French société anonyme
with a share capital of €1,505,133,838
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EDF group

2018 MANAGEMENT REPORT

GROUP RESULTS

SOMMAIRE

1 KEY FIGURES

Pursuant to European regulation no. 1606/2002 of 19 July 2002 on the adoption of international accounting standards, the EDF group's consolidated financial statements for the year ended 31 December 2018 are prepared under the international accounting standards published by the IASB and approved by the European Union for application at 31 December 2018. These international standards are IAS (International Accounting Standards), IFRS (International Financial Reporting Standards), and SIC and IFRIC interpretations.

The Group's accounting policies are presented in note 1 to the consolidated financial statements for the year ended 31 December 2018.

The figures presented in this document are taken from the EDF group's consolidated financial statements at 31 December 2018.

The comparative figures for the year ended 31 December 2017 presented in the notes to the consolidated financial statements have been restated for the impact of retrospective application of IFRS 15 "Revenue from Contracts from Customers". As a consequence of these restatements, sales and energy purchases as published at 31 December 2017 have been reduced, with no impact on EBITDA see note 2.1 to the 2018 consolidated financial statements).

IFRS 9 "Financial Instruments" became mandatory on 1 January 2018. It introduces new principles for classification and measurement of financial instruments, impairment for credit risk on financial assets, and hedge accounting. In application of the simplified approach allowed by IFRS 9, the comparative figures for the first year of application have not been restated. The transition measures and the new standard's principal implications for the Group are presented in note 2.2 to the 2018 consolidated financial statements.

The Group's key figures for 2018 are shown in the following tables.

EXTRACT FROM THE CONSOLIDATED INCOME STATEMENT

(in millions of Euros)	2018	2017 [1]	Variation	Variation (%)	Organic growth (%)
Sales	68,976	64,892	4,084	+6.3	+4.0
Operating profit before depreciation and amortisation (EBITDA)	15,265	13,742	1,523	+11.1	+11.3
Operating profit (EBIT)	5,282	5,637	(355)	-6.3	-1.9
Income before taxes of consolidated companies	473	3,401	(2,928)	-86.1	-79.0
EDF net income	1,177	3,173	(1,996)	-62.9	-57.5
Net income excluding non-recurring items [2]	2,452	2,820	(368)	-13.1	-7.5

(1) The figures published at 31 December 2017 have been restated to reflect the impact of application of IFRS 15 standard on sales. However, no restatements have been made for the first application of IFRS 9 from 1 January 2018, in accordance with the simplified approach allowed by IFRS 9.

(2) 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 the Group's share of net income (EDF net income) excluding non-recurring items, net changes in the fair value of energy and commodity derivatives (excluding trading activities), and net changes in the fair value of debt and equity instruments, net of tax (see section 5.9 "Net income excluding non-recurring items").

FROM EDF NET INCOME TO NET INCOME EXCLUDING NON-RECURRING ITEMS

(in millions of Euros)	2018	2017
EDF net income	1,177	3,173
Gain on sale of 49.9% of the Group's investment in CTE [1]	-	(1,289)
Other, including net changes in fair value on energy and commodity derivatives, excluding trading activities and changes in the fair value of debt and equity instruments	777	(94)
Impairment	498	1,030
NET INCOME EXCLUDING NON-RECURRING ITEMS	**2,452**	**2,820**
Payments to bearers of perpetual subordinated bonds	(584)	(565)
NET INCOME EXCLUDING NON-RECURRING ITEMS, ADJUSTED FOR PAYMENTS ON HYBRID BONDS	**1,868**	**2,255**

(1) The company that holds 100% of RTE (an independent EDF subsidiary as defined in the French Energy Code).

EXTRACT FROM THE CONSOLIDATED BALANCE SHEET

(in millions of Euros)	**31/12/2018**	**31/12/2017 [1]**
Intangible and tangible assets	162,219	156,900
Other non-current assets	48,165	47,424
Non-current assets	**210,384**	**204,324**
Inventories and trade receivables	30,137	30,981
Other current assets	39,358	32,845
Cash and cash equivalents	3,290	3,692
Current assets	**72,785**	**67,518**
Assets held for sale	-	-
TOTAL ASSETS	**283,169**	**271,842**
Equity (EDF's share)	44,469	41,357
Equity (non-controlling interests)	8,177	7,341
Total equity	**52,646**	**48,698**
Non-current provisions	71,772	71,373
Special concession assets	46,924	46,323
Non-current other liabilities	59,012	58,591
Non current liabilities	**177,708**	**176,287**
Current liabilities	**52,815**	**46,857**
Liabilities related to assets classified as held for sale	-	-
TOTAL EQUITY AND LIABILITIES	**283,169**	**271,842**

(1) The comparative figures for the year ended 31 December 2017 have been restated for the impact of retrospective application of IFRS 15 (see note 2.1.3.2 to the 2018 consolidated financial statements).

GROUP CASH FLOW

(in millions of Euros)	**2018**	**2017**	**Variation**	**Variation (%)**
Group cash flow [1][2]	(480)	(209)	(271)	-129.7

(1) 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 equivalent to the operating cash flow after net change in working capital, net investments, allocations and withdrawals from dedicated assets, and dividends (see section 6 of this financial report).

(2) Before the capital increase.

DETAILS OF NET INDEBTEDNESS

(in millions of Euros)	**31/12/2018**	**31/12/2017**	**Variation**	**Variation (%)**
Loans and other financial liabilities	59,188	56,846	2,342	+4.1
Derivatives used to hedge liabilities	(1,972)	(1,176)	(796)	+67.7
Cash and cash equivalents	(3,290)	(3,692)	402	-10.9
Available-for-sale financial assets - Liquid assets	(20,538)	(18,963)	(1,575)	+8.3
NET INDEBTEDNESS [1]	**33,388**	**33,015**	**373**	**+1.1**

(1) Net indebtedness 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.

