[4]	3.6[4]	1.86[4]	1.35[4]
	EDF Hydro	123	123	0.03	0.03	0.001	0.001
Green Bond no. 6 – October 2021	EDF Renewables	2,787	1,487	6.5	3.1	1.93	1.1
	EDF Hydro	430	422	0.02	0.02	0.001	0.001
TOTAL		**9,076**	**6,727**	**24.75**	**17.32**	**10.54**	**7.36**

(1) Sum of the gross impacts of each project that received Green Bond financing.

(2) Sum of the impacts of each project weighted by the project investment amount financed by the Green Bond in question.

(3) Only related to the expected additional generation resulting from development investments, including half of the expected additional generation of the Romanche-Gavet project.

(4) Not including acquisitions.

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Biodiversity conservation projects

The impacts presented above are established on the basis of the following methodological principles:

- generation capacity of financed projects: installed capacity at the end of the construction of each Eligible Project as defined in the project's investment memorandum and updated as appropriate during the construction phase or at project commissioning;
- expected output: generation forecast (the "P50") taken into account when the investment decision of each Eligible Project is made;
- avoided CO_2 emissions: the average emission factor per kWh of the electric system is estimated on the basis of the energy mix of the electric system and LCA emission factors of each generation technology. The emission factor of the project corresponds to the LCA emission factor of the project's production chain. The energy mixes are those published by the United States Environmental Protection Agency (EPA, eGRID 2018) for large power networks in the United States, Statistics Canada (2019) for the networks and provinces of Canada, and the International Energy Agency (IEA 2019) for other countries. The LCA emission factors of each technology correspond to the median values established by the Intergovernmental Panel on Climate Change (IPCC) and published in its 5th assessment report (2014). The detailed methodology is available on request at the EDF group head office. It is important to note that (i) there is no single standard defining a methodology for calculating avoided CO_2 emissions and (ii) the expected output and, therefore, the avoided CO_2 emissions are estimated forecast data and not actual data.

Biodiversity

The table below presents the main monitoring indicators associated with biodiversity projects that have received financing through Green Bond financing. All of these projects were supported by EDF Hydro.

Year(s)	Amount financed (in millions of euros)	Category of the Green Bond framework	Project type	Number of projects considered[1]	Indicator	Indicator value
2022	12	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity	Bringing reserved flows into compliance[2]	1	Number of protected wildlife species benefiting from the project	5
			Ecological continuity (sediments, fish, semi-aquatic mammals)[2]	4		8
			Voluntary ecological monitoring	1	Number of species inventoried	96[3]
			Management plan (grubbing)	1	Area concerned (ha)	340
		b. Restoration and/or "re-naturalising" of sites	Decommissioning of facilities	2	Number of protected wildlife species benefiting from the project	5
2021	11	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity	Bringing reserved flows into compliance[2]	1	Number of protected wildlife species benefiting from the project	5
			Ecological continuity (sediments, fish, semi-aquatic mammals)[2]	7		11

Information on the allocation of the funds raised as part of EDF's green financing

Year(s)	Amount financed (in millions of euros)	Category of the Green Bond framework	Project type	Number of projects considered[1]	Indicator	Indicator value
2020	12	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity	Bringing reserved flows into compliance[2]	4	Number of protected wildlife species benefiting from the project	6
			Ecological continuity (sediments, fish, semi-aquatic mammals)[2]	17		17
			Biodiversity partnerships	7	Number of species targeted by partnerships	20
		b. Restoration and/or "re-naturalising" of sites	Decommissioning of facilities	1	Number of protected wildlife species benefiting from the project	3
2017 – 2019 (financed by the look back)	16	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity	Bringing reserved flows into compliance[2]	7	Number of protected wildlife species benefiting from the project	6
			Ecological continuity (sediments, fish, semi-aquatic mammals)[2]	22		16
		b. Restoration and/or "re-naturalising" of sites	Renaturation/ restoration including Ecosystem Services	1	Area concerned (ha)	190
			Decommissioning of facilities	1	Number of protected wildlife species benefiting from the project	3

(1) 19 projects are included in both the look back and 2020 impact reporting.

(2) A project at the Esterre dam has elements of compliance with reserved flows and ecological continuity; it is therefore counted for the calculation of the indicators for these two types of projects.

The impacts presented above are established on the basis of the following methodological principles:

- the ***"number of protected wildlife species benefiting from the project"*** **indicator** is established on the basis of the lists of target species of the works attached to their execution files or the watercourse classification decrees, and the analysis of EDF naturalist experts. As these operations mainly concern aquatic environments, only aquatic and semi-aquatic species are counted, although these projects generally benefit a wider range of animal and plant species. If a species benefits from several projects, it is counted only once;
- **the *"number of species targeted by partnerships"* indicator** refers to species named in partnership agreements or activity reports (families of species are therefore not counted). Biodiversity partnerships cover a wide range of activities, from raising awareness to land management or carrying out naturalist inventories or ecological status diagnoses;
- **the *"area concerned"* indicator** is measured in hectares (ha). It corresponds to the surface area of projects involving the re-naturalisation or restoration of environments.

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Electricity distribution projects:

		Project sub-category	Impact indicator	Total
Green Bond no. 7 – October 2022	Enedis	Infrastructure for the electrification of transport (including charging stations)	Number of electric vehicle charging infrastructure connections[1]	11,938
		Connections of renewable energy producers	Installed capacity connected to the grid in MW	5,181
			Number of connected installations	100,444
		Investments in the distribution grid connected to the European system	New lines installed in kilometres	2,950
			of which lines buried as part of the climate hazard plan in kilometres	*1,350*
		Smart Metering	Number of smart meters installed	5,488,000
Green Repo – July 2023	Enedis	Infrastructure for the electrification of transport (including charging stations)	Number of electric vehicle charging infrastructure connections[1]	8,987
		Connections of renewable energy producers	Installed capacity connected to the grid in MW	2,061
			Number of connected installations	58,410
		Investments in the distribution grid connected to the European system	New lines installed in kilometres	1,015
			of which lines buried as part of the climate hazard plan in kilometres	*416*
		Smart Metering	Number of smart meters installed	614,000
Green Bond no. 8 – August 2023	Enedis	Infrastructure for the electrification of transport (including charging stations)	Number of electric vehicle charging infrastructure connections[1]	7,719
		Connections of renewable energy producers	Installed capacity connected to the grid in MW	1,976
			Number of connected installations	89,589
		Investments in the distribution grid *connected to the European system*	New lines installed in kilometres	920
			of which lines buried as part of the climate hazard plan in kilometres	*320*
		Smart Metering	Number of smart meters installed	592,000

(1) They each have one or more charging stations downstream.

Projects in existing nuclear reactors in France as part of the extension of their lifespan:

In the 2022 Universal Registration Document (page 254), the Group indicated that it had spent €4,456 million of Capex related to the generation of electricity of nuclear origin in existing facilities as an environmentally sustainable activity (aligned with the taxonomy).

Of these Capex, €1 billion was refinanced by the Green Bond no. 9.

The units extended in 2022 produce from 2023 and for ten years. However, all of the Capex related to the generation of electricity of nuclear origin in existing facilities is necessary to maintain the units in operation during this period.

The calculation of the avoidance production in 2023 related to the Capex corresponding to transactions directly associated with the extension of the operating lifespan of the units and refinanced by Green Bond no. 9 takes all these elements into account.

The calculation of the avoided emissions is based on the average carbon intensity of European electricity generation (including France).

		Estimated CO_2 emissions avoided (in Mt/year)
Green Bond no. 9 – November 2023	EDF	1.82

Attestation of one of the Statutory Auditors on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued on November 29th, 2021

Year ended December 31st, 2023

This is a free translation into English of the attestation of one of the Statutory Auditors on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued on November 29th, 2021 issued in French and it is provided solely for the convenience of English-speaking users.

To the Chairman and Chief Executive Officer,

In our capacity as Statutory Auditor of Electricité de France S.A. (hereinafter "**EDF**" or the "**entity**"), and in accordance with your request, we have prepared this attestation on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued by the entity in November 2021 amounting to 1.85 billion euros (the "**Green Bond**") presented in the document "Information relating to the allocation of funds raised through Green Bonds issued by EDF" (hereinafter the "**Document**"), attached to this attestation.

This Document, including the information related to the entity's Green Bond, prepared in accordance with the terms and conditions of the issuance agreement, especially the *Green Bond Framework* dated January 2020 (the "**2020 Framework**"), is intended for green bondholders. This Document shows the proceeds allocated (the "**Allocated Proceeds**") to eligible projects (the "**Eligible Projects**") as defined in the 2020 Framework, as at December 31st, 2023.

The information was prepared under your responsibility. The methods and eligibility criteria used to identify the Allocated Proceeds are disclosed in the 2020 Framework.

It is our responsibility to express an opinion on:

- the compliance, in all material respects, of the Eligible Projects with the eligibility criteria specified in the 2020 Framework;
- the consistency of the amount of proceeds allocated to Eligible Projects with accounting and underlying accounting data, as at December 31st 2023.

The Eligible Projects on fiscal year 2023 exclude eligible expenditures that have already been the subject of an allocation of proceeds raised during the first allocation of funds for the issue, for a total amount of 1,139 million euros.

However, it is not our responsibility to:

- call into question the eligibility criteria specified in the 2020 Framework, which were validated in the Second Party Opinion by Vigeo Eiris prior to the issuance, and, in particular, to give an interpretation of the terms and conditions of the 2020 Framework;
- express an opinion on the use of proceeds allocated to Eligible Projects once they have been allocated;

Our assignment, which did not constitute an audit or a review, was performed in accordance with the *doctrine professionnelle de la Compagnie nationale des commissaires aux comptes*. Our work included:

- identifying the people responsible for data collection within EDF S.A. and, where appropriate, for the internal control and risk management procedures implemented;
- assessing the appropriateness of the data collection procedures in terms of their relevance, completeness, reliability, neutrality and understandability;
- verifying the existence of internal control and risk management procedures implemented by the company;
- verifying that the published information presented in the Document is consistent with the accounting and underlying accounting data;
- examining the processes used for data collection, compilation, processing and control, particularly the procedures relating to the allocation of proceeds as at December 31st, 2023;
- verifying the compliance, in all material respects, of the Eligible Projects with the eligibility criteria, as specified in 2020 Framework;
- verifying that the amounts of Eligible Projects as at December 31st, 2023, are consistent with the accounting and the underlying accounting data;
- verifying that the amount of proceeds allocated to Eligible Projects is less than or equal to the amount of these projects on December 31st, 2023.

Based on our work, we have no comments regarding:

- **the compliance, in all material respects, of the Eligible Projects with the eligibility criteria specified in the 2020 Framework; and**
- **the consistency of the amount of proceeds allocated to Eligible Projects of December 31st, 2023 with the accounting and the underlying accounting data.**

This attestation has been prepared for you in connection with the context mentioned in the first paragraph and it may not be used, disclosed or referred to for any other purpose.

In our capacity as Statutory Auditor of EDF S.A., our responsibility to the entity is defined by French law and we do not accept any extension of our responsibility beyond that specified by French law. We shall not be liable to any third parties, including green bondholders, and we are not party to the 2020 Framework agreement. We shall not be held liable for the execution of 2020 Framework or for any resulting damages, loss, cost or expense.

This attestation is governed by French law. All disputes, claims, or disagreements arising from our engagement letter or this attestation fall under the exclusive jurisdiction of the French courts. Both parties irrevocably forego their right to oppose any case brought before the French courts, or to argue that the case has been brought before a court that lacks jurisdiction, or that the French courts do not have jurisdiction.

This attestation has been prepared within the context described above and may not be used, distributed or referred to for any other purpose.

Paris la Défense, March 1st, 2024

KPMG S.A.

Quentin Henaux
Partner

Brice Javaux
ESG Expert

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Attestation of one of the Statutory Auditors on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued in August 2023 and the Green Repo issued on July 19th, 2023

Year ended December 31st, 2023

This is a free translation into English of the attestation of one of the Statutory Auditors on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued in August 2023 and the Green Repo issued on July 19th 2023, issued in French and it is provided solely for the convenience of English-speaking users.

Year ended December 31st, 2023

In our capacity as Statutory Auditor of Electricité de France S.A. (hereinafter "**EDF**" or the "**entity**"), and in accordance with your request, we have prepared this attestation on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued by the entity in August 2023 amounting to 325,000,000 Swiss francs, and the Green Repo issued in July 2023 amounting to 565,000,000 euros (the "**Green Bonds**") presented in the document "Information on the allocation of the funds raised as part of EDF's green financing" (hereinafter the "**Document**"), attached to this attestation.

This Document, including the information related to the entity's Green Bonds, prepared in accordance with the terms and conditions of the issuance agreement, especially the *Green Bond Framework* dated July 2022 (the "**2022 Framework**"), is intended for green bondholders. This Document shows the proceeds allocated (the "**Allocated Proceeds**") to eligible projects (the "**Eligible Projects**") as defined in the 2022 Framework, as at December 31st, 2023.

The information was prepared under your responsibility. The methods and eligibility criteria used to identify the Allocated Proceeds are disclosed in the 2022 Framework.

It is our responsibility to express an opinion on:

- the compliance, in all material respects, of the Eligible Projects with the eligibility criteria specified in the 2022 Framework;
- the consistency of the amount of proceeds allocated to Eligible Projects with accounting and underlying accounting data, as at December 31st 2023.

However, it is not our responsibility to:

- call into question the eligibility criteria specified in the 2022 Framework, which were validated in the Second Party Opinion by Cicero Shades prior to the issuance, and, in particular, to give an interpretation of the terms and conditions of the 2022 Framework;
- express an opinion on the use of proceeds allocated to Eligible Projects once they have been allocated;

Our assignment, which did not constitute an audit or a review, was performed in accordance with the *doctrine professionnelle de la Compagnie nationale des commissaires aux comptes*. Our work included:

- identifying the people responsible for data collection within EDF S.A. and, where appropriate, for the internal control and risk management procedures implemented;
- assessing the appropriateness of the data collection procedures in terms of their relevance, completeness, reliability, neutrality and understandability;
- verifying the existence of internal control and risk management procedures implemented by the company;
- verifying that the published information presented in the Document is consistent with the accounting and underlying accounting data;
- examining the processes used for data collection, compilation, processing and control, particularly the procedures relating to the allocation of proceeds as at December 31st, 2023;
- verifying the compliance, in all material respects, of the Eligible Projects with the eligibility criteria, as specified in 2022 Framework;
- verifying that the amounts of Eligible Projects as at December 31st, 2023, are consistent with the accounting and the underlying accounting data;
- verifying that the amount of proceeds allocated to Eligible Projects is less than or equal to the amount of these projects on December 31st, 2023.

Based on our work, we have no comments regarding:

- **the compliance, in all material respects, of the Eligible Projects with the eligibility criteria specified in the 2022 Framework; and**
- **the consistency of the amount of proceeds allocated to Eligible Projects as at December 31st, 2023 with the accounting and the underlying accounting data.**

This attestation has been prepared for you in connection with the context mentioned in the first paragraph and it may not be used, disclosed or referred to for any other purpose.

In our capacity as Statutory Auditor of EDF S.A., our responsibility to the entity is defined by French law and we do not accept any extension of our responsibility beyond that specified by French law. We shall not be liable to any third parties, including green bondholders, and we are not party to the 2022 Framework agreement. We shall not be held liable for the execution of 2022 Framework or for any resulting damages, loss, cost or expense.

