French *société anonyme*
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EDF Group

2023 MANAGEMENT REPORT

CONTENTS

1 SIGNIFICANT EVENTS AND KEY FIGURES

Substantially higher nuclear power output in France
Good overall operational performance
New commercial policy
Net financial debt reduced
Trajectory 1.5°C validated by Moody's

Customers

- **New commercial policy** : 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).
- **Decarbonising uses:** the 12.4 million tonnes of CO_2 emissions avoided by its customers reflects the work done by EDF to encourage greater energy sufficiency 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 points rolled out and managed by EDF rose by 21%.
- **1.5% growth in the customer portfolio** in the G4 countries[1] by end-2023.

Nuclear

- **46 reactors were online** at the beginning of January 2024, representing total capacity of 50GW
- 15 of the 16 reactors most sensitive to stress corrosion were repaired by end-2023, and the last one will be repaired during its 10-year inspection which starts in February 2024. Additionally, the 2023 programme of checks on welds repaired during reactor construction has been completed
- **The estimates of nuclear output in France**[2] **are confirmed** at 315-345TWh for 2024 and 335-365TWh for 2025 and 2026
- **Flamanville 3** : The tests to requalify the entire installation were successfully completed, in preparation for fuel loading in March 2024[3]
- **New nuclear in the United Kingdom:**
  - **Hinkley Point C** :
    - New schedule for the start of power generation by Unit 1 around 3 scenarios: 2029 (around which the project is organised), 2030 (base case) and 2031 (unfavourable scenario)[4].
    - Revised completion cost: £31-34 bn_{2015} (the unfavourable scenario would entail an additional cost of £1 bn_{2015})
    - Impairment of €12.9 bn booked on HPC assets and the EDF Energy goodwill[5]
    - Since end-2023, construction 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 at the Penly site and Bugey chosen as the site for 2 future EPR2 reactors, after 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** : joint early review to develop a standardised design with an extended group of European nuclear safety authorities.

Hydropower

- Start of reservoir impoundment at the Nachtigal dam in Cameroon (420MW)
- EDF and its consortium were selected to develop the Mphanda Nkuwa dam in Mozambique (1.5GW)

Renewables

[1] 40.9 M customers counted by point of delivery in France, the United Kingdom, Italy, and Belgium. One customer may have two points of delivery
[2] Estimated nuclear generation by the plants currently in operation
[3] The risks of deviations in components, equipment or equipment parts delivered by EDF's service providers and suppliers could, after analysis and provided the deviations are confirmed, lead to justification or correction of deviations and the possibility of a delayed start-up date
[4] See the press release of 23 January 2024. Previously, production by Unit 1 was expected to start in June 2027 and the completion cost was £25-26 bn_{2015} (see PR of 19 May 2022)
[5] Voir note 10.8 de l'annexe aux comptes consolidés au 31/12/2023

- **The 14% increase in wind and solar power output to 28.1TWh** was largely due to new installed capacities (including the 2.1GW Al Dhafrah plant), bringing total net capacity to 15.1GW. The portfolio of wind and solar projects also increased, by 15% to 98GW gross
- EDF winner of the Manche Normandie offshore project tender (1GW), in partnership

Thermal

- Final shutdown of EDF's last coal-fired power plant in the United Kingdom, West Burton A, on 31 March 2023
- **EDF is continuing to decarbonise its thermal power generation:** following conversion of the Port Est oil-fired plant (212MW) to liquid biomass, EDF's power output in Réunion Island is now 100% renewable

Networks

- 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 (Island Energy Systems) and Electricité de Strasbourg were up by 11%, essentially due to the higher number of connections and 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 recognized first major company of the energy sector to become an *"entreprise à mission"* in June 2023.

Flexibility

- Significant growth of 0.8GW in the portfolio of storage projects secured (to 1.7GW at end-2023) and development of :
  - Pumped-storage hydropower plants like the Hatta plant in the United Arab Emirates through an engineering contract (250MW / 1500MWh of storage), the Vouglans Saut-Mortier plant in France (87 MW);
  - Battery projects (e.g. in the United Kingdom (173 MW) and South Africa (257 MW))
- Substantial 33% increase in smart electric vehicle recharging points operated, mainly by Izi Smart Charge, depending on network constraints

Dalkia

- Inauguration of a low-carbon geothermal heat network in the Paris region powered 77% by renewable energies, avoiding 11,000 tonnes of carbon emissions per year