2 ECONOMIC ENVIRONMENT

2.1 Market prices for electricity and the principal energy sources

In an interconnected European market, analysis of market prices in France and the rest of Europe provides important context.

Spot electricity prices in Europe were higher overall in 2018 than 2017.

2.1.1 Spot electricity prices in Europe [1]

	France	United Kingdom	Italy	Germany	Belgium
Average baseload price for 2018 *(€/MWh)*	50.2	64.9	61.3	44.5	55.3
Variation in average baseload prices, 2018/2017	+11.6%	+25.4%	+13.6%	+30.0%	+24.0%
Average peakload price for 2018 *(€/MWh)*	59.1	70.0	67.9	52.1	64.8
Variation in average peakload prices, 2018/2017	+10.1%	+23.5%	+10.0%	+22.0%	+18.4%

The comments below concern baseload prices.

In **France**, average spot electricity prices for 2018 stood at €50.2/MWh (baseload) and €59.1/MWh (peakload), up by €5.2/MWh and €5.4/MWh respectively compared to 2017. This increase is mainly explained by a rise in prices for all commodities between March and September, a wave of cold weather in late February 2018, and a summer of very low winds across the whole of Europe.

In 2018 demand in France totalled 475.2TWh, down by 4.6TWh from 2017. Less use was made of fossil-fired thermal plants due to significantly higher nuclear fleet availability and hydropower generation levels (+14.1TWh and +9.4TWh [2] respectively compared to 2017). Wind and photovoltaic solar power output was also up, by 4.0TWh and 0.8TWh respectively to 26.8TWh and 9.7TWh in 2018.

France's export balance saw a year-on-year increase of 23.0TWh [3], in line with the substantial rise in exports to the Central West Europe (CWE) area between May and July, then in September and December due to low wind power generation in Germany, and higher CO_2 prices which had a strong impact on German prices (France's export balance was up by +8.2TWh between May and July, then +10.4TWh between September and December).

In the **United Kingdom**, average spot electricity prices rose by €13.2/MWh compared to 2017, reaching €64.9/MWh for 2018. This increase began in March when all monthly average prices registered year-on-year rises of around 33% (+€16/MWh on average) due to higher fuel prices. Another notable factor was the significant price rise during the spell of cold weather in late February and early March 2018; its impact was accentuated by tension over gas supplies, after unscheduled outages at a Norwegian gas field and at the interconnection with the Netherlands just after the closure of the Rough gas storage facility.

In **Italy**, average spot prices were up by €7.4/MWh from 2017, reaching an average €61.3/MWh in 2018. This movement particularly concerned the months of March to October: over that period prices rose to a level around 28% higher than in 2017 following climbing fuel prices, whereas January prices had been 32% lower due to the milder weather of 2018.

In **Germany**, spot prices increased by €10.3/MWh from 2017 to an average €44.5/MWh in 2018. Although January prices were €22.9/MWh lower year-on-year due to milder temperatures, prices were then driven upwards by a recovery in commodity prices - particularly for CO_2 and coal, with a significant effect on operating costs for the German generation fleet - and the low winds of June. Since June, monthly prices have been close to €20/MWh higher on average than in 2017. Wind power output grew by 2.7TWh from 2017 to 108.6TWh for 2018, while photovoltaic power output was up by 4.8TWh to 41.2TWh in 2018. At 31 December 2018, the total installed wind power and photovoltaic power capacities in Germany stood at approximately 59GW and 46GW respectively. Several episodes of significant wind and photovoltaic power generation led to negative prices (134 hours in 2018 versus 146 hours in 2017). The lowest hourly price, -€76.0/MWh, was registered on 1 January.

In **Belgium**, spot prices were up by €10.7/MWh compared to 2017, with an average price of €55.3/MWh in 2018. This rise particularly concerned the months of March to November, when prices rose by around 44% year-on-year, reflecting the increase in fuel prices, whereas prices in January 2018 were almost 50% lower than in January 2017 as a result of milder temperatures. Spot prices at the end of the year were also driven upwards by the low availability of the nuclear fleet operated by the Engie group: five of the seven Belgian reactors have been shut down from mid-September to end of December, and a sixth unit had to be closed for maintenance between mid-October and mid-November.

(1) ***France*** *et* ***Allemagne*** *: cotation moyenne de la veille sur la bourse EPEXSPOT pour une livraison le jour même ;*
Belgique *: cotation moyenne de la veille sur la bourse Belpex pour une livraison le jour même ;*
Royaume-Uni *: cotation moyenne EDF Trading de la veille pour une livraison le jour même, sur le marché de gré à gré ;*
Italie *: cotation moyenne de la veille sur la bourse GME pour une livraison le jour même.*

(2) *9.4TWh gross and 9.1TWh net of pumping.*

(3) *Source: ENTSO-E TransparencyWebsite.*

2.1.2 Forward electricity prices in Europe [1]

	France	United Kingdom	Italy	Germany	Belgium
Average forward baseload price under the 2019 annual contract for 2018 *(€/MWh)*	48.9	60.1	59.0	44.1	51.0
Variation in average forward baseload price under the annual contracts, 2018/2017	+27.9%	+20.1%	+26.7%	+ 36.1%	+36.9%
Forward baseload price under the 2019 annual contract at 31 December 2018 *(€/MWh)*	61.6	65.3	66.8	55.8	60.9
Average forward peakload price under the 2019 annual contract for 2018 *(€/MWh)*	62.1	65.8	66.8	54.2	63.7
Variation in average forward peakload price under the annual contracts, 2018/2017	+24.3%	+18.2%	+26.6%	+33.8%	+33.0%
Forward peakload price under the 2019 annual contract at 31 December 2018 *(€/MWh)*	75.6	71.1	75.7	67.8	73.3

Annual contract prices for baseload and peakload electricity in Europe were higher on average than in 2017, due to increases in commodity prices (coal, gas and CO_2).