This attestation is governed by French law. All disputes, claims, or disagreements arising from our engagement letter or this attestation fall under the exclusive jurisdiction of the French courts. Both parties irrevocably forego their right to oppose any case brought before the French courts, or to argue that the case has been brought before a court that lacks jurisdiction, or that the French courts do not have jurisdiction.

This attestation has been prepared within the context described above and may not be used, distributed or referred to for any other purpose.

Paris la Défense, March 1st, 2024

KPMG S.A.

Quentin Henaux
Partner

Brice Javaux ESG Expert

Attestation of one of the Statutory Auditors on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued in November 2023

Year ended December 31st, 2023

This is a free translation into English of the attestation of one of the Statutory Auditors on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued in November 2023 issued in French and it is provided solely for the convenience of English-speaking users.

To the Chairman and Chief Executive Officer,

In our capacity as Statutory Auditor of Electricité de France S.A. (hereinafter "**EDF**" or the "**entity**"), and in accordance with your request, we have prepared this attestation on the information related to the allocation, as at December 31st, 2023, of proceeds raised through the Green Bond issued by the entity in November 2023 amounting to 1 billion euros (the "**Green Bond**") presented in the document "Information on the allocation of the funds raised as part of EDF's green financing" (hereinafter the "**Document**"), attached to this attestation.

This Document, including the information related to the entity's Green Bond, prepared in accordance with the terms and conditions of the issuance agreement, especially the *Green Bond Framework* dated July 2022 (the "**2022 Framework**"), is intended for green bondholders. This Document shows the proceeds allocated (the "**Allocated Proceeds**") to eligible projects (the "**Eligible Projects**") as defined in the 2022 Framework, as at December 31st, 2023.

The information was prepared under your responsibility. The methods and eligibility criteria used to identify the **Allocated Proceeds** are disclosed in the 2022 Framework.

It is our responsibility to express an opinion on:

- the compliance, in all material respects, of the **Eligible Projects** with the eligibility criteria specified in the 2022 Framework;
- the consistency of the amount of proceeds allocated to **Eligible Projects** with accounting and underlying accounting data, as at December 31st 2023.

However, it is not our responsibility to:

- call into question the eligibility criteria specified in the 2022 Framework, which were validated in the Second Party Opinion by Cicero Shades prior to the issuance, and, in particular, to give an interpretation of the terms and conditions of the 2022 Framework;
- express an opinion on the use of proceeds allocated to Eligible Projects once they have been allocated;

Our assignment, which did not constitute an audit or a review, was performed in accordance with the *doctrine professionnelle de la Compagnie nationale des commissaires aux comptes.* Our work included:

- identifying the people responsible for data collection within EDF S.A. and, where appropriate, for the internal control and risk management procedures implemented;
- assessing the appropriateness of the data collection procedures in terms of their relevance, completeness, reliability, neutrality and understandability;
- verifying the existence of internal control and risk management procedures implemented by the company;
- verifying that the published information presented in the Document is consistent with the accounting and underlying accounting data;
- examining the processes used for data collection, compilation, processing and control, particularly the procedures relating to the allocation of proceeds as at December 31st, 2023;
- verifying the compliance, in all material respects, of Eligible Projects with the eligibility criteria, as specified in 2022 Framework;
- verifying that the amounts of Eligible Projects as at December 31st, 2023, are consistent with the accounting and the underlying accounting data;
- verifying that the amount of proceeds allocated to Eligible Projects is less than or equal to the amount of these projects on December 31st, 2023.

Based on our work, we have no comments regarding:

- **the compliance, in all material respects, of the Eligible Projects with the eligibility criteria specified in the 2022 Framework; and**
- **the consistency of the amount of proceeds allocated to Eligible Projects as at December 31st, 2023 with the accounting and the underlying accounting data.**

This attestation has been prepared for you in connection with the context mentioned in the first paragraph and it may not be used, *disclosed or referred to for any other purpose.*

In our capacity as Statutory Auditor of EDF S.A., our responsibility to the entity is defined by French law and we do not accept any extension of our responsibility beyond that specified by French law. We shall not be liable to any third parties, including green bondholders, and we are not party to the 2022 Framework agreement. We shall not be held liable for the execution of 2022 Framework or for any resulting damages, loss, cost or expense.

This attestation is governed by French law. All disputes, claims, or disagreements arising from our engagement letter or this attestation fall under the exclusive jurisdiction of the French courts. Both parties irrevocably forego their right to oppose any case brought before the French courts, or to argue that the case has been brought before a court that lacks jurisdiction, or that the French courts do not have jurisdiction.

This attestation has been prepared within the context described above and may not be used, distributed or referred to for any other purpose.

Paris la Défense, March 1st, 2024

KPMG S.A.

Quentin Henaux
Partner

Brice JavauxESG Expert



7.

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7.1 General information about the Company

7.1.1 Company name, address, telephone number of the registered office and website

The name of the Company is: "Électricité de France". The Company may also be legally designated by the acronym "EDF".

The Company's registered office is at 22-30 Avenue de Wagram, 75008 Paris (France).

The telephone number is 33 (0)1 40 42 22 22.

The website is: www.edf.fr. The information on the Company's website does not form an integral part of this Universal Registration Document unless it is incorporated by reference.

7.1.2 Trade and Companies Registry

The Company is registered with the Paris Trade and Companies Registry under number 552 081 317. Its APE code is 3511Z.

7.1.3 Date of incorporation and term of the Company

EDF was incorporated pursuant to Act no. 46-628 of 8 April 1946 as a French public industrial and commercial establishment (*établissement public industriel et commercial – EPIC*). It was converted into a French public limited company (*société anonyme*) by the Act of 9 August 2004 and the Application Decree of 17 November 2004.

The Company was incorporated for a term of 99 years as from 19 November 2004, unless the Company is dissolved before such date or unless its term is extended.

7.1.4 Legal form and applicable legislation

Since 20 November 2004, EDF has been a French public limited company (*société anonyme*) with a Board of Directors. It is governed by the laws and regulations applicable to commercial companies, subject to the specific provisions applicable to it arising in particular from the French Energy Code and Order no. 2014-948 of 20 August 2014 on governance and the capital transactions of companies with public shareholding and from its articles of association.

7.1.5 Disputes

This section describes the main legal proceedings, except those covered in note 17.3 "Contingent assets and liabilities" to the consolidated financial statements for the financial year ended on 31 December 2023 (see section 6.1 "Consolidated financial statements at 31 December 2023"), and any material developments in those proceedings that have occurred between the date of approval of the financial statements and the date of filing of this document.

To the Company's knowledge, there are no administrative, legal or arbitration proceedings (including any pending or threatened proceedings of which the Company is aware) likely to have or having had in the past 12 months a material impact on the financial situation or the profitability of the Company and/or the Group with the exception of those described below and those described in the consolidated financial statements for the year ended on 31 December 2023.

CRE/REMIT investigation

On 14 December 2017, the French Energy Regulation Commission (*Commission de régulation de l'énergie – CRE*) launched an investigation into whether EDF and its subsidiaries EDF Trading Limited and EDFT Markets Limited were guilty of engaging, between 1 January 2017 and 30 June 2018, in practices that could constitute breaches of the provisions of Regulation (EU) no. 1227/2011 of 25 October 2011 on wholesale energy market integrity and transparency (REMIT). By a letter dated 14 April 2023, the CRE informed EDF, that it had referred the matter to the Settlement of Disputes and Sanctions Committee (*Comité de règlement des différends et des sanctions - CoRDiS*). This action does not prejudge the outcome of the procedure.

NGOs and associations appealed against administrative authorisations related to the generation plants

A certain number of authorisations and permits related to the Group's generation plants (ASN, prefectoral decision, decree, order, etc.) are the subject of disputes, mainly by environmental associations.

ADLC investigations

1. Decision of 22 February 2022 of the ADLC condemning EDF

On 22 February 2022, the French Competition Authority (*Autorité de la concurrence – ADLC*) sanctioned the EDF group in the amount of €300 million for dominant position abuse practices would have enabled it to maintain its market shares in the electricity supply sector and to strengthen its position in the associated gas and energy services supply markets. In this decision, which follows a complaint filed in 2017 by Engie (see note 17.3 "Contingent assets and liabilities" to the consolidated financial statements for the year ended on 31 December 2023), the ADLC criticises EDF for having used data from the files of its customers eligible for regulated sales tariffs contracts (*contrats aux tarifs réglementés de ventes* – TRV), as well as the commercial infrastructure dedicated to the management of TRV contracts, in order to develop the commercialisation of market offers for gas and energy services.

EDF, which benefited from a settlement procedure in this case, made two commitments: firstly, to make its Blue TRV customer file available to alternative electricity suppliers who requested it, and secondly, to separate the telephone subscription process for Blue TRV customers and prospects from that of customers and prospects with market offers.

2. Appeal to the Paris Court of Appeal against the ADLC's decision of 18 January 2022

As indicated in note 17.3 "Contingent assets and liabilities" to the consolidated financial statements for the financial year ended on 31 December 2023 (see section 6.1 "Consolidated financial statements at 31 December 2023"), the ADLC, in a decision dated 18 January 2022, rejected the complaint and the request for protective measures filed against it by the French National Association of Energy Retailers (*Association nationale des opérateurs détaillants en énergie – ANODE*). This complaint related to EDF's refusal to maintain access to the database of non-residential customers affected by the end of the Blue regulated electricity sales tariffs *(tarifs réglementés de vente d'electricité - TRVE)* and having automatically switched, on 31 December 2020, to a tariff exit contract. However, the ADLC considered that the facts put forward by ANODE were not supported by sufficient evidence to substantiate the existence of the practices complained of ANODE appealed the Authority's decision on 1 March 2022 and EDF filed a voluntary intervention statement on 30 March 2022. In a decision dated 3 November 2022, the Paris Court of Appeal ruled EDF's voluntary intervention to be inadmissible. On 30 November 2022, EDF filed an appeal with the French Supreme Court (*Cour de Cassation*) against this ruling of inadmissibility by the Court of Appeal. The substantive appeal proceedings against the ADLC decision of 18 January 2022 is still ongoing.

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Arbitrage CGN

In the context of the shareholders' agreement of TNPJVC Guangdong Taishan Nuclear Power Company Limited, whose purpose is the construction, operation, maintenance and management of the Taishan nuclear power plant with a capacity of two times 1,750MW, an arbitration procedure "in interpretation" was initiated in January 2021 by EDF against its partners China General Nuclear Power Co. Ltd., Guangdong Nuclear Power Investments Co. Ltd. and Taishan Nuclear Power Industry Investments Co. Ltd. (together CGN), before the Singapore ICC.

The disagreement relates to accounting policy and in particular the duration of the depreciation of the nuclear power plant, with EDF arguing that the duration should be consistent with the life of the plant, while CGN believes that it should be limited to the duration of TNPJVC.

In June 2023, the arbitration tribunal ruled in favour of EDF. EDF has entered into discussions with its partner in order to implement this verdict.

Dispute over the additional 20TWh of electricity made available to alternative suppliers at a price of €46.20 per MWh for the period April-December 2022

On 13 January 2022, the Government announced exceptional measures to limit the increase in electricity prices for consumers in 2022, including the provision by EDF to eligible suppliers of an additional 20TWh over the period from 1 April to 31 December 2022 at the price of €46.20 per MWh.

The terms of implementation of this measure were specified by a decree dated 11 March 2022 and by 4 orders.

As this measure considerably impaired the Company, EDF applied for review to the French State in May 2022, requesting that the Decree of 11 March 2022 and the corresponding Orders be rescinded. In the absence of a response from the French State within the two-month period, on 9 August 2022 EDF filed an appeal with the French Council of State *(Conseil d'Etat)* on grounds of ultra vires against the decree and the related orders. In a decision issued on 3 February 2023, the Council of State rejected EDF's appeal.

At the same time, EDF sent the French Prime Minister a preliminary request for compensation for the losses resulting from the implementation of the governmental measure in question, estimated at €8.34 billion at the end of June 2022. As the absence of a response from the French State within the 2-month time limit gave rise to an implicit decision to reject the request for compensation, on 27 October 2022 EDF lodged an appeal for compensation with the Paris Administrative Court to obtain full compensation from the French State for its losses under this scheme. The compensation proceedings initiated by EDF before the Paris Administrative Court to obtain full compensation from the French State for the losses suffered by EDF are continuing.

Framatome

Arbitration proceedings are underway between Framatome SAS and Eskom Holding SOC Limited (Eskom), within the framework of the contract to replace the steam generators of units 1 and 2 at the Koeberg power plant in South Africa. The dispute concerns in particular the consequences for Framatome and its subcontractors of the postponement of the replacement of the steam generators due to delays attributable to Eskom.

Haute Sambre complaint

In April 2023, EDF was informed of the opening of a preliminary investigation by the Public Prosecutor of the Judicial Court of Avesnes-sur-Helpe concerning the actions of the company Aciérie et Fonderie de la Haute Sambre (specialised in manufacturing industrial foundry parts) and relating in particular to a suspicion of falsification of data or undeclared activities in its Berlaimont plant (59).

Some of EDF's service providers and suppliers have called on Aciérie et Fonderie de la Haute Sambre to manufacture parts (components, equipment or parts of equipment) intended for EDF. The possible consequences of Aciérie et Fonderie de la Haute Sambre's actions on the compliance of components, equipment or parts of equipment delivered by EDF's service providers and suppliers for the facilities of the existing nuclear fleet and for the Flamanville 3 project require an in-depth analysis and access to certain information that will only be fully disclosed at the end of the current investigation.

In parallel with the ongoing analyses, EDF filed a complaint on 24 January 2024.

In addition, EDF has asked all contract holders to exercise particular vigilance in the execution of the contracts they have entered into with Haute Sambre in order to ensure the absence of any impact on the proper execution of their contracts with EDF.

7.1.6 EDF a public undertaking with a public service mission

7.1.6.1 EDF as a public undertaking

As an undertaking fully owned by the French State (see section 7.2.9 "Statutory or legal provisions preventing a change in the current control over the Company"), EDF is subject to the provisions of Order no. 2014-948 of 20 August 2014 on governance and the capital transactions of companies with public shareholding and its Application Decree no. 2014-949 of the same date.

In accordance with the legislation that applies to all undertakings of which the French State is a majority shareholder, EDF may have to undergo certain State audit procedures, in particular through an economic and financial evaluation assignment, pursuant to decree no. 55-733 of 26 May 1955 on State economic and financial evaluation and Decree no. 53-707 of 9 August 1953 on State evaluation of national public undertakings and certain organisations whose purpose has an economic or social component.

EDF is also subject to the audit procedures performed by the French Court of Auditors (*Cour des Comptes*) and Parliament. In addition to the control performed by the Statutory Auditors, the Company's accounts and management and, where applicable, those of its directly-held majority subsidiaries, fall under the control of the French Court of Auditors, in accordance with articles L. 111-4, L. 133-1 and L. 133-2 of the French Financial Jurisdictions Code.

Lastly, the sale of shares by the French State, or the dilution of the State's stake in EDF's capital, is subject to a special procedure pursuant to the aforementioned Order no. 2014-948 of 20 August 2014.

As a buyer, EDF is governed by the French Public Procurement Code.