Edison

- Inauguration of the Marghera Levante 780MW CCGT plant, which produces 30% less carbon emissions than the average for Italian thermal plants, and has the technological ability to run on up to 50% hydrogen

Producing more low-carbon electricity

- **In 2023 EDF was the world's number one investor and producer**[1] in available on demand and constantly available carbon-free electricity, which accounted for 434TW or 93% of its total power output. **EDF has one of the lowest carbon intensities in the world at 37gCO_2/kWh,** down by 26% from 2022
- **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% by 2025, 70% by 2030 and 80% by 2035
  - Carbon intensity of 30gCO_2/kWh by 2030 and 22 gCO_2/kWh by 2035
- By Moody's assessment[2], the **Group's CO_2 emission reduction target is in line with a +1.5°C global warming scenario**

Financing

- Implementation of the 2023 financing program : ~€8bn of senior bond issues on various markets and a US$1.5bn hybrid note issue during the first half of 2023
- Conversion in equity of all the OCEANE bonds maturing in 2024, amounting to €2.4bn
- Confirmation of credit ratings with stable outlook by the three agencies S&P, Moody's and Fitch[3]
- **EDF successfully launched its first green bond dedicated to the financing of the existing nuclear fleet,** for an amount of €1 bn

Finalisation of the simplified public tender offer

- All the shares of EDF were acquired by the French State through the squeeze-out on 8 June 2023

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[1] *Source : Enerdata, Power Plant Tracker en 2022.*
[2] *See the Net Zero Assessment report*
[3] *Credit rating stable after a 1-notch outlook upgrade in relation with support from the French State, and a 1-notch downgrade of the standalone rating*

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 on "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 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 4).

2 ECONOMIC ENVIRONMENT

2.1 Market prices for electricity and the principal energy sources

Spot electricity prices in Europe [(1)]

	France	United Kingdom	Italy	Belgium
Average baseload price for 2023 *(€/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 *(€/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.

Forward electricity prices in Europe [(5)]

	France	United Kingdom	Italy	Belgium
Average forward baseload price under the 2024 annual contract for 2023 *(€/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 December 27, 2023 (€/MWh)	94.9	87.7	114.2	94.9
Average forward peakload price under the 2024 annual contract for 2023 *(€/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 December 27, 2023 (€/MWh)	109.7	98.1	123.9	n.a.

n.a.: not applicable

[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] *France, Italy, Belgium, United Kingdom: year-ahead EEX price*

The annual contract forward prices for baseload and peakload electricity were generally lower than in 2022 in all European countries.

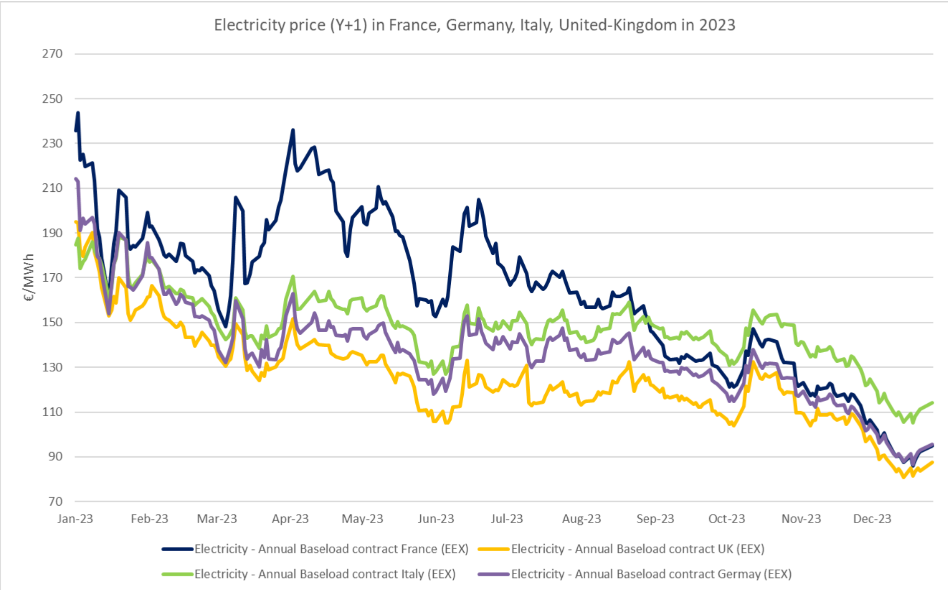
In **France**, the average annual contract baseload price for next-year delivery was €162.7/MWh for 2023, down by 56% compared to 2022. This price fluctuated between €86.0/MWh and €243.7/MWh and ended the year at €94.9/MWh (for comparison, the 2023 forward price at the end of 2022 was €271.7/MWh).