In **France**, the average annual contract baseload price for next-year delivery was €48.9/MWh, up by 27.9% from 2017. This increase is principally explained by rising fuel and CO_2 prices: the average coal price increased by 18%, the average gas price by 22% and the average CO_2 price practically tripled between 2017 and 2018. The "Calendar N+1" contract price ended the year 2018 at €61.6/MWh.

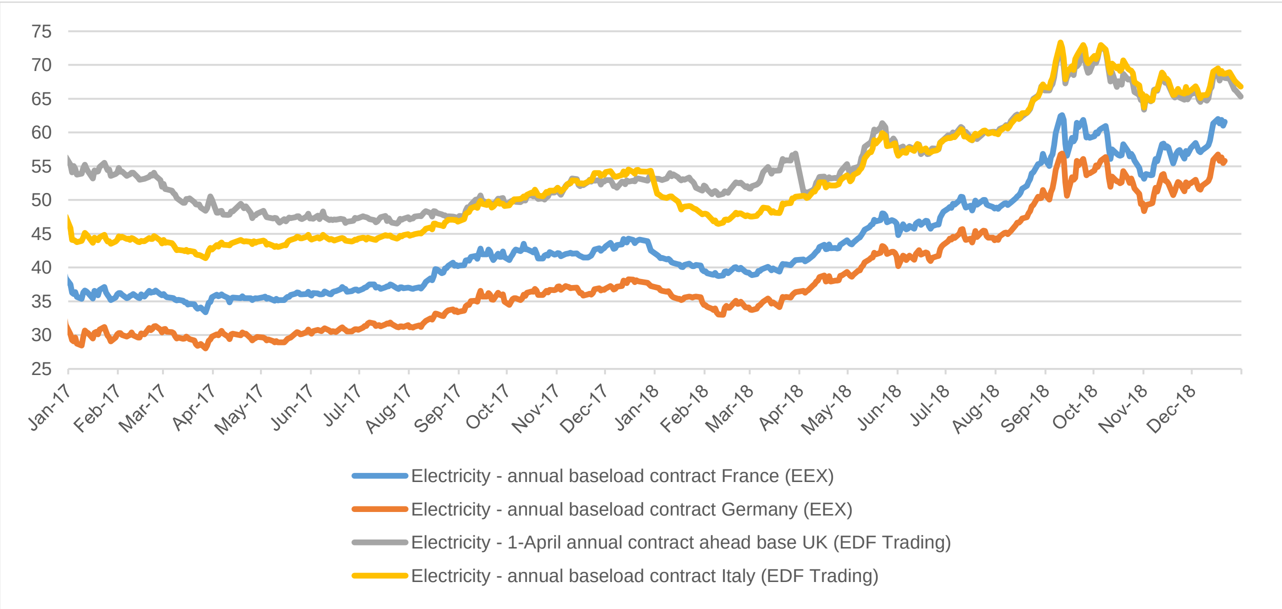
In the **United Kingdom**, the April Ahead contract baseload price for 1 April Y+1 to 31 March Y+2 increased by 20.1% from 2017 to an average €60.1/MWh for 2018, due to a rise between the two years in CO_2 prices but also gas prices, which make a significant contribution to the formation of British electricity prices.

In **Italy**, the annual contract baseload price for next-year delivery also rose to an average €59.0/MWh, 26.7% higher than in 2017. This increase was driven by the significant increase in gas and CO_2 prices, which are a major factor in Italian electricity prices.

In **Germany**, the average annual contract baseload price for next-year delivery was up by 36.1% from 2017, at €44.1/MWh in 2018. This increase resulted from year-on-year rises in fuel and CO_2 prices, since coal-fired facilities still make a significant contribution to the formation of German electricity prices, and are more strongly affected than gas-fired facilities by higher CO_2 prices.

In **Belgium**, the annual contract baseload price for next-year delivery was nearly 37% higher in 2018 than in 2017 at an average €51.0/MWh, due to higher coal and CO_2 prices. Another factor in this increase was the announcement that Tihange reactors 2 and 3 were to be shut down in late 2018: this pushed prices up from 21 September, before they fell back in mid-October following announcements of measures introduced to ensure secure power supplies for Belgium during the winter.

→ Principal forward electricity prices in Europe (baseload year ahead)