7.1.6.2 Public service in France

Statutory definition of public service in France

Articles L. 121-1 *et seq.* of the French Energy Code outline the framework for the public electricity sector.

Public service missions

Articles L. 121-1 *et seq.* of the French Energy Code state that the public electricity service must develop a balanced supply of electricity, develop and operate public electricity networks, and supply electricity at regulated sales tariffs.

Balanced development of electricity supply mission

The purpose of developing a balanced supply of electricity, which is defined in Article L. 121-3 of the French Energy Code, is to achieve the objectives defined in the multi-year energy programme (*Programmation pluriannuelle de l'énergie* – PPE). The PPE was defined by decree, and sets out priority courses of action for the public authorities for the management of all forms of energy in continental metropolitan France. It must be compatible with the greenhouse gas emission reduction targets set in the carbon budget and the low carbon strategy, which are defined by Decree no. 2020-457 of 21 April 2020.

The multi-year energy programme defines the quantitative objectives for the plan and the maximum indicative budget for the public funds that will be allocated by the French State and its public institutions in order to attain them. It may be broken down by objective and by industry sector.

The French Energy and Climate Act (*loi relative à l'énergie et au climat*) adopted on 8 November 2019 created a programming law on energy and the climate (*Loi de programmation sur l'énergie et le climat* – LPEC) which will set the main objectives of the multi-year energy programme and the national low carbon strategy (*Stratégie nationale bas-carbone* – SNBC). Accordingly, these three documents will form the French energy and climate strategy. The programming law on energy and the climate should be adopted in 2024.

Decree no. 2020-456 of 21 April 2020 set the multi-year energy programme for the 2019-2023 and 2024-2028 periods. The multi-year energy programme 3 (PPE 3) (2024-2033) will have to be compatible with the programming law on energy and the climate and adopted by Decree within twelve months of the Act being adopted.

Pursuant to the law, EDF prepared a Strategic Business Plan (PSE) presenting the actions that the Company commits to implementing to meet the security of supply and electricity generation diversification objectives defined in the first period of the PPE. On 14 October 2020, the strategic business plan was submitted for approval by the Minister for Energy.

The Energy and Climate Act of 8 November 2019 specifies the procedure concerning the Strategic Business Plan, which will have to cover both periods of the multi-year energy programme, be made public (with the exception of information relating to business secrecy), and present the accompanying measures put in place for employees as a result of the closure of nuclear or thermal power stations. If the PSE is incompatible with the PPE, the act provides for a formal notice followed, if necessary, by sanctions.

The mission relating to the balanced development of electricity supply also involves guaranteeing supply in areas that are not interconnected to continental metropolitan France (Corsica, and the overseas *départements* and territories, as well as some islands in Brittany). Corsica, Guadeloupe, French Guiana, Martinique, Mayotte, La Réunion, and Saint-Pierre-et-Miquelon will each have their own specific PPE. Other areas that are not interconnected with the continental metropolitan network, except for Saint-Martin and Saint-Barthélemy, will be subject to a section appended to the PPE for continental metropolitan France.

As a power producer, EDF, along with the other producers, contributes to the performance of this mission.

Mission to develop and operate public transmission and distribution networks

The mission to develop and operate the public electricity transmission and distribution networks, which is defined in Article L. 121-4 of the French Energy Code, involves ensuring:

- a rational electricity distribution service in France through the public transmission and distribution networks, in a way that is environmentally friendly and interconnects with neighbouring countries;
- connection and access to the public transmission and distribution networks, under non-discriminatory conditions.

Public network operators are designated by law to carry out this duty: RTE for transmission, Enedis and local distribution companies (LDCs – *Entreprises locales de distribution*) for distribution, EDF in zones that are not interconnected to the continental metropolitan network.

Mission to supply electricity

The public service mission to supply electricity, which is defined in Article L. 121-5 of the French Energy Code, involves ensuring the supply of electricity throughout France to customers who benefit from regulated electricity sales tariffs.

This mission is entrusted to EDF and the LDCs.

The conditions under which customers can benefit from regulated electricity sales tariffs are defined in Articles L. 337-7 *et seq.* of the French Energy Code.

The mission to supply electricity may also consist in ensuring the supply of emergency electricity, defined in Articles R. 333-17 to R. 333-29 of the French Energy Code, to customers connected to public networks and whose supplier is in default or has had its authorisation withdrawn or suspended. Until the calls for applications provided for by the permanent emergency provision system have been implemented, in November 2021 the French State appointed emergency suppliers on a transitional basis (EDF in the RTE and Enedis supply areas, the LDCs in their supply areas, with the option to transfer this responsibility to EDF for non-residential customers).

Social cohesion

Article L. 121-5 of the French Energy Code provides that the supply of electricity at regulated tariffs must contribute to social cohesion, in particular through the national equalisation of the tariffs.

Article L. 115-3 of the French Social Action and Families Code prohibits electricity suppliers from cutting off electricity supplies to the primary residences of individuals or families during the winter period (from 1 November to 31 March) due to unpaid bills, including through contract termination. Nevertheless, in certain cases electricity suppliers may reduce the power supplied, except with regard to customers who benefit from "energy vouchers". These vouchers are a special means of payment that allow households that are experiencing financial difficulties to cover part of their energy consumption expenses (electricity, gas, fuel oil, *etc.*) or their expenditure on improving the energy efficiency of their home.

In its capacity as an electricity supplier, EDF is required to maintain electricity supplies under the conditions laid down by said Article and by Decree no. 2008-780 of 13 August 2008 on the procedure applicable in the event of unpaid electricity, gas, heating and water bills.

Public Service Contract

On 24 October 2005, a public service contract was entered into by the French State and EDF pursuant to Article L. 121-46 of the French Energy Code. This contract, which details the commitments made by EDF and the French State and specifies the rules governing the financial remuneration for service commitments, will remain in force until a new contract is signed, as provided for in the contract itself.

EDF's commitments

EDF's public service commitments include:

- the supply of electricity to customers who choose to remain at regulated tariffs;
- power generation, including the implementation of the energy policy and maintaining a secure and environmentally friendly electricity production;
- the obligation to purchase or enter into remuneration supplement contracts concerning electricity generated by installations falling within the scope of the schemes;
- contributing to the safety of the electricity network. In this regard, EDF undertakes to enter into several contracts with RTE, in particular concerning the optimisation of work on production facilities and the availability of the resources required to maintain network balance.

Commitments by network managers

Through the Public Service Contract, Enedis and RTE in their capacity as network managers made commitments concerning the management of the public networks for the transmission and distribution of electricity and the safety of the electricity system. These commitments are financed by the Tariff for Using the Public Electricity transmission and distribution Networks (TURPE).

These commitments concern, above all, network safety, supply quality, third party safety and the preservation of the environment – four areas where customers' and local authorities' expectations are especially high.

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7.2 Incorporation documents and articles of association

In this Universal Registration Document, a reference to the articles of association means the Company's articles of association as approved by Decree no. 2004-1224 of 17 November 2004 adopted under Act no. 2004-803 of 9 August 2004 relating to the public electricity and gas service and electricity and gas companies (the "Act of 9 August 2004"), which have subsequently been amended.

7.2.1 Corporate purpose and *raison d'être*

EDF's purpose, both in France and abroad and in compliance with the laws set out in Article 2 of its articles of association, is:

- to ensure the production, transmission, distribution, supply and trading of electrical energy, and the import and export of said energy;
- to carry out the public service missions assigned to EDF by the laws and regulations, in particular by the French Energy Code, and Article L. 2224-31 of the French Local Authorities Code, as well as by the concession agreements, and in particular the mission to develop and operate public electricity grids and to supply energy at regulated rates, and to supply back-up power to electricity producers and customers with the aim of compensating for unforeseen supply failures, and to supply electricity to eligible customers who cannot find a supplier, while contributing to the balanced development of electricity supply by reaching the goals defined by the multi-year generation investments programme defined by the Minister for Energy;
- more generally, to engage in any industrial, commercial or service activity, including research and engineering activities, in the field of energy, for all categories of customer;
- to enhance the value of all the personal and real property assets it holds or uses;
- to create, acquire, rent or lease under a business lease, all personal property, real property, businesses and clientele, to lease, install and operate all establishments, businesses and clientele, plants and workshops relating to any one of the aforementioned purposes;
- to obtain, acquire, operate or sell all processes and patents concerning the activities that are related to any of the aforementioned purposes;
- to take part, directly or indirectly, in all transactions that may be connected to any of the aforementioned purposes, by creating new companies or undertakings, by contributing, subscribing for or purchasing equity or ownership interests, stakes, or through mergers, partnerships or in any other way whatsoever; and
- more generally, to engage in all industrial, commercial, financial transactions, whether in personal or real property, that are directly or indirectly connected, in whole or in part, to any similar or related purposes or even to any purposes that may favour or develop the Company's business.

EDF's *raison d'être* is: "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development."

7.2.2 Financial year

Each financial year lasts for 12 months, starting on 1 January and ending on 31 December of each year.

7.2.3 Statutory distribution of profits

The distributable profit consists of the net profit for the fiscal year, less prior losses carried forward and the various deductions provided for by the law or the articles of association, plus any retained earnings carried forward.

The General Meeting may decide to distribute amounts deducted from the reserves that are freely available to it, but must expressly state the reserve items from which the deductions are made.

After approving the financial statements and confirming the existence of distributable amounts (which include the distributable profit and any amounts deducted from the reserves mentioned above), the General Meeting can decide to distribute all or part of such amounts to the shareholders in the form of a dividend, allocate them to reserve items or carry them forward. The Board of Directors may also distribute interim dividends prior to the approval of the financial statements for the financial year, under the conditions laid down by law.

The General Meeting has the option of granting the shareholders a choice, for all or part of the dividend or interim dividend paid out, between payment in cash and payment in shares. Moreover, the General Meeting may decide to pay any dividend, interim dividend, reserve or premium that is distributed or any reduction in capital, through remittal of the Company's assets, including financial securities.

Any shareholder who can prove, at the close of a fiscal year, that he has held registered shares for at least two years and still holds such shares on the date of payment of the dividend declared for the said financial year, will be entitled to an increased dividend for the said registered shares, equal to 10% of the dividend paid for the other shares, including in cases where the dividend is paid in shares. The number of shares eligible for the 10% increased dividend may not exceed, for any one shareholder, 0.5% of the share capital at the close of the past financial year. The first increased dividend was paid in 2014 for the 2013 financial year (see section 6.5.2 "Dividend policy, increased dividend").

The terms governing the payment of distributions decided by the General Meeting, and the ex-dividend date of the distributed shares are fixed by the General Meeting or, failing this, by the Board of Directors, in accordance with the applicable statutory provisions. If the amount of the non-cash distributions to which a shareholder is entitled does not correspond to a whole number of shares, the said number will be rounded down to the next whole number and a balancing cash payment made to the shareholder or, if requested by the General Meeting, rounded up to the next whole number, with the difference being paid in cash by the relevant shareholder.

7.2.4 Rights attached to shares

Each share entitles its holder to a portion of the Company's profit and corporate assets that is proportional to the percentage of the capital that the share represents. Moreover, each share confers a voting right and the right to be represented at General Meetings in accordance with legislative, regulatory and bylaw restrictions.

On the filing date of this Universal Registration Document, EDF has only issued a single class of shares.

Ownership of a share automatically entails acceptance of the articles of association and decisions adopted by General Meetings.

Shareholders are only liable for losses within the limit of their contributions.

Whenever it is necessary to hold more than one share in order to exercise any right whatsoever, in the event of an exchange, reverse stock split or allocation of shares, or due to a capital increase or reduction, a merger or any other corporate transaction, owners of single shares or numbers of shares below that required may only exercise such right if they take personal responsibility for consolidating or, if necessary, purchasing or selling the requisite number of shares.

Shareholders can choose to hold shares in registered or bearer form, subject to compliance with the laws and regulations.

Shares may be registered with an intermediary under the conditions provided for in Articles L. 228-1 *et seq.* of the French Commercial Code. Intermediaries must declare their status as intermediaries who hold shares for a third party, under the conditions provided for by the laws and regulations. These provisions are also applicable to the other securities issued by the Company.

Under the conditions provided for by the laws and regulations in force, the Company is entitled to request from the central custodian of financial instruments, at any time and provided that it pays the required consideration, as applicable, the name or corporate name, the nationality, the year of birth or the year of incorporation, and the address of the holders of bearer shares that grant an immediate or deferred right to vote at its own General Meetings, as well as the quantity of securities held by each of these shareholders and, where applicable, any restrictions to which the securities may be subject. The Company, in view of the list provided by the aforementioned body, has the right to ask the persons appearing on this list and whom the Company considers could be registered on behalf of third parties for the above information concerning the owners of the shares.

For registered shares that grant immediate or deferred access to the capital, intermediaries that are registered under the conditions provided for in Article L. 228-1 of the French Commercial Code mentioned above, are required, within ten business days as from receipt of the request made by the Company or its agent, which may be made at any time, to disclose the identity of the owners of said securities.

7.2.5 Assignment and transfer of shares

Shares can be traded without restriction, subject to compliance with the provisions of the laws and regulations. They are registered in an account and are passed on by transfer from one account to another.

7.2.6 Changes to the articles of association, the capital and voting rights

All changes to the articles of association, the capital or the voting rights attached to the securities that make up the capital are subject to the requirements of law, as the articles of association contain no specific provisions regarding such matters.

7.2.7 Administrative and management bodies

The composition and functioning of the administrative and management bodies are detailed in chapter 4 "Corporate governance" (*see sections 4.2 "Members and functioning of the Board of Directors"* and 4.3 "Executive Management").

7.2.8 Shareholder's Meetings

7.2.8.1 Convening notices to meetings

General Meetings are convened by the Board of Directors or, alternatively, by the Statutory Auditors or by any person empowered to do so. Meetings are held at the registered office or at any other place stated in the convening notice.

7.2.8.2 Participation in meetings and exercise of voting rights

General Meetings may be held by video conference or any telecommunication means that allow shareholders to be identified. The conditions governing the type and use of such means are specified in Articles R. 225-97 to R. 225-99 of the French Commercial Code. In such cases, shareholders who participate in the meeting by such means are deemed to be present for the calculation of the quorum and majority, under the conditions specified by law.

All shareholders can attend General Meetings, regardless of the number of shares they own.

Shareholders may choose between one of the following three methods of participation: attending the General Meeting in person, giving a proxy to the Chairman of the General Meeting or to any individual or legal entity of their choice (Article L. 225-106 of the French Commercial Code) or casting their vote remotely.

In accordance with Article R. 22-10-18 of the French Commercial Code, proof of the right to participate in a General Meeting is obtained by the registration of the securities in an account in the name of the shareholder or of the intermediary that is registered on the shareholder's behalf (pursuant to paragraph 7 of Article L. 228-1 of the French Commercial Code), on the second working day prior to the meeting, *i.e.* at midnight, Paris time, in the registered share accounts held by the Company (or its authorised representative).

All shareholders may grant a proxy to any individual or legal entity of their choice to be represented at a General Meeting. Proxies, as well as any proxy revocations, must be evidenced in writing and notified to the Company. Proxies may be revoked in the same forms as those required for the designation of the proxy holder, including by electronic means if need be. The owners of shares that are properly registered in the name of an intermediary under the conditions provided for in Article L. 228-1 of the French Commercial Code may be represented by a registered intermediary under the conditions provided for in said article.