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)[1].

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**



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.

[1] *Source: ENTSO-E Transparency Platform; consumption figures unadjusted for weather effects*

CO_2 emission certificate prices in €/t for deliveries in December [(1)]

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.

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

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).*

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.

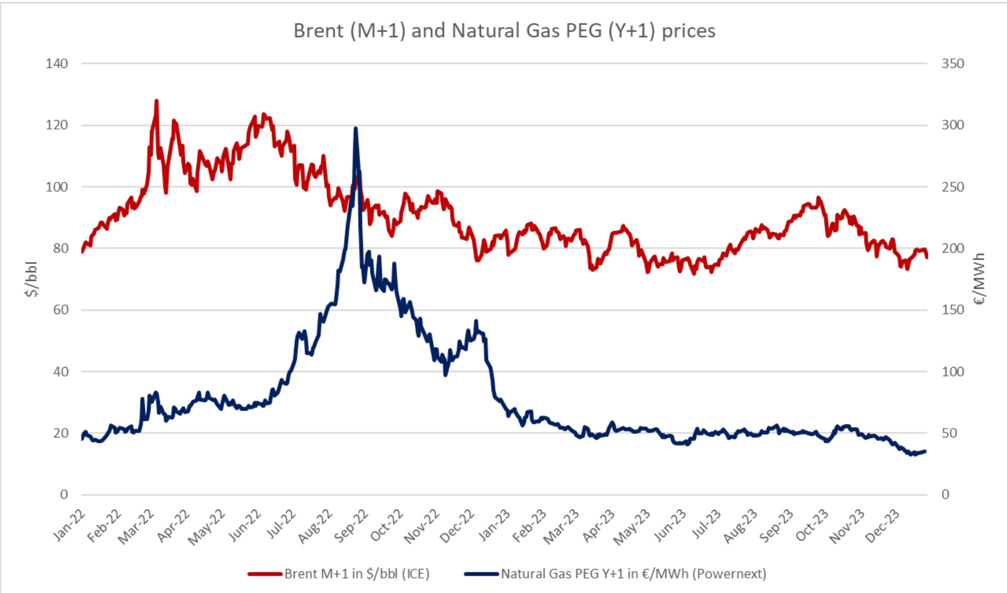
The 2024 annual contract price declined greatly over the first half of the year: at the end of May it reached its lowest level since January 2022, before the Russia-Ukraine conflict, at $92.1/t. This downward trend was sustained by the lower use made of coal-fired plants in mild temperatures, as robust 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 Novorossïbisk 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



2.2 Consumption of electricity and natural gas

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.

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.

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.

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'Energie* (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.

2.4 Weather conditions: temperatures and hydrological conditions in France

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).

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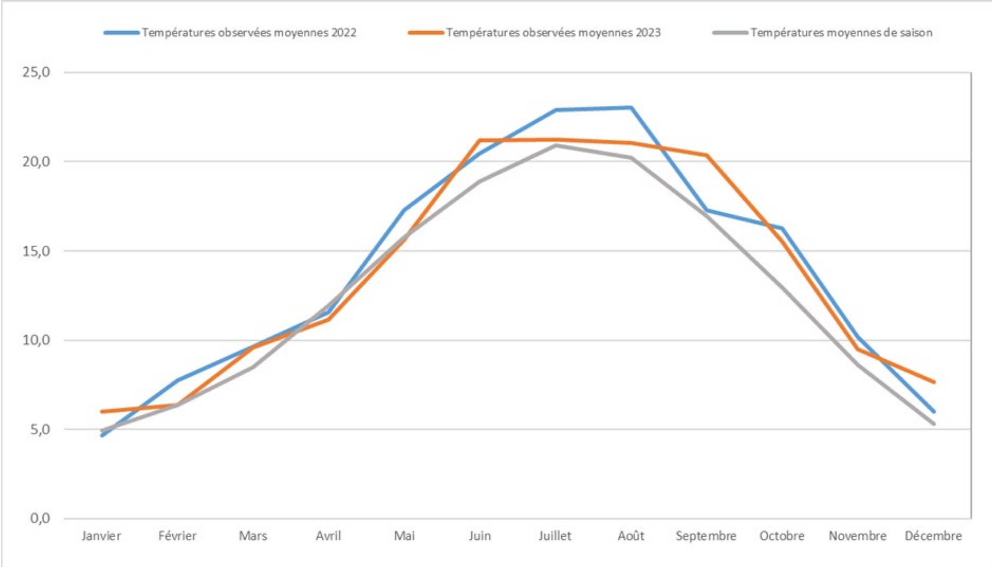
[1] *Source: EDF Energy estimates*