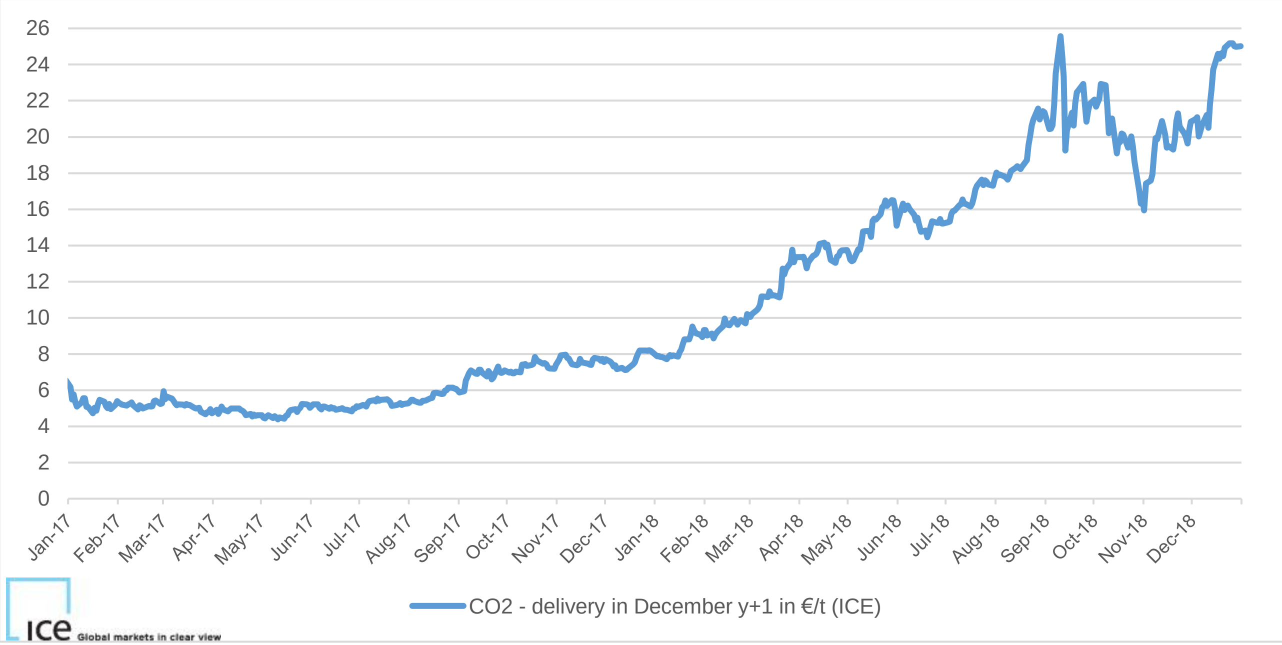


*(1) **France** and **Germany**: average year-ahead EEX price;*
***Belgium** and **Italy**: average year-ahead EDF Trading price;*
***United Kingdom**: average ICE annual contract prices, April 2018 then April 2019 (in the UK, annual contract deliveries take place from 1 April to 31 March).*

2.1.3 CO_2 emission rights prices [1]

The price of CO_2 emission rights for delivery in December Y+1 ended the year at €25.0/t, up by €16.8/t compared to December 2017. CO_2 prices rose almost constantly between January and early September, continuing the trend that began in September 2017 after the agreement to reform the EU-ETS for the period 2021-2030, which was approved by the European Parliament in February 2018. This upward movement brought the return of many speculative actors who had abandoned the CO_2 market, accentuating the trend and increasing market volatility.

→ CO_2 emission rights prices



2.1.4 Fossil fuel prices [2]

	Coal *(US$/t)*	Oil *(US$/bbl)*	Natural gas *(€/MWhg)*
Average price for 2018	87.0	71.7	20.9
Average price variation, 2018/2017	+18.0%	+31.0%	+21.9%
Highest price in 2018	100.0	86.3	27.4
Lowest price in 2018	72.8	50.5	16.9
Closing price, 2018	85.9	53.8	20.4
Closing price, 2017	90.3	66.9	18.2

Coal prices for next-year delivery in Europe stood at an average US$87.0/t in 2018, up by 18% (+US$13.3/t), although the year-end price was US$4.4/t lower than in 2017. Coal prices declined during the first quarter of 2018 (-US$13/t) due to a falling oil price and plentiful supplies in Asia, particularly in Indonesia where a change in regulations encouraged producers to focus on exports. With the recovery of oil prices and rising demand in China and India, coal prices then increased by more than US$27/t between late March and early October. After nearing the US$100/t mark on 3 October, prices saw a sharp downturn in the final quarter (-US$15/t) due to a decline in oil prices, restrictions on Chinese imports and high stocks in the Benelux ports as the low level of the river Rhine affected deliveries to German power plants.

Oil prices for 2018 stood at an average US$71.7/bbl, an annual increase of 31% (+US$16.9/bbl), although the year-end price was US$13.1/bbl lower than in 2017. After falling by close to US$/8bbl in early February due to fears of a slowdown in worldwide demand in the short term, oil prices rose almost constantly from March to May as the OPEC countries respected their agreement for record limitation of oil production. Oil prices then remained stable over the summer before showing a marked increase in September following the United States' threats of sanctions against importers of crude oil from Iran. That rise was short-lived, and the final quarter registered a drop in oil prices (-USD$29/bbl) as the sanctions against Iran were more lenient than expected, and production levels were very high in Russia and the United States.