7.2.9 Statutory or legal provisions preventing a change in the current control over the Company

Pursuant to Article L. 111-67 of the French Energy Code and the EDF articles of association, changes in share capital cannot result in the French State's shareholding falling below the statutory 70% threshold.

Certain shares may carry double voting rights in accordance with the conditions laid down in Article L. 225-123 of the French Commercial Code (see section 7.2.4 "Rights attached to shares").

With the exception of the foregoing, no other provision specifically aims to prevent or delay the takeover of the Company by a third party.

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7.3 Information regarding capital and share ownership

7.3.1 Amount and changes in share capital

On the filing date of this Universal Registration Document, the details of the Company's share capital are as follows:

Number of shares issued	**4,168,730,082**
Par value	€0.50 per share
Type of shares issued	ordinary shares
Share capital amount	€2,084,365,041
Treasury shares	0

The share capital issued by the Company has been paid up in full. The Company has not issued or authorised any preference shares.

The capital transactions over the last three financial years have been as follows:

Date of the transaction	Nature of the transaction	Shares created/ cancelled *(in number of shares)*	Nominal amount of the transaction *(in euros)*	Amount of capital after the transaction *(in euros)*	Shares forming the capital after the transaction *(in number of shares)*
30/06/2021	Capital increase – Payment of the balance of the dividend for the financial year ended on 31 December 2020	57,908,528	28,954,264	1,578,916,053.50	3,157,832,107
02/12/2021	Capital increase – Payment of the interim dividend for the financial year ended on 31 December 2021	80,844,641	40,422,320.50	1,619,338,374	3,238,676,748
17/03/2022	Capital increase with maintenance of the shareholders' preferential subscription right	498,257,960	249,128,980	1.868.467.354	3,736,934,708
21/06/2022	Capital increase – Payment of the balance of the dividend for the financial year ended on 31 December 2021	131,545,635	65,772,817.50	1,934,240,171.50	3,868,480,343
25/07/2022	Capital increase reserved for employees	18,100,741	9,050,370.50	1,943,290,542	3,886,581,084
16/12/2022	Capital increase by conversion of 882,340 green bonds convertible and/or exchangeable into new or existing shares of the Company ("Green OCEANEs")	1,137,336	568,668	1,943,859,210	3,887,718,420
27/02/2023	Capital increase by conversion of 201 Green OCEANEs	259	129.50	1,943,859,339.50	3,887,718,679
13/03/2023	Capital increase by conversion of 87,831,655 Green OCEANEs	113,215,003	56,607,501.50	2,000,466,841	4,000,933,682
25/05/2023	Capital increase by conversion of 130,784,645 Green OCEANEs	168,581,407	84,290,703.50	2,084,757,544.50	4,169,515,089
21/06/2023	Capital increase by conversion of 130,784,645 Green OCEANEs	103,504	51,752	2,084,809,296.50	4,169,618,593
31/07/2023	Capital decrease by cancellation of treasury shares	888,511	444,255.50	2,084,365,041	4,168,730,082

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7.3.2 Treasury shares and share buyback programme

The Combined General Meeting of 12 May 2022, in its 24th resolution, authorised the Board of Directors to set up a share buyback programme, up to a limit of 10% of the share capital per 24-month period.

The authorisation was granted for a maximum period of 18 months from the General Meeting of 12 May 2022 and expired on 12 November 2023.

At its meeting of 28 June 2023, the Board of Directors decided to reduce the Company's share capital by a nominal amount of €444,255.50 by cancelling 888,511 ordinary shares with a par value of €0.50. The 888,511 treasury shares represent a book value of €7,320,061.14.

By decisions of 31 July 2023, the Chairman and Chief Executive Officer recorded the capital reduction. At 31 December 2023, there were no more treasury shares.

The liquidity contract initially entered into with the investment service provider ODDO was terminated on 8 June 2023 following the squeeze-out.

Post-closing transactions

Between 1 January 2024 and 28 February 2024, the Company did not acquire any of its own shares and did not sell any shares.

7.3.3 Capital authorised but not issued

The following table presents a summary of the delegations of authority and authorisations to increase or reduce the share capital that were in force on the filing date of this Universal Registration Document which the Board of Directors was granted by the Combined General Meeting of 12 May 2022, and the extent to which they have been used at 31 December 2023:

STATUS OF THE AUTHORISATIONS ADOPTED BY THE COMBINED GENERAL MEETING OF 12 MAY 2022

Securities concerned/type of issue	Term of the authorisation and date of expiration	Maximum nominal increase or reduction in capital *(in millions of euros)*
Delegation of authority to the Board to increase the capital with maintenance of the shareholders' preferential subscription right	26 months 12 July 2024	935[(1)]
Capital increase, all securities		
Delegation of authority to the Board to increase the capital, by way of a public offering, with cancellation of the shareholders' preferential subscription right	26 months 12 July 2024	375[(1)]
Capital increase, all securities		
Delegation of authority to the Board to make offers for private placements[(2)] with cancellation of the shareholders' preferential subscription right	26 months 12 July 2024	375[(1)] and 20% of the share capital per year
Capital increase, all securities		
Authorisation for the Board to increase the number of securities to be issued in the event of a capital increase, with or without the shareholders' preferential subscription right	26 months 12 July 2024	15% the amount of the initial issue[(1)]
Capital increase, all securities		
Delegation of authority to the Board to increase the capital through the capitalisation of reserves, profits, premiums or otherwise	26 months 12 July 2024	1,000
Delegation of authority to the Board to increase the capital as consideration for a public exchange bid initiated by the Company	26 months 12 July 2024	185[(1)]
Delegation of authority to the Board to increase the capital to remunerate in-kind contributions[(3)]	26 months 12 July 2024	10% of the Company's capital up to a maximum of 115[(1)]
Delegation of authority to the Board to increase the share capital in favour of members of savings plans with cancellation of preferential subscription rights in favour of the latter[(4)]	26 months 12 July 2024	15
Issues reserved for the personnel		

(1) The nominal aggregate limit on the share capital increase of €935 million provided for in the 15th resolution submitted to the General Meeting of 12 May 2022, applies to all capital increases the nominal amount of which will be charged in consequence on this limit, with the exception of capital increases through capitalisation of reserves, premiums, profits or otherwise.

(2) Offers governed by Article L. 411-2 II of the French Monetary and Financial Code, in that they are exclusively intended for persons who provide investment portfolio management services on behalf of third parties or qualified investors or a restricted circle of investors acting on their own behalf.

(3) Article L. 22-10-53 of the French Commercial Code.

(4) By a decision taken on 25 July 2022, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 11 and 18 May 2022, itself making use of the delegation of authority granted to it by the Combined General Meeting of 12 May 2022 under its 22nd resolution, decided on a capital increase in cash with cancellation of the shareholders' preferential subscription right, reserved for the members of one or more company savings plans set up within the Company or the EDF group consisting of the French or foreign companies and undertakings included in the scope of consolidation of the Company's financial statements in accordance with the provisions of Article L. 3344-1 of the French Labour Code, for a nominal amount of €9,050,370.50. The capital was increased to €1,943,290,542 divided into 3,886,581,084 ordinary shares.

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7.3.4 Other equity securities

On 8 September 2020, EDF launched an issue of senior unsecured Green Bonds convertible into and/or exchangeable for new and/or existing shares (Green OCEANEs) maturing on 14 September 2024. The bonds were offered to the public exclusively to qualified investors, within the meaning of Article 2(e) of EU Regulation 2017/1129 of 14 June 2017, in France and outside France, in accordance with the procedure known as "bookbuilding", as developed by professional practice, with the exception of the United States of America, Australia and Japan (as referred to in Article L. 411-2, 1° of the French Monetary and Financial Code), for a maximum par value of approximately €2.4 billion and a gross annual negative return of -1.68%.

On 14 September, 219,579,139 Green OCEANEs were issued under ISIN code FR0013534518 with a par value of €10.93 and an issue price of €11.70, *i.e.* 107% of the par value. They do not bear interest. The French State subscribed to 87,831,655 Green OCEANEs, representing 40% of the issue and a nominal amount of approximately €960 million.

The Company has decided that in the event that the holders of Green OCEANEs exercise the option to convert and/or exchange these bonds into ordinary shares of the Company, the Green OCEANEs will be converted and the Company will issue new ordinary shares. On the date of the issue, the conversion ratio was 1 Green OCEANE for 1 ordinary share. It may be subject to adjustment in accordance with the terms of the issue agreement (see below).

An amount equal to the net proceeds of the issue will be allocated, directly or indirectly, for the financing and/or refinancing, in whole or in part, of new or existing Eligible Projects, as defined in EDF's Green Bond Framework. The existing eligible projects that may be refinanced through this issue with a maximum three-year retrospective period preceding the year of the bond issue represent approximately €1.5 billion, pursuant to EDF's Green Bond Framework.

This issue may also contribute to the strengthening of the Company's shareholders' equity, in the event that the holders of the Green OCEANEs exercise their conversion option, resulting in the issue of new shares of the Company.

Assuming an issue with a par value of €2,399,999,989.27 represented by 219,579,139 bonds with a par value of €10.93 each, based on the initial conversion ratio, the potential dilution would be approximately 7.1% of the Company's share capital if the right to the allocation of shares were exercised for all Bonds and the Company decided to issue only new shares in the event that the right to the allocation of shares is exercised [1].

In 2021, as a result of the distribution of a dividend of €0.21 per share and in accordance with the provisions of the issue agreement, the conversion/exchange ratio was increased to 1.018 EDF share per Green OCEANE. Subsequently, following the distribution of an interim dividend of €0.30 per share, the conversion/exchange ratio was increased to 1.042 EDF share per Green OCEANE, with effect from 2 December 2021.

In 2022, following the capital increase of 7 April 2022, the conversion/exchange ratio was increased to 1.087 EDF share per Green OCEANE. Then, at the time of the dividend payment for the year 2021, the conversion/exchange ratio was increased to 1.124 EDF share per Green OCEANE as of 13 June 2022. Lastly, as a result of the simplified tender offer initiated by the French State on 23 November 2022, the conversion/exchange ratio was increased to 1.289 EDF share per OCEANE.

At 31 December 2022, 882,340 Green OCEANEs were converted into new shares over the period from 24 November to 31 December 2022, resulting in the creation of 1,137,336 shares. These transactions increase the share capital by €0.57 million, due to an exclusive payment in new shares, and generate a bond-for-share conversion premium of €9.08 million.

At 31 December 2023, 218,696,799 Green OCEANEs were converted into new shares over the period from 26 January to 13 June 2023, resulting in the creation of 281,900,173 shares. These transactions increase the share capital by €140.9 million, due to an exclusive payment in new shares, and generate a bond-for-share conversion premium of €2.249 billion.

All of the Green OCEANEs have been converted.

7.3.5 Non-equity securities

Bonds at 31 December 2023

At 31 December 2023, the amount of bonds in the balance sheet was €49,083 million (note 18.3.2.1 "Changes in loans and other financial liabilities" in the consolidated financial statements at 31 December 2023), with note 18.3.2.2 also providing details of the Group's main borrowings, including those relating to EMTNs and other bonds. At 31 December 2023, the amount of perpetual subordinated bonds recognised in equity was €12,009 million (note 14.4.1 "Outstanding perpetual subordinated bonds at 31 December 2023" of the consolidated financial statements at 31 December 2023).

Euro Medium-Term Notes (EMTN) programme

On 18 April 1996, EDF set up a programme to issue debt securities in the form of Euro Medium-Term Notes (the "EMTN" programme). Since this date, this programme has been regularly renewed.

In 2023

On 19 January 2023, EDF launched a multi-currency senior bond issue in 4 tranches:

- a €1 billion bond issue with a 9-year maturity and a fixed coupon of 4.25%;
- a €1 billion bond issue with a 20-year maturity and a fixed coupon of 4.625%;
- a £450 million bond issue with a 12-year maturity and a fixed coupon of 5.50%;
- a £500 million bond issue with a 30-year maturity and a fixed coupon of 5.625%.

On 28 March 2023, EDF issued bonds for £99 million fungible in the £500 million issue with a 30-year maturity issued on 19 January 2023.

On 17 May 2023, EDF raised US$3 billion and CAD$500 million through five tranches of senior bonds:

- a US$1 billion bond with a 5-year maturity and a fixed coupon of 5.70%;
- a US$1 billion bond with a 10-year maturity and a fixed coupon of 6.25%;
- a US$1 billion bond with a 30-year maturity and a fixed coupon of 6.90%;
- a CAD300 million bond with a 7-year maturity and a fixed coupon of 5.993%;
- a CAD200 million bond with a 30-year maturity and a fixed coupon of 6.492%.

(1) See section 6.8 of the 2020 URD, presenting the report of the Board of Directors and the Statutory Auditors on the issue.

On 8 June 2023, EDF launched a US$1.5 billion hybrid bond issue with a 9.125% coupon and a redemption option including a first option for early redemption at the Company's call in December 2033.

On 22 June 2023, EDF raised ¥33 billion, corresponding to approximately €213 million, through 4 senior bonds issued on the Japanese market ("Samurai bonds"):

- a ¥25.3 billion bond with a 5-year maturity and a fixed coupon of 1.059%;
- a ¥2.2 billion bond with a 7-year maturity and a fixed coupon of 1.355%;
- a ¥4.4 billion bond with a 10-year maturity and a fixed coupon of 1.695%;
- a ¥1.1 billion bond with a 20-year maturity and a fixed coupon of 2.328%.

On 7 July 2023, EDF launched the buyback for US$904 million of a series of hybrid bonds denominated in US dollars with an initial amount of US$1.5 billion with an early redemption date at EDF's option on 22 January 2024. The principal amount of the securities concerned still outstanding following the settlement of the tender offer was redeemed on 22 January 2024 following the exercise of the early repayment option on this issue.

On 21 August 2023, EDF also launched a senior green bond issue of around CHF325 million in 2 tranches:

- a CHF200 million bond with a 4-year maturity and a fixed coupon of 2.3%;
- a CHF125 million bond with an 8-year maturity and a fixed coupon of 2.55%;
- an amount equal to the net proceeds of the green bonds will be allocated to the financing and/or refinancing, in whole or in part, of investments in electricity distribution related in particular to the adaptation of the network to the needs of the energy transition.

On 28 November 2023, EDF launched a €1 billion senior green bond issue with a maturity of 3 years and 6 months and a coupon of 3.75%. This is the first green bond issue, the amount of which will be entirely allocated to the existing French nuclear fleet.

In the two previous financial years, 2021 and 2022

On 26 May 2021, EDF launched an issue of hybrid perpetual corporate bonds for a total nominal amount of €1.25 billion with an initial coupon of 2.625% and a first early redemption option at EDF's option on 1 June 2028.

On 23 November 2021, EDF launched a senior green bond issue maturing on 29 November 2033 for a nominal amount of €1.75 billion and with a fixed coupon of 1%.

On 5 October 2022, EDF also launched a senior bond issue in 3 tranches, for a nominal amount of €3 billion consisting of:

- a €750 million bond issue with a maturity of 4 years and 3 months and a fixed coupon of 3.875%;
- a €1 billion bond issue with a 7-year maturity and a fixed coupon of 4.375%;
- a green bond issue for €1.25 billion with a 12-year maturity and a fixed coupon of 4.75%; the net proceeds of these green bonds will be allocated to the financing and/or refinancing, in whole or in part, of investments in electricity distribution, as defined in EDF's Green Financing Framework published in July 2022(1).