2 Source of data for Italy: raw data provided by Terna, the Italian national grid operator, and adjusted by Edison.

[3] €0.01/smc^3 = 1 €/MWh

Average monthly temperatures [1] [2] in France



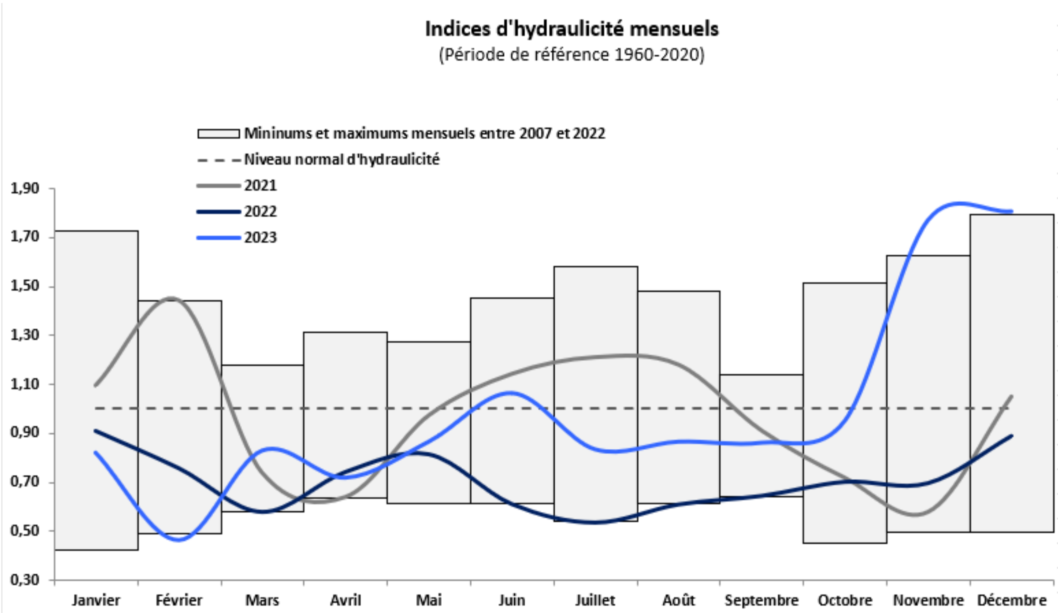
(1) Average temperatures observed in 32 French cities, weighted for their electricity consumption.
(2) Source: Météo France.

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

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 (1)	(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	-	-

(1) Other external expenses are reported net of capitalised production.

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%).

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).

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 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 -0.8TWh. The decline in unit consumption observed since 2022 is estimated at -9.3TWh, 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.

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.

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.

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.

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.

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.

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.

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).

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[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*

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.

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 EBITA to €39.9 million 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

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 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.

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

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.

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)].

[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.*

Also, in 2022 a €1.7 billion payment was received from RTE[1], 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.

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.

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).

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.

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 (-4.1TWh) in August 2022 and a more intense maintenance programme than in 2022.

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[2] at end-2023.

Other international

The rise in EBITDA in **Belgium**[3] 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[4] 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.

[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.

[2] For Edison's scope

[3] Luminus and EDF Belgium.

[4] For Luminus' scope

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.

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*

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.

(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[1] 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".

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.

[1] *See the Group press release of 23 January 2024*

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).

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.

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.

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).