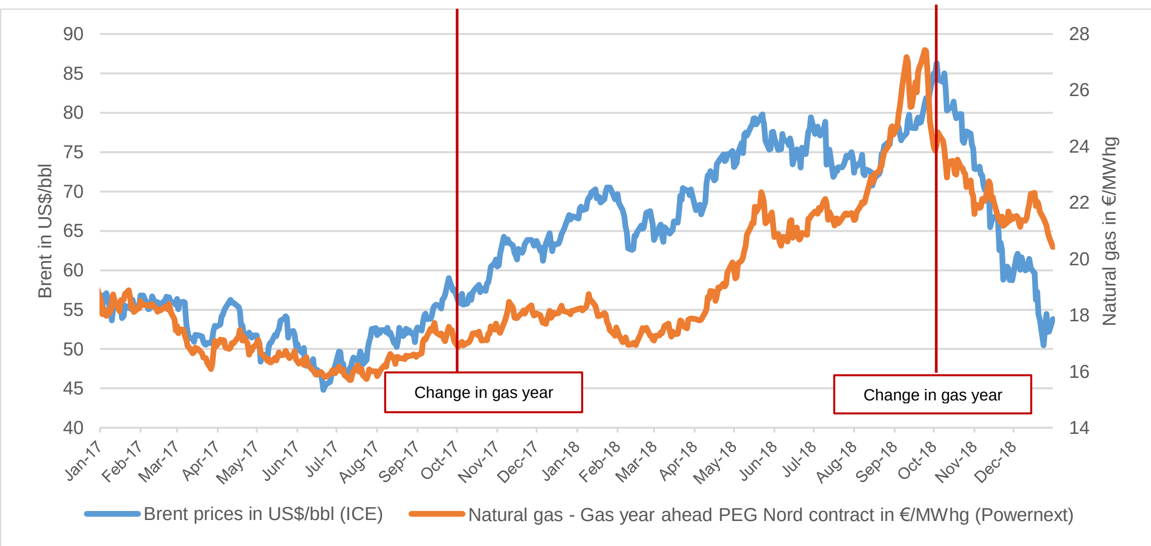
The annual **gas** contract for next-year delivery at the French PEG Nord hub traded at an average €20.9/MWh in 2018, nearly 22% (+€3.8/MWh) more than 2017. The year 2018 was marked by a merger between the Peg Nord and TRS zones on 1 November to form a single gas market area, PEG. During the first quarter of 2018, annual gas contract prices were generally stable. The rise principally

(1) Average ICE prices for the annual contract, Phase III (2013-2020).

*(2) **Coal**: average ICE prices for delivery in Europe (CIF ARA) for the next calendar year (US$/t);*
***Oil**: Brent first reference crude oil barrel, IPE index (front month) (US$/barrel);*
***Natural gas**: average ICE OTC prices, for delivery starting from October of the following year in France (PEG Nord) (€/MWhg).*

occurred between April and September, largely driven by the oil price recovery, since long-term contracts are partly indexed on oil prices, but also by tensions over short-term stock levels which affected long-term prices. With the drop in oil prices, the final quarter saw declining gas prices (-€6.7/MWh) due to very good LNG supplies in Europe, and comfortable stock levels while the forecast was for a relatively mild winter.

→ **Natural gas and oil prices**



2.2 Electricity and gas consumption

2.2.1 Electricity and gas consumption in France

Electricity consumption in **France** (1) reached 478.2TWh in 2018, slightly less (-0.8%) than in 2017. 2018 was a warmer year, registering an annual average temperature of 13.4°C compared to 12.8°C in 2017.

The first quarter of 2018 was a period of sharp contrasts. After a very mild January (+3.0°C above normal), February and March were very cold (respectively - 3.5°C and -1.1° C below normal). After correction for weather effects, electricity consumption in France was down slightly compared to 2017 (-0.3%).

Estimated natural gas consumption in **France** (2) declined by -4.7% between 2017 and 2018 to 470.0TWh. In February and March, colder year-on-year temperatures resulted in significantly higher demand for heating. Nonetheless, consumption was down overall in 2018, due to lower use of gas-fired plants for electricity generation throughout the year (-11TWh), and milder weather, especially in January and December, which led to a general reduction in the demand for heating.

2.2.2 Electricity and gas consumption in Italy

In **Italy** (3), electricity consumption was practically stable between 2017 and 2018 (+0.4%). The lower levels of thermal and solar power generation were counterbalanced by higher hydropower generation and net imports.

In **Italy**, domestic demand for natural gas (4) decreased by 3.4% due to exceptionally high temperatures during the final quarter of 2018, which resulted in lower consumption by the residential market and thermal power generation.

2.3 Electricity and natural gas sales tariffs

In **France**, the regulated tariffs changed as follows:

- the "blue" tariffs were raised by + 0.7% for residential customers and +1.6% for non-residential customers from 1 February 2018;
- the "blue" tariffs were reduced by -0.5% for residential customers and raised by +1.1% for non-residential customers from 1 August 2018.

In the **United Kingdom**, EDF Energy made two changes to the variable tariffs for residential customers:

- the tariffs for residential customers were raised by 2.7% from 7 June 2018;
- electricity tariffs were raised by 6.1% and gas tariffs by 6% from 31 August 2018.

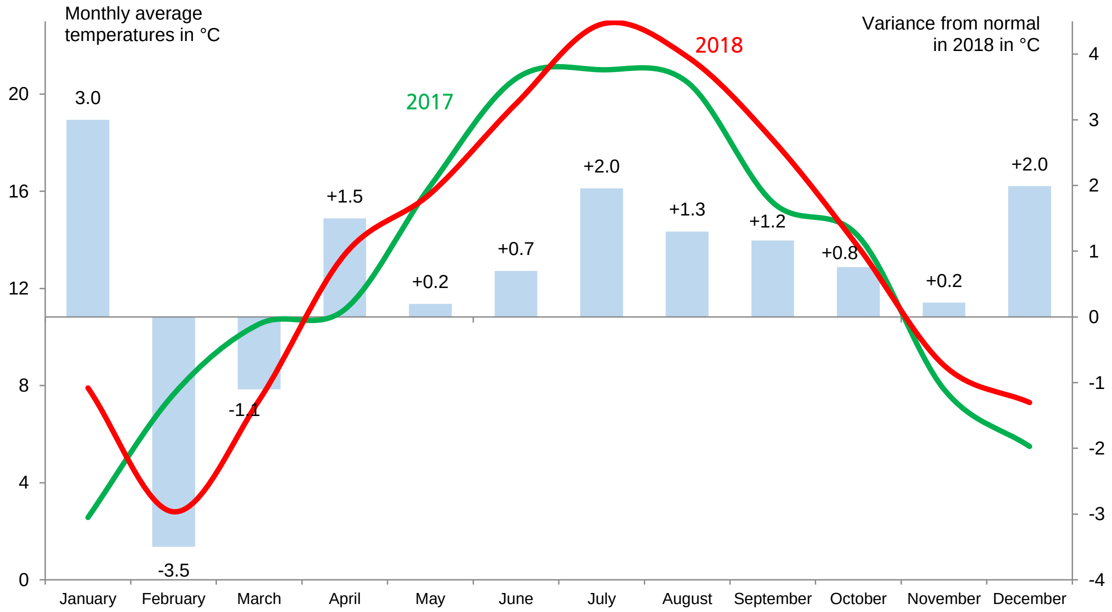
This rise is mainly explained by increases in wholesale market prices.