On 30 November 2022, EDF launched a €1 billion issue of undated hybrid bonds with a 7.5% coupon and a 6-year redemption option at the Company's discretion.

7.3.6 Information on the capital of every member of the Group that is the subject of a conditional or unconditional agreement

Disposal commitments involving securities in subsidiaries are described in note 3.2 "Assets and liabilities held for sale" to the consolidated financial statements for the financial year ended on 31 December 2023 and concerning the E&P activities, in particular earn-outs.

With the exception of these commitments to acquire and dispose of securities and any other commitments that are described in chapter 1 ("The Group, its strategy and activities") of this Universal Registration Document, EDF has not made any promises to purchase or sell that would make it possible to acquire or dispose of, as applicable, all or part of the capital of the Company or of any of its subsidiaries, as defined in Article L. 233-1 of the French Commercial Code.

7.3.7 Pledge of the Company's shares

To the Company's knowledge, none of the Company's ordinary shares that make up its share capital have been pledged.

(1) On www.edf.fr.

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7.3.8 Ownership of the Company's capital and voting rights

At 31 December 2023, the Company's share capital consisted of 2,084,365,041 ordinary shares held in full by the French State following the squeeze-out procedure implemented on 8 June 2023[1] and the cancellation of treasury shares implemented on 31 July 2023.

For the past three fiscal years, EDF's share capital has been owned as follows as at 31 December of each year:

	At 31/12/2023		At 31/12/2022		At 31/12/2021	
	Number of shares	% of capital	Number of shares	% of capital	Number of shares	% of capital
State[1]	2,084,365,041	100.00	3,460,481,557	89.01	2,716,550,741	83.88
Institutional and private investors	n/a	n/a	364,680,320	9.38	478,277,574	14.77
Employee shareholdings	n/a	n/a	61,668,032[2]	1.59	42,673,879[3]	1.32
Treasury shares	n/a	n/a	888,511	0.02	1,174,554	0.03
TOTAL	**2,084,365,041**	**100**	**3,887,718,420**	**100**	**3,238,676,748**	**100**

(1) The French State's shareholding in EDF includes the EDF shares held by Bpifrance.

(2) This number includes 57,796,177 shares (representing 1.49% of the capital) based on the definition of employee shareholdings under Article L. 225-102 of the French Commercial Code (shares held by EDF's employees and former employees through the "Actions EDF", "EDF Classique" and "EDF ORS" FCPE of the EDF group corporate savings plan). This number also includes almost 3.872 million shares, representing 0.10% of the capital, held as directly or administered registered shares, with no lock-in periods or whose lock-in periods have expired, by employees or former employees.

(3) This number includes 38,775,926 shares (representing 1.20% of the capital) based on the definition of employee shareholdings under Article L. 225-102 of the French Commercial Code (shares held by EDF's employees and former employees through the "Actions EDF", "EDF Classique" and "EDF ORS" FCPE of the EDF group corporate savings plan). This number also includes almost 3.899 million shares, representing 0.12% of the capital, held as directly or administered registered shares, with no lock-in periods or whose lock-in periods have expired, by employees or former employees.

(4) This number includes 38,075,245 shares (representing 1.23% of the capital) based on the definition of employee shareholdings under Article L. 225-102 of the French Commercial Code (shares held by EDF's employees and former employees through the "Actions EDF" and "EDF ORS" FCPE of the EDF group corporate savings plan). This number also includes almost 4.017 million shares, representing 0.13% of the capital, held as directly or administered registered shares, with no lock-in periods or whose lock-in periods have expired, by employees or former employees.

With regard to the theoretical voting rights exercisable at General Meeting, at 31 December 2023, the French State held 100% of the share capital and theoretical voting rights exercisable at General Meeting.

7.3.9 Agreements whose implementation could lead to a change of control

To EDF's knowledge, there are no agreements whose implementation could subsequently lead to a change in the Company's control.

Moreover, pursuant to Article L. 111-67 of the French Energy Code, the French State may not hold less than 70% of EDF's capital.

7.3.10 Relations with investors

EDF's Investor Relations Department establishes a permanent/regular dialogue with the financial markets in compliance with regulations. The objective is for the market to possess the information needed to enhance the Company's value over time, by explaining its strategy, its development model and its environment.

The Group publishes numerous communication materials on its strategy, results, business model and outlook, as well as on the various events that impact its activity. In addition, throughout the year, the Investor Relations Department maintains discussions with the market during physical or virtual meetings, conferences and roadshows, in particular to prepare for bond issues.

The purpose of this dialogue with the financial markets is to maintain a consistent and faithful image of the EDF group among analysts and investors, in particular so that the latter can assess the Group's operating and financial performance as well as its development prospects.

In 2023, the publication of the Group's financial results, now on a half-yearly basis, was the subject of a press conference and a conference call during which the Chief Financial Officer also answered questions from investors and financial analysts.

(1) See the press release dated 8 June 2023.

7.4 Transactions with related-parties

7.4.1 Transactions with related-parties

The information regarding the details of the transactions concluded by the Company with related parties, as defined by the IFRS, in respect of the 2023 financial year, is provided in note 22 "Related parties" to the consolidated financial statements for the financial year ended on 31 December 2023.

They describe:

- relations with the French State;
- relations with Engie;
- relations with Orano and public sector companies;
- the main transactions with the companies in the scope of consolidation.

The information on the regulated agreements and commitments referred to in Article L. 225-38 of the French Commercial Code is stated in the Statutory Auditors' special report, which is reproduced below in section 7.4.2 "Statutory Auditors' special report on regulated agreements" of this Universal Registration Document.

7.4.2 Statutory Auditors' special report on related party agreements

(Shareholders' Meeting for the approval of the financial statements for the year ended 31 December 2023)

This is a free translation into English of the Statutory Auditors' special report on related party agreements issued in French and is provided solely for the convenience of English speaking readers. This report should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France.

To the Shareholders,

In our capacity as Statutory Auditors of Electricité de France, we hereby report to you on related party agreements.

It is our responsibility to report to shareholders, based on the information provided to us, on the main terms and conditions of agreements that have been disclosed to us or that we may have identified as part of our engagement, as well as the reasons given as to why they are beneficial for the Company, without commenting on their relevance or substance or identifying any undisclosed agreements. Under the provisions of Article R.225-31 of the French Commercial Code (*Code de commerce*), it is the responsibility of the shareholders to determine whether the agreements are appropriate and should be approved.

Where applicable, it is also our responsibility to provide shareholders with the information required by Article R.225-31 of the French Commercial Code in relation to the implementation during the year of agreements already approved by the Shareholders' Meeting.

We performed the procedures that we deemed necessary in accordance with professional standards applicable in France to such engagements. These procedures consisted in verifying that the information given to us is consistent with the underlying documents.

AGREEMENTS TO BE SUBMITTED FOR THE APPROVAL OF THE SHAREHOLDERS' MEETING

Agreements authorised and entered into during the year

We were not informed of any agreements authorised and entered into during the year to be submitted for the approval of the Shareholders' Meeting pursuant to the provisions of Article L.225-38 of the French Commercial Code.

AGREEMENTS ALREADY APPROVED BY THE SHAREHOLDERS' MEETING

Agreements approved in previous years that were implemented during the year

In accordance with Article R.225-30 of the French Commercial Code, we were informed of the following agreements, approved by the Shareholders' Meeting in previous years, which were implemented during the year.

1. Settlement agreement relating to compensation paid by the French State for the closure of the Fessenheim nuclear power plant

Persons concerned: the French State, represented by Martin Vial on the Board of Directors, and by Alexis Zajdenweber, from 23 September 2022, a shareholder owning more than10% of the EDF's voting rights.

Nature, purpose and conditions: the purpose of the settlement agreement is to determine the damages and the terms and conditions for the calculation of compensation to be paid by the French State to EDF in connection with the early closure of the Fessenheim nuclear power plant. The conclusion of this settlement agreement, signed on 27 September 2019, was authorised by the Board of Directors' meeting of 4 April and 20 September 2019.

This agreement was amended on 25 July 2022, as mentioned in paragraph 1 of the third part of this report (Agreements authorised and entered into in previous years which may not be approved by the Shareholders' Meeting).

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The compensation breaks down as follows:

- Initial payments corresponding to the plant's anticipated closure costs. In this respect, EDF received compensation of €370 million on 14 December 2020. This compensation is recognised in the income statement in operating subsidies at the rate as the anticipated closure costs, representing €43 million in the year ended 31 December 2023.
- Subsequent payments corresponding to the lost income that would have been generated by future production volumes up until 2041, based on Fessenheim's previous output figures and calculated *"ex post"* on the basis of nuclear power sale prices, particularly observed market prices. This second category of compensation had no impact on the year ended 31 December 2023.

2. Sale agreement between EDF, Areva SA and Areva NP for the acquisition of 75.5% of New NP (now called Framatome) capital and other agreements signed by EDF as part of the sale by Areva SA of its entire interest in New NP (now called Framatome)

Persons concerned: the French State, represented by Martin Vial on the Board of Directors then by Alexis Zajdenweber, from 23 September 2022, a shareholder owning more than 10% of EDF and Areva SA's voting rights.

Nature, purpose and conditions: in connection with the acquisitions carried out by EDF for New NP, EDF entered into the following agreements:

(i) a sale agreement between EDF, Areva SA and Areva NP for the acquisition of 75.5% of New NP (now called Framatome), which is 100%-held by Areva NP, a subsidiary of Areva SA. The final acquisition agreement covering 75.5% of Framatome's capital, was authorised by your Board of Directors on 14 December 2017 and signed on 22 December 2017. The acquisition was carried out on 31 December 2017 for €1,868 million, excluding acquisition costs;

(ii) the other agreements signed by EDF as part of the aforementioned sale, previously authorised by your Board of Directors on23 June 2017 and 14 December 2017, i.e.:

- the final sale agreement signed by EDF on 14 December 2017 for the acquisition of 19.5% of the Framatome shares by MHI from Areva SA and Areva NP, under financial conditions similar to those of EDF;
- the final sale agreement signed by EDF on 14 December 2017 for the acquisition of 5% of the Framatome shares by Assystem from Areva SA and Areva NP, under financial conditions similar to those of EDF.

As mentioned in our special report dated 13 March 2023 for the Shareholders' Meeting held to approve the financial statements for the year ended 31 December 2022, EDF repaid €34 million to Framatome and €13 million to MHI and Assystem in proportion to their investment in Framatome, i.e. €10 million and €3 million respectively. In 2023, no payments impacting EDF's cash position were made.

AGREEMENTS AUTHORISED AND ENTERED INTO IN PREVIOUS YEARS BUT NOT APPROVED BY THE SHAREHOLDERS' MEETING

We draw your attention to the following agreements authorised and entered into in previous years, which were included in the special report on related party agreements relating to the 2022 financial year and which were not approved by the Shareholders' Meetings called to approve the financial statements for previous years.

1. Shareholders' agreement between EDF, on the one hand, and Caisse des Dépôts et Consignation and CNP Assurances on the other hand, regarding Coentreprise de Transport d'Electricité – CTE, parent company of RTE

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Persons concerned: the French State, represented by Martin Vial on the Board of Directors, then by Alexis Zajdenweber, from 23 September 2022, a shareholder owning more than 10% of EDF SA's voting rights, and having a representative on the Board of Directors of CNP Assurances.

Nature, purpose and conditions: this agreement, signed on 14 December 2016 and implemented on 31 March 2017 between EDF, Caisse des Dépôts et Consignation and CNP Assurances enabled the acquisition by the latter two of an indirect interest of 49.9% in the capital of RTE, via CTE, and the set-up of the terms and conditions of a long-term partnership to encourage RTE's development, notably by the conclusion of a shareholders' agreement.

This shareholders' agreement remained in force during the 2023 financial year.

2. Agreement entered into between the French State, EDF, Caisse des Dépôts, CNP Assurances and CTE on the governance of CTE and RTE

Persons concerned: the French State, represented by Martin Vial on the Board of Directors then by Alexis Zajdenweber from 23 September 2022, a shareholder owning more than 10% of EDF's voting rights, a party to the agreement and having a representative on the Board of Directors of CNP Assurances.

Nature, purpose and conditions: the purpose of this agreement entered into between EDF, Caisse des Dépôts and CNP Assurances, CTE and the French State, is to set forth the commitment of the French State to limit its representatives to two on the Supervisory Board of RTE.

This agreement remained in force for the year ended 31 December 2023.

AGREEMENTS AUTHORISED AND ENTERED INTO IN PREVIOUS YEARS THAT CANNOT BE APPROVED BY THE SHAREHOLDERS' MEETING

We draw your attention to the following agreements authorised and entered into in previous years, which were included in the special report on related party agreements for the 2022 financial year and which could not be legally approved by the Shareholders' Meeting called to approve the financial statements for the 2022 financial year, as the French State is the Company's sole shareholder.

1. Amendment to the settlement agreement relating to the compensation paid to EDF by the French State due to the early closure of the Fessenheim nuclear power plant

Persons concerned: *the French State, represented by Martin Vial at the Board of Directors (at the time of authorisation by the Board of Directors), then by Alexis Zajdenweber, from 23 September 2022, a shareholder owning more than 10% of EDF's voting rights.*

Nature, purpose and conditions: as mentioned in paragraph 1 of the second part of this report (Agreements already approved by the Shareholders' Meeting), a settlement agreement relating to the compensation to be paid by the French State to EDF in connection with the early closure of the Fessenheim nuclear power plant (the "Settlement Agreement") was signed on 27 September 2019.

At the request of the French State the decision was made to add certain modifications, by way of an amendment signed on 25 July 2022, to the Settlement Agreement in order to specify the practical terms and conditions of its application and provide better budget predictability for the French State without challenging the principles and balance defined by the Settlement Agreement.

Your Board of Directors, meeting on 15 December 2021 previously authorised the signing of this amendment to the Settlement Agreement, considering that it was in EDF's best interest to sign it since the modifications to the Settlement Agreement were negotiated by EDF in its best interests and did not challenge the clauses already approved in the Agreement.

This agreement remained in force for the year ended 31 December 2023.

2. Agreements concluded by EDF as part of the planned acquisition of General Electric's Steam Power nuclear activities

On 10 February 2022, EDF and General Electric Company (GE) signed a MOU for the planned acquisition by EDF of GE's "Steam Power" ("GE Steam Power") nuclear activities (excluding service activities conducted in America).

Your Board of Directors meeting of 3 November 2022 previously authorised the following agreements as part of the signing by EDF of the acquisition agreement involving GE Steam Power's activities on 4 November 2022 (the "Acquisition Agreement").

These agreements remained in force during the 2023 financial year.

2.1 Adherence by EDF to the agreement signed between General Electric Company and the French State on 10 February 2022

Persons concerned: the French State, represented on the Board of Directors by Alexis Zajdenweber on 23 September 2022, a shareholder with over 10% of EDF's voting rights.

Nature, purpose and conditions: at the same time as the signing of the aforementioned MOU, GE and the French State signed, on 10 February 2022, an agreement (the "Agreement"), the purpose of which is to provide for (i) the cancellation, as described below in paragraphs 2.2, 2.3 and 2.4 of this report, of two framework agreements and related licensing agreements entered into in 2014 during the acquisition by GE of all the Power & Grid activities of Alstom; and (ii) the commitments made by the French State as shareholder of GEAST as part of the acquisition by EDF of GE Steam Power's nuclear activities.