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

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	(53)	(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)**

(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.

n.a.: not applicable

4.1 Net financial debt

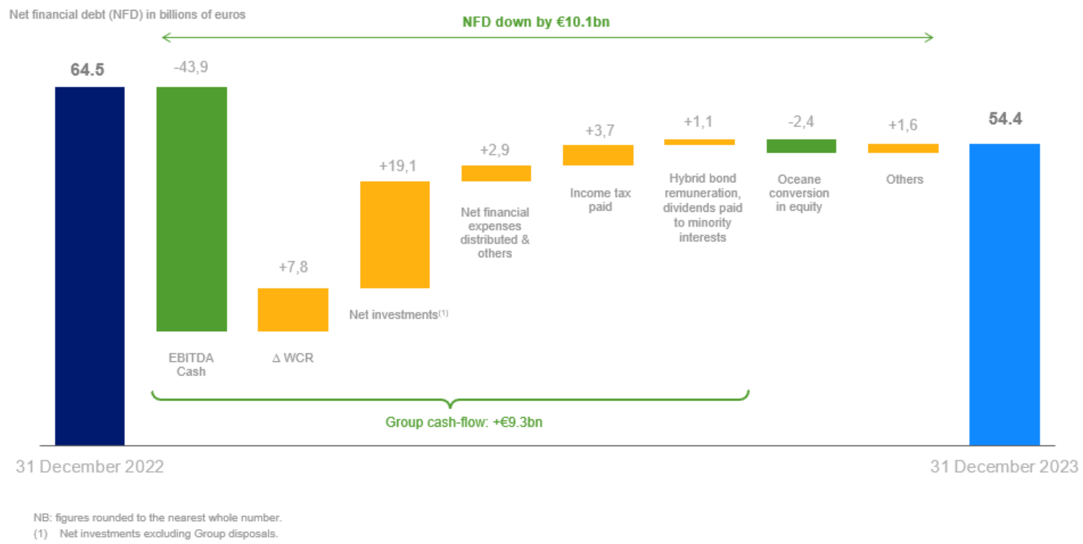
Net financial debt[1] totalled €54.4 billion at 31 December 2023, a decrease of €10.1 billion compared to end-2022. As well as the positive cash flow, the €2.4 billion conversion of OCEANE bonds reinforced EDF's equity.

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



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

[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.*

- €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.

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.

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.

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).

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.

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).

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.

5 FINANCIAL OUTLOOK

2026 targets[1]

Net financial debt / EBITDA : **≤ 2.5x**
Adjusted economic debt / Adjusted EBITDA[2] : **≤ 4x**

[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] Applying constant S&P ratio methodology

6 MANAGEMENT AND CONTROL OF MARKET RISKS

See also section 2.2.2. of the 2023 Universal Registration Document, “Management of financial and market risks”.

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.

Liquidity position and management of liquidity risk

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.

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.

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 [(1)]**		
(in millions of euros)	**Liabilities**	**Interest rate swaps**	**Currency swaps**	**Guarantees given for 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*			

(1) 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 SA 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.

[1] Valued by reference to exchange rates and interest rates at 31 December 2023.

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.

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".

Company	Agency	Long-term rating	Short-term rating
EDF	Standard & Poor's	BBB/ stable outlook	A-2
	Moody's	Baa1/ stable outlook	P-2
	Fitch Ratings	BBB+/ stable outlook	F2
EDF Trading	Moody's	Baa3/ stable outlook	n. a.
EDF Energy	Standard & Poor's	BB-/ stable outlook	B
	Moody's	Baa3/ stable outlook	n. a.
	Fitch Ratings	BBB-/ stable outlook	n. a.
Edison	Standard & Poor's	BBB/stable outlook	A-2
	Moody's	Baa3/ stable outlook	n. a.

n. a. = not applicable.

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 [1]	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%*

(1) 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) **USD**	**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**
CHF (Switzerland)	1,507	1,364	136	3,163	2,965	297
PLN (Poland)	3	3	-	2	2	-
GBP (United Kingdom)	151	35	4	128	27	3
BRL (Brazil)	6,079	6,995	700	10,740	12,109	1,211
CNY (China)	2,506	467	47	1,697	301	30
(in millions of currency units)	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.

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.

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 2022 *(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.

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".

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.

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.

(1) An internal committee and permanent body for evaluation, consultation and operational decision-making for dedicated asset management.

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.

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.

6.2 Management and control of energy market risks

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.

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.

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.

7 TRANSACTIONS WITH RELATED PARTIES

The types of transaction undertaken with related parties are detailed in note 22 to the 2023 consolidated financial statements, "Related parties".

8 SCOPE OF CONSOLIDATION

A list of all consolidated companies is presented in note 3 to the 2023 consolidated financial statements, "Scope of consolidation".

[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.*

9 SUBSEQUENT EVENTS

Subsequent events are described in note 23 to the 2023 consolidated financial statements.