2.4 Weather conditions: temperatures and rainfall

Average temperatures were +0.7°C above normal for 2018 as a whole. Only February and March registered below-normal monthly temperatures. The month of January was particularly mild (+3°C above normal), and July and December were also warmer than usual (+2°C above normal). The average annual temperature in France in 2018 was 13.4°C, making it the warmest year since 1900.

*(1) Sources for **France**: unadjusted data and data adjusted for weather effects provided by RTE.*
*(2) Sources for **France**: unadjusted data provided by Smart GRTgaz.*
*(3) Sources for **Italy**: unadjusted data and data provided by Terna, the Italian national grid operator and adjusted by Edison.*
*(4) Sources for **Italy**: Ministry for Economic Development (MSE), Snam Rete Gas data adjusted by Edison on the basis of 1Bcm = 10.76TWh.*

→ Temperatures [(1)(2)] in France in 2018 and 2017



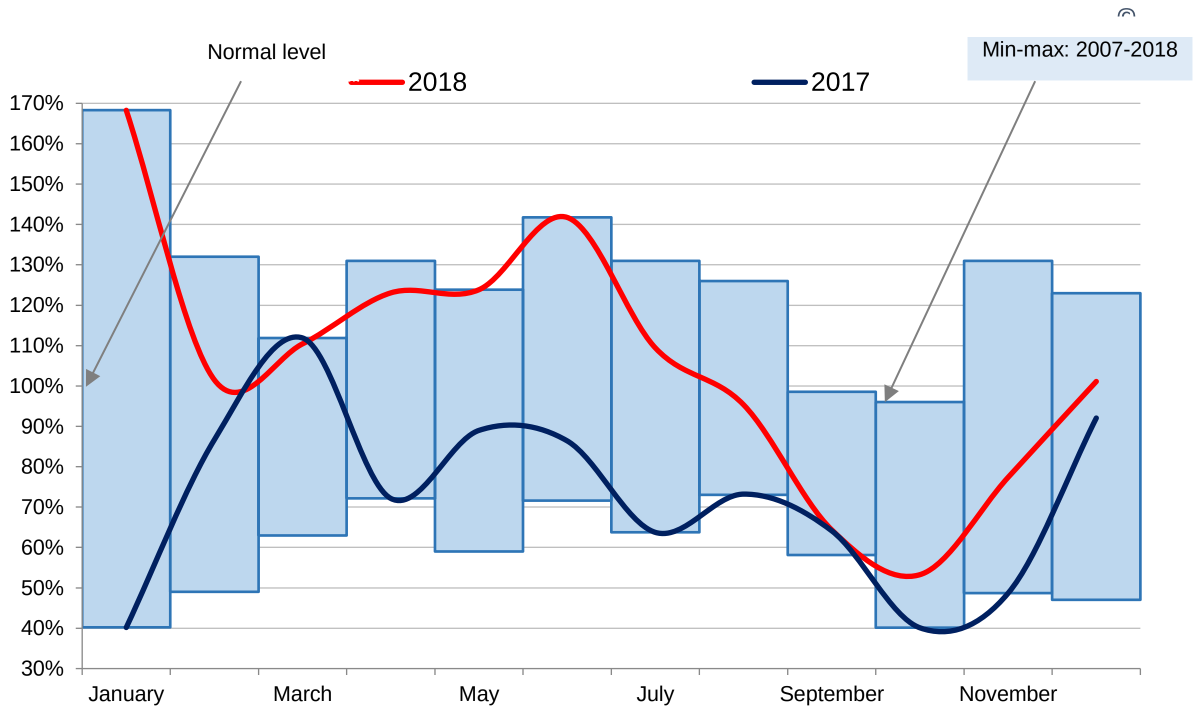
(1) Average temperatures recorded in 32 cities weighted by electricity consumption.
(2) Source: Miréor (data from Météo-France).

Concerning rainfall, 2018 was a year of contrasts:

- The first half of the year saw excess precipitation in much of the southern half of Europe (including France), a shortfall in Germany and part of Central Europe, and close to normal levels in the North of Europe;
- The second half of the year saw a serious shortage of precipitation over much of Europe, particularly France, Germany and all of Scandinavia.

Annual rainfall for 2018 thus registered surplus levels across all of southern Europe and shortages in Central Europe and Scandinavia.

→ WATER FLOW COEFFICIENTS IN FRANCE IN 2018 AND 2017 [(1)]



(1) Weekly monitoring by EDF's OSGE energy observatory of French reservoir levels (Miréor project) as far as the coast.

France had very high precipitation in the first part of the year, with exceptionally high snowfall on all mountain ranges during the winter. A very warm, very dry summer and autumn then followed, gradually diminishing water flow coefficients and leading to very low water levels in autumn, particularly in the northern half of the country.