At the same time as the signing of the Acquisition Agreement and pursuant to its clauses, EDF adhered to the Agreement by signing it on 4 November 2022 with General Electric Company, and the French State, without any financial expense for EDF.

Your Board of Directors considered that it was in EDF's interest to adhere to the Agreement as its adhesion was linked to the signing by EDF of the Acquisition Agreement.

2.2 Agreement for the cancellation of the framework agreement guaranteeing the sustainability of the existing nuclear facilities, concluded during General Electric's acquisition of all of Alstom's Power & Grid activities

Persons concerned: the French State, represented on the Board of Directors by Alexis Zajdenweber, on 23 September 2022, a shareholder with over 10% of EDF's voting rights.

Nature, purpose and conditions: the purpose of this cancellation agreement is to cancel the framework agreement which was entered into between EDF, GE, Alstom SA and the French State on 4 November 2014, involving commitments to supply services to the current nuclear facilities of the EDF Group to guarantee the sustainability of nuclear facilities in operation, as part of the acquisition in 2014 by GE of all of Alstom's Power & Grid business.

This cancellation agreement, which was signed by EDF on 4 November 2022 with General Electric Company, the French State and GEAST, is at no expense for EDF.

Your Board of Directors considered that it was in EDF's interest to sign the cancellation agreement as its conclusion was linked to the signing by EDF of the Acquisition Agreement, the framework agreement to be cancelled during the completion of this this acquisition no longer becoming applicable.

2.3 Agreement for the cancellation of the framework agreement on new nuclear projects signed during General Electric's acquisition of all of Alstom's Power & Grid activities

Persons concerned: the French State represented on the Board of Directors by Alexis Zajdenweber, a shareholder with over 10% of EDF's voting rights and Jean-Bernard Lévy, the Chairman and CEO of EDF (until 23 November 2022) and Chairman of the Framatome Supervisory Board (until 25 November 2022).

Nature, purpose and conditions: the purpose of this cancellation agreement is to cancel the framework agreement which was entered into between EDF, Areva NP (Framatome assuming the rights of Areva NP in 2017), GE, Alstom SA and the French State on 4 November 2014 involving the commitments relating to the offer discounts based on Arabelle technology for new nuclear projects, as part of the acquisition in 2014 by GE of all the Power & Grid activities of Alstom.

This cancellation agreement, which was signed by EDF on 4 November 2022 with General Electric Company, the French State, Framatome and GEAST, is at no expense for EDF or Framatome.

Your Board of Directors considered that it was in EDF's interest to sign the cancellation agreement as its conclusion was linked to the signing by EDF of the Acquisition Agreement, the framework agreement to be cancelled during the completion of this acquisition no longer becoming applicable.

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2.4 Agreement for the cancellation of the licensing agreements concluded during the acquisition by General Electric of all of Alstom's Power & Grid activities

Persons concerned: the French State represented on the Board of Directors by Alexis Zajdenweber, a shareholder with over 10% of EDF's voting rights and a 100% shareholder of SPVPI, and Jean-Bernard Lévy, Chairman and CEO of EDF (until 23 November 2022) and Chairman of the Framatome Supervisory Board (until 25 November 2022).

Nature, purpose and conditions: the purpose of this cancellation agreement is to cancel the following licensing agreements related to the framework agreements concluded in 2014 during the acquisition by GE of all of Alstom's Power & Grid activities:

- licensing agreement on SPV intellectual property rights for current EDF facilities, concluded between Alstom Technologie AG, SOGEPA, GE, Alstom SA and EDF, and
- licensing agreement on SPV intellectual property rights for new nuclear projects, entered into between Alstom Technologie AG, SOGEPA, GE, Alstom SA, EDF and Areva NP (Framatome assuming the rights of Areva NP in 2017).

This cancellation agreement, which was signed by EDF on 4 November 2022 with General Electric Technology GmbH, General Electric Company, Framatome, SPVPI and GEAST, is at no expense for EDF or Framatome.

Your Board of Directors considered that it was in EDF's interest to sign the cancellation agreement as its conclusion was linked to the signing by EDF of the Acquisition Agreement, the licensing agreements to be cancelled during the completion of this acquisition no longer becoming applicable.

Neuilly-sur-Seine and Paris-La Défense, 11 March 2024

The Statutory Auditors

KPMG SA		PricewaterhouseCoopers Audit	
Marie GUILLEMOT	Jacques-François LETHU	Séverine SCHEER	Cédric HAASER

7.5 Material contracts

In addition to the regulated agreements included in the Statutory Auditors' special report, any contracts described in chapters 1 and 5 or in the appendix to the consolidated financial statements of this Universal Registration Document, the Group's material contracts, other than those entered into in the ordinary course of business, concluded in the course of the last three financial years are as follows:

7.5.1 Material contracts entered into in 2023

Material contracts entered into in 2023, other than those conducted in the normal course of business, by the Group, are the following:

- agreement for the sale of 49% of the capital of three project companies operating wind farms in France (installed capacity of 160MW) by EDF Renewables France to the Spanish company PonteGadea Inversiones SL (27 December 2023);
- agreement for the acquisition of a majority stake in the capital of Jeumont Electric by Framatome and a minority stake by Naval Group, representing 100% of the capital and voting rights, from Altawest (6 October 2023).

7.5.2 Material contracts entered into in 2022

Mmaterial contracts entered into in 2022, other than those conducted in the normal course of business, by the Group, are the following:

- agreement for EDF Trading Limited, a wholly-owned subsidiary of EDF, to sell 100% of the share capital of EDF Energy Services LLC (EDFES), the retail business of EDF Trading North America, to BP (12 September 2022);
- agreement to sell EDF's stake in the Sloe CCGT plant (870MW) in the Netherlands to EPH, a Czech power producer and grid operator (27 September 2022);
- agreement for Imtech, a subsidiary of Dalkia and the EDF group, to acquire SPIE UK (27 October 2022);
- agreement for EDF to acquire GE Stream Power's conventional nuclear power plant island business (4 November 2022);
- agreement for Imtech, a subsidiary of Dalkia and EDF Energy, to sell 100% of the capital of the Irish subsidiary Suir Engineering Ltd. to the British equity fund Duke Street (11 November 2022).

7.5.3 Material contracts entered into in 2021

Material contracts entered into in 2021, other than those conducted in the normal course of business, by the Group, are the following:

- settlement agreement between EDF and AREVA to resolve all disputes between EDF and AREVA relating to the Framatome acquisition agreement contract entered into in 2017 and their commercial relationship prior to the acquisition (29 June 2021).



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8.1 Person responsible for the Universal Registration Document and the Certification

8.1.1 Person responsible for the Universal Registration Document

Luc Rémont, Chairman and Chief Executive Officer of EDF.

8.1.2 Certification by the person responsible for the 2023 Universal Registration Document containing the annual financial report

I certify that, to the best of my knowledge, the information contained in this Universal Registration Document accurately reflects the facts and contains no omission likely to affect its meaning.

I certify that, to the best of my knowledge, the financial statements are prepared in accordance with accounting standards and that they give a true and fair view of the assets and liabilities, financial position and the income of the Company and of all the companies included in the consolidation scope, and that the management report included in this document presents a true and fair view of the business trends, income and financial position of the Company and of all the companies included in the consolidation scope and a description of the main risks and uncertainties they face.

Luc Rémont,

Chairman and Chief Executive Officer of EDF

8.2 Auditors – Statutory Auditors

KPMG SA

Tour EQHO, 2, avenue Gambetta, CS 60055, 92066 Paris-La Défense Cedex, represented by Ms Marie Guillemot and Mr Jacques François Lethu.

PricewaterhouseCoopers Audit

63, rue de Villiers, 92200 Neuilly-sur-Seine, represented by Ms Séverine Scheer and Mr Cédric Haaser.

KPMG SA, Principal Statutory Auditor, was renewed by decision of the Ordinary General Meeting of 28 June 2023 for a period of six financial years expiring at the end of the Ordinary General Meeting ruling on the financial statements covering the financial year closing on 31 December 2028.

PricewaterhouseCoopers Audit SAS, Principal Statutory Auditor, was appointed by decision of the Ordinary General Meeting of 28 June 2023 for a period of six financial years expiring at the end of the Ordinary General Meeting ruling on the financial statements covering the financial year closing on 31 December 2028.

The aforementioned Statutory Auditors consequently certified the financial statements reproduced in this Universal Registration Document.

8.3 Publicly available documents – LEI number

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The Company's press releases, annual reports, including historical financial information relating to the Company and any related updates filed with the French financial markets Authority (Autorité des marchés financiers – AMF), are available on the Company's website: www.edf.fr. A copy may also be obtained at the Company's registered office at 22-30, avenue de Wagram, 75382 Paris Cedex 08 (France).

EDF's LEI number is 549300X3UK4GG3FNMO06.

All of the regulated information published by the Company, pursuant to Articles 221-1 *et seq.* of the AMF's general regulation, is available on the Company's website[1].

The Company has imposed a 15-day embargo period prior to the announcement of the annual, half-year and quarterly results ("quiet period") during which no new information regarding the business development and EDF's results may be issued to financial analysts and investors, so as to prevent incomplete financial information from being released, enabling the recipients to anticipate EDF's results prior to their official publication.

In application of Article 19 of EU Regulation no. 2017/1129 of the European Parliament and of the Council of 14 June 2017, the following information is incorporated by reference in this Universal Registration Document:

- the main headings provided for in Appendices 1 and 2 of EU Delegated Regulation no. 2019/980 of 14 March 2019;
- the information making up the annual financial report provided for in Articles L. 451-1-2 of the French Monetary and Financial Code and 222-3 of the general regulations of the AMF;
- the information making up the management report of the Board of Directors provided for by the French Commercial Code, including the statement of non-financial performance (*Déclaration de performance extra-financière* – DPEF) and the report on corporate governance;
- the 2022 Universal Registration Document (2022 URD) of the EDF group, filed with the AMF on 21 March 2023 under number D-23-0122, and the 2021 Universal Registration Document (2021 URD) of the EDF group, filed with the AMF on 17 March 2022 under number D-22-0110, which can be consulted on the www.edf.fr website;
- the EDF group's consolidated financial statements (under international accounting standards) for the financial year ended on 31 December 2022, and the Statutory Auditors' report on those financial statements, as presented in chapter 6 of the EDF group's 2022 URD;
- the EDF group's consolidated financial statements (under international accounting standards) for the financial year ended on 31 December 2021, and the Statutory Auditors' report on those financial statements, as presented in chapter 6 of the EDF group's 2021 URD;
- the review of the EDF group's financial position and results for the financial year ended on 31 December 2022, as presented in chapter 5 of the 2022 URD;
- the review of the EDF group's financial position and results for the financial year ended on 31 December 2021, as presented in chapter 5 of the 2021 URD.

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(1) www.edf.fr

8.4 Concordance tables

8.4.1 Concordance table with Appendix I of (EC) Regulation no. 2019/980

The concordance table below identifies the information required by Appendices 1 and 2 of delegated regulation (EC) no. 2019/980 of 14 March 2019 in accordance with the scheme of this Universal Registration Document:

Appendices 1 and 2 of delegated regulation (EC) no. 2019/980 of 14 March 2019	URD paragraphs
1. Persons responsible, information from third parties, experts report and approval by the competent authority	
1.1 Identity of the persons responsible	8.1.1
1.2 *Certification by the persons responsible*	8.1.2
1.3 Name, address, qualifications and potential interests of persons acting as experts	n/a
1.4 Certification of third-party information	n/a
1.5 Declaration without prior approval of the competent authority	Page 3
2. Statutory Auditors	
2.1 Identity of the Statutory Auditors	8.2
2.2 Previous changes	n/a
3. Description of the significant risks	**Chapter 2**
4. Information about the issuer	
4.1 Legal and commercial name of the issuer	7.1.1
4.2 Location, registration number and LEI of the issuer	7.1.2 and 8.3
4.3 Date of incorporation and length of life of the issuer	7.1.3
4.4 Registered office and legal form of the issuer, legislation governing the activities, country of origin, address and telephone number of the registered office, website with a disclaimer	7.1.1 and 7.1.4
5. Business overview	
5.1 Main activities	
5.1.1 Nature of the operations	1.4
5.1.2 Important new products and services	n/a
5.2 Major markets	1.4
5.3 Key events in the development of the activities	1.4, 5.1.2 and 5.1.3
5.4 Strategy and objectives	1.3
5.5 Dependency of the issuer on patents, licenses, contracts and manufacturing processes	1.5
5.6 Competitive position declaration	2.1.1
5.7 Investments	
5.7.1 Major investments made	1.1, 5.1.4.2.3 and 6.1 (note 10.7)
5.7.2 Principal ongoing or future investments of the issuer for which the latter's management bodies have already made firm commitments and adopted financing methods	6.1 (note 10.6)
5.7.3 Joint ventures and commitments in which the issuer holds a significant proportion of the share capital	6.1 (note 12)
5.7.4 Environmental issues	3
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6.2 List of significant subsidiaries	1.2.1
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7.1.2 Forecasts for future development and research and development activities	1.3 and 1.5
7.2 Operating results	
7.2.1 Important factors, unusual or infrequent events or new developments	1.2.3, 5.1.2 and 5.1.3
7.2.2 Explanation of material changes in net sales or revenues	5.1.4
8. Cash and capital resources	
8.1 Capital Information	7.3 and 6.1 (note 14)

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Appendices 1 and 2 of delegated regulation (EC) no. 2019/980 of 14 March 2019	URD paragraphs
8.2 Cash flows	6.1 (notes 10.4, 10.7 and 13.1)
8.3 Financing needs and structure	6.1 (note 18.3)
8.4 Restrictions on the use of capital resources	n/a
8.5 Expected sources of financing	n/a
9. Regulatory environment	
9.1 Description of the regulatory environment and any measures or factors of an administrative, economic, budgetary, monetary, or political nature	1.4
10. Trend information	
10.1 Description of major trends and any significant changes in the Group's financial performance since the end of the last financial year	5.2, 5.3, 5.4, 6.6.2 et 6.1 (note 23)
10.2 Events that are reasonably likely to have a material effect on prospects	5.4
11. Profit forecasts or estimates	
11.1 Published profit forecasts or estimates	n/a
11.2 Declaration outlining key forecasting assumptions	n/a
11.3 Declaration regarding comparability with historical financial information and compliance of accounting methods	n/a
12. Administrative, management, and supervisory bodies and Executive Management	
12.1 Information regarding members	
Name, professional address and functions	4.2.1 and 4.3.1
Nature of any family relationship	4.4
Expertise and experience	4.2.1 and 4.3.2
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Appendices 1 and 2 of delegated regulation (EC) no. 2019/980 of 14 March 2019	URD paragraphs
18.1.6 Consolidated financial statements	6.1
18.1.7 Date of the latest financial information	31 December 2023
18.2 Interim and other financial information	
18.2.1 Quarterly or half-yearly financial information	n/a
18.3 Audit of historical annual financial information	
18.3.1 Independent audit of historical annual financial information	6.2
18.3.2 Other audited information	n/a
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18.4 Pro forma financial information	n/a
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19.2 Incorporation documents and articles of association	
19.2.1 Register and company purpose	7.1.2 and 7.2.1
19.2.2 Rights, privileges and restrictions attached to each class of shares	7.2.4
19.2.3 Provision delaying, deferring or preventing a change of control	7.2.9
20. Material contracts	7.5
21. Available documents	8.3

8.4.2 Concordance table with the management report

This Universal Registration Document includes the elements of the Board of Directors' management report relating to the 2023 financial year as provided for in Articles L. 225-100-1 *et seq.* and L. 22-10-35 of the French Commercial Code. The management report is composed of the sections of this Universal Registration Document identified in the table below:

Topics	Reference texts	URD paragraphs
1. Situation and activity of the Group		
1.1 Situation of the Company during the past financial year and an objective and exhaustive analysis of the development of the business, results and financial situation of the Company and the Group, in particular its debt situation, in relation to the volume and complexity of the business	L. 225-100-1, par. I, 1°, L. 232-1, par. I and II, L. 233-6 and L. 233-26 of the French Commercial Code	5
1.2 Key indicators of financial performance	L. 225-100-1, par. I, 2° of the French Commercial Code	1.1 and 5
1.3 Key indicators of financial and non-financial performance relevant to the particular business of the Company and the Group, including information relating to environmental and employee-related matters	L. 225-100-1, par. I, 2° of the French Commercial Code	3

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Topics	Reference texts	URD paragraphs
1.4 Key events arising between the end of the financial year and the date the management report was written	L. 232-1, par. II, and L. 233-26 of the French Commercial Code	5.1.2, 5.2 and 5.3
1.5 Identity of the main shareholders and holders of voting rights at General Meetings and changes during the financial year	L. 233-13 of the French Commercial Code	7.3.8
1.6 Existing branches	L. 232-1, par. II of the French Commercial Code	6.6.5
1.7 Acquisition of significant equity holdings in companies having their registered office on the French territory	L. 233-6, par. 1 of the French Commercial Code	5.1.3 and 6.1 (note 3)
1.8 Disposal of cross-shareholdings	L. 233-29, L. 233-30 and R. 233-19 of the French Commercial Code	n/a
1.9 Foreseeable development and future prospects of the situation of the Company and the Group	L. 232-1, par. II, and L. 233-26 of the French Commercial Code	5.4
1.10 Research and development activities	L. 232-1, par. II, and L. 233-26 of the French Commercial Code	1.5
1.11 Table showing the Company's results over each of the last five financial years	R. 225-102 of the French Commercial Code	6.6.1
1.12 Information concerning supplier and customer payment periods	L. 441-14 and D. 441-6 of the French Commercial Code	6.6.3
1.13 Amount of intercompany loans granted and statement from the Statutory Auditor	L. 511-6, par. 3 *bis*, and R. 511-2-1-3 of the French Monetary and Financial Code	6.6.4
2. Internal control and risk management		
2.1 Description of the main risks faced by the Company	L. 225-100-1, par. I, 3° of the French Commercial Code	2.2
2.2 Information on the financial risks related to the effects of climate change and the measures that the Company is taking to reduce them by implementing a low-carbon strategy in all components of its activity	L. 22-10-35, 1° of the French Commercial Code	2.2.5 and 3.1
2.3 Main characteristics of the internal control and risk management procedures implemented by the Company and the Group relating to the preparation and processing of accounting and financial information	L. 22-10-35, 2° of the French Commercial Code	2.1
2.4 Information on the objectives and policy regarding the hedging of each main category of transactions and on the exposure to price, credit, liquidity and treasury risks, including the use of financial instruments	L. 225-100-1, 4° of the French Commercial Code	5.1.6
2.5 Anti-corruptions provisions	"Sapin II" Act no. 2016-1691 of 9 December 2016	3.3.2.2.1
2.6 Vigilance plan and reporting on its effective implementation	L. 225-102-4 of the French Commercial Code	3.8
3. Report on Corporate governance		**See concordance table 8.4.3**
4. Share ownership and capital		
4.1 Structure, changes in the Company's capital and crossing of thresholds	L. 233-13 of the French Commercial Code	7.3
4.2 Acquisition and disposal by the Company of its own shares	L. 225-211 of the French Commercial Code	7.3.2
4.3 Overview of employee share ownership on the last day of the financial year (proportion of capital represented)	L. 225-102, par. 1 of the French Commercial Code	7.3.8
4.4 References to potential adjustments for the securities giving access to the share capital in the case of share repurchases or financial operations	R. 228-90 and R. 228-91 of the French Commercial Code	n/a
4.5 Information on operations made on the Company's shares by managers and related persons transactions	L. 621-18-2 of the French Monetary and Financial Code	n/a
4.6 Amount of dividend paid out over the past three financial years	243 *bis* of the French General Tax Code	6.5.1
5. Statement of non-financial performance		**See concordance table 8.4.4**
6. Other information		
6.1 Additional tax information	223 *quater* and 223 *quinquies* of the French General Tax Code	n/a
6.2 Injunctions or fines as a result of anti-competitive practices	L. 464-2 of the French Commercial Code	n/a

8.4.3 Concordance table with the elements of the EDF Board of Directors' report on corporate governance

This Universal Registration Document includes all the elements of the Company's Board of Directors' report pursuant to Article L. 225-37 of the French Commercial Code. The Board of Directors' report on corporate governance is composed of the sections of the Universal Registration Document identified in the table below and is included in the management report in a section on "Corporate governance":

Corporate Government/Corporate Officers **Section including elements contained in the report on corporate governance**	**Reference texts**	***URD* paragraphs**
Information on the remunerations		**4.6**
Information on governance		
3.15 List of all mandates and positions held in all companies by each corporate officer during the financial year	L. 225-37-4, 1° of the French Commercial Code	4.2 and 4.3
3.16 Agreements concluded between a manager or a major shareholder and a subsidiary	L. 225-37-4, 2° of the French Commercial Code	6.1 (notes 12 et 22)
3.17 Summary table of the outstanding delegations given by the Shareholders' Meeting to perform capital increases	L. 225-37-4, 3° of the French Commercial Code	7.3.3
3.18 Method of Executive Management	L. 225-37-4, 4° of the French Commercial Code	4.3
3.19 Membership, conditions for the preparation and organisation of the Board of Directors' work	L. 22-10-10, 1° of the French Commercial Code	4.2
3.20 Principle of balanced representation of women and men on the Board of Directors	L. 22-10-10, 2° of the French Commercial Code	4.2.1
3.21 Limits placed by the Board on the powers of the Chief Executive Officer	L. 22-10-10, 3° of the French Commercial Code	4.2.2
3.22 Reference to the Corporate Governance Code and implementation of the comply or explain principle	L. 22-10-10, 4° of the French Commercial Code	4.1
3.23 Specific procedures relating to the participation of shareholders in the Shareholders' Meeting	L. 22-10-10, 5° of the French Commercial Code	7.2.8
3.24 Evaluation procedure for current agreements – Implementation	L. 22-10-10, 6° of the French Commercial Code	n/a
3.25 Information likely to have an impact in the event of a takeover bid or exchange offer	L. 22-10-11 of the French Commercial Code	n/a

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8.4.4 Concordance table with the statement of non-financial performance

This Universal Registration Document includes the statement of non-financial performance for the 2023 financial year prepared in accordance with Articles L. 22-10-36 and R. 225-105 of the French Commercial Code.

Thus, to the extent necessary to understand the Company's position, the evolution of its business, its economic and financial results and the impact of its activity, the statement of non-financial performance (DPEF) presents information on how the Company and the Group take into account the social and environmental consequences of their activities, as well as the effects of these activities on respect for human rights and the fight against corruption and tax evasion.

The statement of non-financial performance is composed of the sections of the Universal Registration Document identified in the table below:

	Topics	Reference texts	URD paragraphs
5.1	Business model (or commercial model)	L. 233-13 of the French Commercial Code	1.1
5.2	Description of the main risks relating to the activity of the Company or the Group, including – if relevant and proportionate – risks due to its business relationships, products or services	L. 225-102-1 and R. 225-105, par. I, 1° of the French Commercial Code	2.2
5.3	Information on how the Company or Group takes into account the social and environmental consequences of its activity, and the effects of this activity in terms of respect for human rights and the fight against corruption (description of the policies applied and due diligence procedures implemented to prevent, identify and mitigate the main risks related to the Company's or Group's activity)	L. 225-102-1, par. III, L. 22-10-36, R. 225-104 and R. 225-105, par. I, 1° of the French Commercial Code	3
5.4	Results of the policies applied by the Company or Group, including key performance indicators	L. 225-102-1 and R. 225-105, par. I, 3° of the French Commercial Code	
	CSR issue topics from the materiality matrix	**Key performance indicators**	3
	Ambitious carbon trajectory	Carbon intensity: specific CO_2 emissions from electricity and heat generation ✓	3.1.1
	Carbon contribution	Deployment rate of the framework guidelines on carbon contribution solutions	3.1.1.6
	Adapting to climate change	Deployment rate of new climate change adaptation plans within concerned entities	3.1.2
	Developing electricity use and energy services	Avoided CO_2 emissions thanks to sales of innovative goods and services	3.1.3
	Biodiversity	Achievement rate of "Act4nature international" commitments (2023-2025)	3.2.2
	Responsible land management	Implementation rate of innovative solutions encouraging for multifunctional land use	3.2.2
	Integrated and sustainable water management	Water intensity: water consumed/electricity generated by fleet ✓	3.2.3
	Radioactive and conventional waste, and circular economy	Annual rates of conventional waste directed to recovery facilities	3.2.4
	Security, health and safety for all	Global Lost Time Incident Rate (LTIR)	3.3.1
	Ethics, compliance and human rights	Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure	3.3.2
	Equality, diversity and inclusion	Gender balance index: percentage of women in the Management Committees of the Group's entities	3.3.3
	Energy poverty and social innovation	Advisory actions carried out with customers within the framework of the Energy Support Services	3.3.4
	Dialogue and consultation with stakeholders	Annual rate of projects for which a dialogue and consultation process is engaged	3.4.1
	Responsible regional development	Annual rate of procurement from SMEs in France	3.4.2
	Development of industrial sectors	Achievement rate of supporting actions backed by EDF encouraging relocation and maintaining nuclear industry skills (France Relance Programme)	3.4.3
	Data responsible company	Achievement rate of EDF commitments towards French Responsible Digitalisation Institute (INR)	3.4.4

	Topics	Reference texts	URD paragraphs
5.5	Social information (employment, work organisation, health and safety, social relations, training, equal treatment)	L. 225-102-1 and R. 225-105, par. II A. 1° of the French Commercial Code	3.3.3, 3.5.3, 3.4.2.1 and 3.3.1.3
5.6	Environmental information (general environmental policy, pollution, circular economy, climate change)	L. 225-102-1 and R. 225-105, par. II A. 2° of the French Commercial Code	3.1.3, 3.2.1 and 3.3.1
5.7	Societal information (societal commitments in favour of sustainable development, subcontracting and suppliers, fair practices)	L. 225-102-1 and R. 225-105, par. II A. 3° of the French Commercial Code	3.4
5.8	Information relating to the fight against corruption and tax evasion	L. 22-10-36 and R. 225-105, par. II B. 1° of the French Commercial Code	3.3.2.2
5.9	Information on human rights actions	L. 22-10-36 and R. 225-105, par. II B. 2° of the French Commercial Code	3.3.2 and 3.8
5.10	Specific information: • technological accident risk prevention policy implemented by the Company; • ability of the Company to cover its civil liability with regard to property and persons as a result of the operation of such facilities; • resources allocated by the Company to ensure the management of compensation for victims in the event of a technological accident for which it is liable.	L. 225-102-2 of the French Commercial Code	2.1.3.7
5.11	Collective agreements concluded within the Company and their impact on the economic performance of the Company and working conditions of employees	L. 225-102-1, par. III, and R. 225-105 of the French Commercial Code	3.5.3
5.12	Attestation of the independent third-party body of the information contained in the statement of non-financial performance (DPEF)	L. 225-102-1, par. III, and R. 225-105-2 of the French Commercial Code	3.7.5
5.13	Eligibility and alignment of the Group's activities with the European Taxonomy		3.7.4

✓ 2023 value subject to a reasonable assurance audit by PricewaterhouseCoopers Audit.

8.4.5 Concordance table with the annual financial report

This Universal Registration Document includes the annual financial report for the 2023 financial year. It has been prepared in application of Articles L. 451-1-2 of the French Monetary and Financial Code and Article 222-3 of the General Regulations of the AMF. The annual financial report is composed of the sections of the Universal Registration Document identified in the table below:

Topics	URD paragraphs
1. EDF annual financial statements	6.3
2. EDF group consolidated financial statements	6.1
3. Management report (minimum information within the meaning of Article 222-3 of the General Regulations of the AMF)	8.4.2
4. Statement by the persons responsible for the annual financial report	8.1.2
5. Statutory Auditors' reports on the EDF's financial statements and the consolidated financial statements	6.2 and 6.4

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8.5 Glossary

ANDRA	National agency for radioactive waste. A public industrial and commercial institution created following the Act of 30 December 1991 and responsible for the long-term management of radioactive waste.
ASN	Nuclear safety authority. For a detailed description of its remits, please refer to section 1.4.1.1.2.1.
Balancing Mechanism	Created by RTE on 1 April 2003, the balancing mechanism allows it to use power reserves that can be mobilised in the event of an imbalance between supply and demand.
Becquerel (Bq)	International legal unit for measuring radioactivity. The becquerel (Bq) is equal to one disintegration per second. The activity represented by this unit is so low that multiples of it are used: the MBq (megabecquerel or million becquerels) and the GBq (gigabecquerel or billion becquerels).
Biogas	Gas generated from the fermentation of organic animal or plant matter.
Biomass	Technologies based on biomass mainly consists of burning certain types of waste, particularly from the timber and farming industries, or exploiting wood fuel forests, to produce heat or electricity.
Cogeneration	Generation technique for combined electricity and heat generation. The advantage of cogeneration is the ability to capture the heat produced by the fuel whereas in traditional electricity generation this heat is lost. This process also allows the same facility to meet the heating (hot water or steam) and electricity needs of both industrial and local authority customers. This system improves the energy efficiency of the generation process and reduces the fuel use by an average of 20%.
Combined-Cycle Gas	A technology for generating electricity in a natural gas-fired plant. A combined cycle is made up of one or more combustion turbines (TAC) and a steam turbine allowing for an improved yield. The natural gas is routed to the combustion turbine, which generates electricity and very hot exhaust gases. The heat from the exhaust gases is recovered by a boiler, thus producing steam which is recovered by the steam turbine to generate electricity.
Congestion	Situation in which an interconnection linking the national transmission grids cannot absorb all of the physical flows resulting from international exchanges required by market operators due to a shortage of capacity in the interconnection and/or the national transmission grids involved.
Disruption	Voluntary reduction of electrical power by a customer, in exchange for compensation. It is called "diffused" when it is due to the aggregation of small consumption sites.
Distribution network	Downstream of the transmission network, medium- and low-voltage distribution networks serve end-users (private individual, local authorities, SMEs, SMIs, etc.).
Electricity supply	Electricity demand can be broken down into four types of consumption: • the "basic" (or "ribbon") supply of electricity, which is generated and consumed throughout the year; • "semi-basic" supply is the electricity generated and consumed over the winter period; • "peak" supply corresponds to periods of the year when electricity generation or supply is in heavy demand; • "lace" supply is a complement to "ribbon" supply.
Energy Regulation Commission (CRE)	French energy regulatory Commission. See section 1.4.2.1.1.
Enriched uranium	Uranium, whose isotope 235 content, the only fissile material, has been increased from its low natural level (0.7%) to approximately 4% in order to be used as pressurised water reactor fuel.
Enrichment	Process to increase the fissile content of an element. In its natural state, uranium is 0.7% uranium 235 (fissile) and 99.3% uranium 238 (non-fissile). To enable its efficient use in a pressurised water reactor, it is enriched with uranium 235 whose proportion is increased to around 4%.
ERU (enriched reprocessed uranium)	To be used in a reactor, reprocessed uranium (RepU), even if containing more fissile uranium than in its natural state, must be further enriched. It is therefore called enriched reprocessed uranium (ERU).
Entity responsible for balance	Entities with which RTE signs a contract for the financing of shortfalls between forecast and actual consumption and the production of a portfolio of users brought together by the entity responsible for balance which plays a role of insurer covering the potential losses arising from the many differences between over- and under-supply.
European green taxonomy	Commission Delegated Regulation (EU) no. 2021/2139 of 4 June 2021 supplementing Regulation (EU) no. 2020/852 of the European Parliament and of the Council with the technical review criteria for determining under which conditions an economic activity can be considered to contribute substantially to climate change mitigation or adaptation and whether that economic activity does not cause significant harm to any of the other environmental objectives.
EPR	The latest generation European Pressurised water Reactor currently under construction (known as "generation 3"), is the result of Franco-German cooperation, and offers advanced safety, environmental and technical performance.
Fluorination (conversion)	Also called "conversion", fluorination allows for the purification of uranium compounds and their transformation into uranium hexafluoride (UF_6), allowing their enrichment using current techniques.
Fuel Assembly	The nuclear fuel used for EDF's PWR is in the form of an assembly made up of an array of 264 fuel rods, bound together by a rigid structure made of tubes and grids. Each fuel rod consists of a water-tight zirconium tube into which uranium oxide pellets are piled, constituting the fuel. The assemblies are loaded side by side into the reactor vessel – for example, 205 assemblies are required for a 1,500MW reactor – to make up the core of the reactor. During operation, these assemblies are crossed by bottom to top with primary water which heats on contact and carries this energy to the steam generators.