As a result of these contrasting weather conditions, water flow coefficients in France showed a relative surplus in every month of the first half of 2018 (registering some of the highest levels in 40 years), then a shortfall in the second part of the year. For the year as a whole, however, the coefficients were slightly above normal by about 10%.

3 SIGNIFICANT EVENTS OF 2018 (1)

This chapter reports on significant events following the publication, on 15 March 2018, of the 2017 Reference Document (see section 5.1.3 “Significant events of 2017” and 5.2 “Subsequent events”).

3.1 Major events

3.1.1 Sustainable development and Group Renewables

EDF Renewables (2)

- In 2018, EDF Renewables commissioned new facilities, signed electricity purchase agreements and undertook new projects.
- EDF Renewables entered into exclusive talks with a view to acquire the Luxel group, a French solar energy specialist (see press release of 14 February 2019).
- EDF Renewables and SITAC Group signed power purchase agreement covering 300MW of wind project in India (see press relase of 4 February 2019).
- EDF Renewables has closed on a purchase agreement with York Nebraska Wind Partners, LLC, a partnership comprised of Aksamit Resource Management, LLC and York Capital Management for 100-percent of the interests in the 300MW Milligan 1 Wind Project (see press release of 17 January 2019).
- The EDF Renewables-Masdar consortium awarded a 400 MW wind project in Saudi Arabia (see press release of 11 January 2019).
- EDF Renewables and Shell invested in New Jersey offshore wind (see press release of 20 December 2018 and note 3.8.1 to the 2018 consolidated financial statements).
- EDF Renewables announced the repowering of the Eckolstädt wind farm in Germany (see press release of 11 December 2018).
- EDF Renewables entered into an agreement with Shell Energy North America to supply 132MWp of solar power in California (see press release of 15 November 2018).
- EDF Énergies Nouvelles was rebranded EDF Renouvelables (see press release of 6 September 2018) and EDF Énergies Nouvelles’ international entities were rebranded EDF Renewables (see press release of 12 April 2018).
- EDF Renewables won a 276MW wind energy project in Brazil (see press release of 5 September 2018).
- EDF Renewables sold a 49% minority stake in twenty-four of its UK wind farms (c.550MW) (see press release of 29 June 2018 and note 3.8.2 to the 2018 consolidated financial statements).
- The realisation of the three offshore wind projects at Fécamp, Courseulles-sur-Mer and Saint-Nazaire that EDF Renewables is developing with its partners Enbridge Inc. and WPD has been confirmed (see press release of 20 June 2018).
- EDF Renewables acquired a 450MW offshore wind project in Scotland from Mainstream Renewable Power (see press release of 3 May 2018 and note 5.2 to the 2018 consolidated financial statements).

Hydropower

- EDF, IFC and the Republic of Cameroon signed final and binding agreements for the construction of the Nachtigal hydroelectric dam in Cameroon (see press release of 8 November 2018). Financial closing was reached on 24 December 2018, when the shareholding structure changed due to Africa50 (15%) and STOA (10%) joining the project. IFC now owns a 20% stake, the Republic of Cameroon a 15% stake and EDF’s share is unchanged at 40%.

EDF Pulse Croissance

- EDF Nouveaux Business became EDF Pulse Croissance.
- EDF and McPhy signed a partnership agreement to develop carbon-free hydrogen in France and around the world (see press release of 5 June 2018).

3.1.2 Group Energy Services

- Edison, through its subsidiary Fenice, acquired the control of Zephyro SpA. and launched a mandatory tender offer (see press release of 2 July 2018).
- Dalkia, which owned 75% of Dalkia Wastenergy (previously Tiru), acquired the 25% of shares previously held by the Engie group (see Dalkia press release of 30 March 2018 available on the website www.dalkia.fr).

3.1.3 Nuclear industry

- Flamanville 3 EPR project:
  - welds in the main secondary system of the Flamanville EPR: EDF sets up corrective actions and adjusts schedule and target construction costs (see press release of 25 July 2018 and note 3.10 to the 2018 consolidated financial statements);
  - the "hot tests" are now scheduled to commence during the second half of February (see press release of 21 January 2019 and note 3.10 to the 2018 consolidated financial statements);
  - ASN would issue a statement in May concerning the validation programme on the welds in the main secondary system. A detailed progress update of the Flamanville EPR, including the schedule and construction cost, will then be given after the ASN ruling has been published (see press release of 31 January 2019).
- The first of two EPR reactors at China’s Taishan nuclear power plant entered into commercial operation (see press release of 14 December 2018 and note 3.1 to the 2018 consolidated financial statements).

(1) A full list of press releases is available from the EDF website: www.edf.fr
(2) A full list of press releases is available from the EDF Renouvelables website: www.edf-renouvelables.com

- EDF and Nawah signed operations and maintenance assistance agreement for Barakah Nuclear Energy Plant, United Arab Emirates (see press release of 22 November 2018).
- EDF and GE signed a strategic cooperation agreement for the planned construction of 6 EPRs in India (see press release of 26 June 2018).

3.2 Assets disposal plan

- EDF sold a portfolio of more than 200 real estate and business assets to Colony Capital (see press release of 29 November 2018 and note 3.2 to the 2018 consolidated financial statements).
- EDF closed the disposal of its stake in Dunkerque LNG (see press release of 30 October 2018 and note 3.3 to the 2018 consolidated financial statements).