Fuel Cycle	The nuclear fuel cycle encompasses all industrial operations in France and abroad which enable the supply of the fuel to generate energy in a reactor, then to unload and process it. See section 1.4.1.1.2.3.
Greenhouse gases (GHG)	Gas that retains a portion of the solar radiation in the atmosphere and for which an increase in emissions due to human activity (man-made emissions) causes an increase in the earth's average temperature and plays an important role in climate change. The Kyoto Protocol covers the seven following principal greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrogen protoxide (N_2O), hydrofluorocarbons (HFC), perfluorated hydrocarbons (PFC), sulfurhexafluoride (SF_6) and, since 2013, nitrogen trifluoride (NF_3).
Hydrogen	The conversion of natural gas into hydrogen generates CO_2 hence the qualification of "grey" hydrogen. This form of hydrogen is used on a large scale, particularly in the chemical industry to produce ammonia and fertilisers. So-called "blue" hydrogen is obtained when the emitted CO_2 is captured and then reused or stored. So-called "green" hydrogen is generated from renewable energy sources. The electricity generated by wind power, solar power or hydropower plants is transformed with water through an electrolysis process. No greenhouse gases are emitted. Hydrogen can be stored in large quantities and then converted back into electricity.
IAEA	International Atomic Energy Agency based in Vienna (Austria).
INB	Basic nuclear installation.
Interconnection	Electricity transmission infrastructure that allows for exchanges of energy between different countries, by connecting the transmission network of one country to that of a neighbouring country.
Intermediate storage	Intermediate storage is a step in the process of managing nuclear waste. It involves placing waste packages in a facility to ensure, for a given period of time, their isolation from contact with man and the environment with the intention of retrieving them for a further stage in the waste management process for final storage (possibly after a further stage in the waste management process). The intermediate storage facilities are designed, built and managed by the producers of such waste (EDF, ORANO and CEA) and are close to the areas where the waste is conditioned.
IRSN	French radiation protection and nuclear safety Institute (Institut de radioprotection et de sûreté nucléaire – IRSN). IRSN is the public expert in research and assessment of nuclear and radiological risks.
LDC	French Local Distribution Companies. LDCs sell and deliver electrical energy to end users located in their exclusive service area.
Liquefied Natural Gas (LNG)	Natural gas turned into liquid form by reducing its temperature to (162)°C, allowing for a reduction by 600 in its volume.
Man-sievert	Unit expressing the collective equivalent dose. A man-sievert is the collective dose from exposure of 1,000 men to 1 mSv (millisievert).
Metering	A system allowing for the recording, at a given network connection point, of the volumes of electricity transmitted or distributed (power, frequency, active and reactive energy).
Microgrid	Microgrids (or *microréseaux*) are small power grids designed to provide a reliable supply of electricity to a small number of consumers. They combine multiple local and diffuse production facilities, consumption facilities, storage facilities and tools for supervision and demand management. They can be connected directly to a distribution network or operate disconnected from the network (islanding).
MW – MWh	The megawatt-hour (MWh) is the energy unit generated by a facility and is equal to the facilities' power, expressed in megawatts (MW), multiplied by the duration of operations in hours. 1 MW = 1,000 kilowatts = 1 million watts 1 MWh = 1 MW produced for 1 hour = 1 megawatt-hour 1 GW = 1,000 MW = 1 billion watts 1 TW = 1,000 GW
MWh cumac	The MWh cumac is the certificate energy unit of counting which corresponds to the cumulative energy savings aggregated over the operations' lifetime.
Non-interconnected zones	Zones in France which are not connected (by power lines) to metropolitan France (Corsica and overseas departments).
Nuclear safety	Nuclear safety includes all of the technical, organisational and human measures which are intended to prevent accident risks and to limit the effects of an accident, and which are taken at every stage of the nuclear power plant lifecycle (from design to operation and finally to decommissioning).
Nuclear unit	Electrical generation unit consisting of a nuclear boiler and a turbo-alternator generator. A nuclear unit essentially consists of its reactor type and the power of its turbo-alternator generator. EDF nuclear plants include two or four units, and occasionally six.
Plant availability	Fraction of power available, out of theoretical maximum energy, counting only technical unavailability. The availability coefficient (Kd) is defined as the ratio between the annual actual generation capacity (or amount producible annually) and the maximum theoretical generation capacity, where the maximum theoretical generation capacity = installed capacity × 8,760 hours. The Kd, which counts only technical non-availability, *i.e.* scheduled shutdowns, unplanned outages and testing periods, characterises a plant's industrial performance.
Plutonium (Pu)	Element with the atomic number of 94 (number of protons) and no naturally occurring isotopes (elements whose atoms possess the same number of electrons and protons – thus the same chemical properties – but a different number of neutrons). Plutonium 239, a fissile isotope, is produced in nuclear reactors from uranium 238.

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Producible hydropower generation	Maximum energy that hydropower facilities may produce, at the facility's maximum authorised capacity, using contributions under normal hydraulicity conditions. However, generation from hydroelectric facilities does vary, sometimes markedly, from one year to the next depending on hydraulicity (rainfall and snowfall). In dry years, the generation index may vary by 20% or more from the standard level.
Radiation protection	At a power plant, ionising radiation sources are numerous: the fuel itself, equipment activated by neutron flux (particularly those that are close to the core, such as tanks or lids) and particles from corrosion of the primary circuit of the reactors and carried by the primary fluid. The level of exposure of a person is quantified by the dose equivalent in sieverts (Sv). The total dose equivalents, called "collective dosimetry" and expressed in man-sieverts, is used as an indicator of the dose received by all participating persons. The mobilisation of stakeholders has allowed a continuous improvement of performance on the protection of employees against the effects of ionising radiation.
Radioactive Waste	Nuclear energy produces carbon-free electricity, but it generates radioactive waste. The short-lived waste represents more than 90% of the total volume, but contains only 0.1% of the radioactivity of the waste. Accordingly, based on their level of radioactivity, they are separated into two sub-categories: low-level waste (TFA) and very-low-level waste (FA). The long-lived medium and high-level waste (MAVL and HA) are produced in low quantity (less than 10% of the total volume) but they contain almost all of the radioactivity of the waste (99.9%).
Renewable energies	Energies for which production does not require extinction of the initial resource. They include hydro, wind, solar, marine (the energy produced by marine waves and currents), geothermal (energy derived from the heat below the earth's magma) energies, and biomass (energy derived from living matter, particularly wood and organic waste). They often include energy from the incineration of household or industrial waste.
Reprocessing	Reactor burnt fuel reprocessing aimed at separating materials that can be recycled (uranium and plutonium) from final waste.
RepU (reprocessed uranium)	Reprocessed uranium (RepU), uranium derived from spent fuel reprocessing, differs from natural uranium as it contains slightly more uranium 235 and other uranium isotopes. It is recyclable and RepU fuel assembly refuelling is ordinarily used in reactors.
Scopes 1, 2 and 3	Every year, EDF draws up a GHG report (scopes 1, 2 and 3) covering the Group scope calculated according to the principles of the GHG Protocol Corporate Standard: • Scope 1 covers the direct emissions generated by EDF's assets: CO_2, CH_4 and N_2O emissions from power and heat generation plants, consumption of fossil fuels for heating, fuel consumption of the fleet of vehicles and machinery, fugitive emissions from hydropower plant reservoirs, fugitive emissions of SF6 and refrigerating fluids; • Scope 2 covers the indirect emissions linked to losses in the electricity networks of our electricity distribution companies and those linked to the purchase of energy for our own needs: electricity consumption of tertiary buildings and data centers, consumption of heating and chilled water networks for our own use; • Scope 3, which comprises 15 categories (GHG Protocol), covers the other indirect emissions generated by EDF's suppliers (purchases of goods and services, upstream of fuels including nuclear, leased assets, downstream freight of by-products), and by EDF's customers (upstream and combustion of gas purchased for resale to end customers, production of electricity and heat purchased for resale to end customers) or at EDF's facilities (depreciation of emissions linked to the manufacture of fixed assets, emissions from non-consolidated investments, upstream and losses linked to the transport and distribution of electricity, upstream and losses of electricity, heat and cold consumption for own use, waste management, travel of employees, etc.).
Series	In the nuclear field, a series of plants means a set of nuclear plants with identical generation capacity. EDF's PWR model is divided into three series of power generation capacity: the 900MW series (32 units currently in operation of approximately 900 MW each), the 1,300MW series (20 units) and the 1,450 MW series (4 units).
Smart city	The smart city is a new concept of urban development. The aim is to improve the quality of life of city dwellers by making cities more adaptive and efficient, using new technologies based on an object and service ecosystem. The scope of this new way of managing cities includes: public infrastructure (buildings, street furniture, home automation, etc.), networks (water, electricity, gas, telecoms), transport (public transport, intelligent roads and cars, carpooling, so-called soft mobility – by bike, on foot, etc.), e-services and e-administrations.
Smart charging	Smart charging is an umbrella term for all technologies aimed at optimising the charging or discharging of an electric vehicle through efficient, flexible and economical management of the vehicle's recharging power.
SMR	Small modular reactors (SMRs) are small-scale power plants with one or more reactors with a unit power of less than 300MWe. This small power allows for the reduction of certain systems, standardisation of design and thus a reduction in the duration of construction sites in order to improve their competitiveness.
STEP	Pumped-storage hydropower plant. Power plant with two tanks, an upper and a lower one, connected by pumps that allow the water to be pumped up once turbined and located in the lower tank, towards the upper tank.
Storage (about nuclear fuel)	Storage consists in placing packages of radioactive waste in a facility, ensuring their long-term management, *i.e.* under safe conditions allowing for long-term risk control.
Systems services	Systems services are services provided to users (consumers or electricity producers) through the joint action of the electricity transmission network operator RTE and the producers. They are intended to regulate frequency and voltage in order to maintain the balance between electric consumption and generation at all times. They are created by RTE from elementary contributions from producers, *i.e.* primary and secondary reserves provided to RTE. RTE remunerates the producers for these auxiliary services before reinvoicing these services *via* the tariff to use the network under the rules defined by the Union for the Coordination of Transmission of Electricity (UCTE).

Therms (th)	One therm (th) is equivalent to 1,163kWh or 4,186 million joules.
Transmission network	Network providing for the transmission of electrical power at High and Very High Voltages from the generating sites to the distribution networks or industrial sites directly connected to it; this includes the major interconnection transmission network (400,000 volts and 225,000 volts) and the regional distribution networks (225,000 volts, 150,000 volts, 90,000 volts and 63,000 volts).
Uranium	In its natural state, uranium is a mix containing three main isotopes (elements whose atoms have the same number of electrons and protons, thus the same chemical properties, but a different number of neutrons): • uranium 238, fertile, in a proportion of 99.3%; • uranium 235, fertile, in a proportion of 0.7%. Uranium 235 is the only natural fissile isotope, a quality which justifies its use as an energy source.
Vitrification	Process of immobilisation in a glass structure of concentrated solutions of highly radioactive products by mixing at high temperature with glass paste.

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In this Universal Registration Document (URD), unless otherwise indicated, the terms "Company" and "EDF" refer to the company Électricité de France SA and the terms "EDF group" and "Group" refer to EDF and its subsidiaries and associates. In addition to the information contained in this Universal Registration Document, the reader is invited to carefully consider the risk factors described in chapter 2 "Risk factors and control framework". These risks, or one of these risks, could negatively impact the Group's business, position, financial results or outlook. Furthermore, other risks not yet identified or considered as non material by the Group, could also have a negative impact, and investors could consequently lose all or part of their investment in the Company.

This Universal Registration Document also contains information relating to the markets in which the EDF group operates. This information has been taken from surveys carried out by external sources. Given the rapid changes affecting the energy sector in France and throughout the world, it is possible that this information could prove to be erroneous or no longer up-to-date on the filing date of this Document or thereafter. The Group's activities may therefore evolve in a manner different to that described in this document, and the statements or information presented in this document may prove to be erroneous. The forward-looking statements in this document, specifically in section 1.3 "Group strategy and objectives" and section 5.1.5 "Financial outlook", are based on assumptions and estimates that could change or be impacted by risks, uncertainties (linked, in particular, to the economic, financial, competitive, regulatory and climatic environment) and other factors that may cause the future income, performance and achievements of the Group to differ significantly from the objectives expressed and suggested. These factors may include changes in the economic and commercial environment, in the regulations, and in the factors set forth in chapter 2 "Risk factors and control framework".

In application of European and French legislation, RTE and Enedis, which are regulated subsidiaries, managed in compliance with the rules of management independence within the meaning of the provisions of the French Energy Code, responsible respectively for the transmission and distribution of electricity within the EDF group, cannot communicate some of the information they collect in the course of their activities to other Group entities, including its management. Similarly, certain data specific to generation and marketing activities cannot be communicated to the entities in charge of transmission and distribution. This Universal Registration Document has been prepared by the EDF group in compliance with these rules. For the sake of clarity, the rest of the document mentions RTE and Enedis without systematically specifying that they are independent subsidiaries within the meaning of the provisions of the French Energy Code. A glossary of the main technical terms can be found at the end of this Universal Registration Document.

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