3.3 Financial structure

- EDF announced the successful syndication of an innovative ESG-Indexed Revolving Credit Facility (see press release of 27 November 2018 and note 3.7 to the 2018 consolidated financial statements).
- EDF announced the success of its hybrid refinancing operation (see press release of 3 October 2018 and notes 3.5 and 3.6 to the 2018 consolidated financial statements).
- EDF priced €1.25 billion hybrid note offering and successfully priced a €1 billion senior note offering (see press release of 25 September 2018 and notes 3.4 and 3.5 to the 2018 consolidated financial statements).
- EDF raised $3.75 billion through a multi-tranche U.S. Dollar senior bond issuance (see press release of 19 September 2018 and note 3.4 to the 2018 consolidated financial statements).

3.4 Regulatory environment

Regulatory changes are detailed in the following notes to the 2018 consolidated financial statements:

- note 4.1 “Multi-year energy plan (PPE)”;
- note 4.2 "Regulated electricity sales tariffs in France";
- note 4.3 "TURPE network access tariffs";
- note 4.4 "CSPE compensation mechanism for public energy service charges"(CSPE);
- note 4.5 "French capacity mechanism";
- note 4.6 "Energy savings certificates”;
- note 4.7 "ARENH".

3.5 Other significant events

- Philippe Sasseigne appointed Senior Executive in charge of Nuclear and Thermal (see press release of 8 February 2019).
- EDF announced the payment of an interim cash dividend of €0.15 per share for 2018 fiscal year (see press release of 6 November 2018 and note 27.3 to the 2018 consolidated financial statements).
- Results of the option for payment of the balance of the dividend for the 2017 financial year in the form of shares (see press release of 15 June 2018 and note 27.1 to the 2018 consolidated financial statements).
- Appointment of Bruno Bensasson to the EDF Group’s Executive Committee as Group Senior Executive President responsible for Renewable Energies (see press release of 30 March 2018).
- Edison finalised the acquisition of Edison Énergie (formely Gas Natural Vendita Italia) (see press release of 22 February 2018 and note 5.3 to the 2018 consolidated financial statements).

4 SUBSEQUENT EVENT

5 ANALYSIS OF THE BUSINESS AND THE CONSOLIDATED INCOME STATEMENTS FOR 2017 AND 2018

Presentation and analysis of the consolidated income statements for 2017 and 2018 is shown at two levels of analysis for Sales and EBITDA: a first focusing on the Group, then a second reporting on the different business segments (France - Generation and supply activities, France - Regulated activities, EDF Renewables, Dalkia, Framatome [1], United Kingdom, Italy, Other international and Other activities). EBIT (operating profit) and net income are analysed from a general standpoint.

In 2018, for strategic reasons, the Group has modified its segment reporting and now presents EDF Renewables and Dalkia separately (they were previously included in the "Other activities" segment). The segments used by the Group are presented in note 6.1 to the 2018 consolidated financial statements.

(in millions of Euros)	2018	2017 [(1)]
Sales	**68,976**	**64,892**
Fuel and energy purchases	(33,012)	(32,901)
Other external purchases	(9,364)	(8,739)
Personnel expenses	(13,690)	(12,456)
Taxes other than income taxes	(3,697)	(3,541)
Other operating income and expenses	6,052	6,487
Operating profit before depreciation and amortisation (EBITDA)	**15,265**	**13,742**
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	(224)	(355)
Net depreciation and amortisation	(9,006)	(8,537)
Net increases in provisions for renewal of property, plant and equipment operated under concessions	(50)	(58)
(Impairment)/reversals	(598)	(518)
Other income and expenses	(105)	1,363
Operating profit (EBIT)	**5,282**	**5,637**
Cost of gross financial indebtedness	(1,716)	(1,778)
Discount effect	(3,486)	(2,959)
Other financial income and expenses	393	2,501
Financial result	**(4,809)**	**(2,236)**
Income before taxes of consolidated companies	**473**	**3,401**
Income taxes	149	(147)
Share in net income of associates and joint ventures	569	35
GROUP NET INCOME	**1,191**	**3,289**
EDF net income	1,177	3,173
Net income attributable to non-controlling interests	14	116
EARNINGS PER SHARE (EDF SHARE) IN EUROS		
Earnings per share	0.20	0.98
Diluted earnings per share	0.20	0.98

(1) The figures published at 31 December 2017 have been restated to reflect the impact of application of IFRS 15 on sales. However, no restatements have been made for the first application of IFRS 9 from 1 January 2018, in accordance with the simplified approach allowed by IFRS 9.

5.1 Sales

Consolidated sales were up by 6.3% corresponding to an organic increase of 4.0%.

5.1.1 Change in Group sales

(in millions of Euros)	2018	2017 [(1)]	Variation	Variation (%)	Organic growth (%)
Sales	**68,976**	**64,892**	**4,084**	**+6.3**	**+4.0**

(1) The figures published at 31 December 2017 have been restated to reflect the impact of application of IFRS 15 standard on sales.

(1) Framatome has been included in the consolidation since 31 December 2017. Its total net income for 2018 is included in the effect of changes in the scope of consolidation.

Sales amounted to €68,976 million in 2018, up by €4,084 million (+6.3%) from 2017. Excluding the effects of exchange rates (-€203 million), principally the decline in the pound sterling, the US dollar and the Brazilian real against the Euro, and changes in the scope of consolidation (+€1,713 million), which mainly concerned the acquisition of Framatome and the sale of the assets of EDF Polska, consolidated sales showed organic growth of 4.0%.

5.1.2 Change in sales by segment

The following table shows sales by segment, excluding inter-segment eliminations.

(in millions of Euros)	2018	2017 [1]	Variation	Variation (%)	Organic growth (%)
France - Generation and supply activities [2]	26,096	25,084	1,012	+4.0	+4.0
France - Regulated activities [3]	16,048	15,836	212	+1.3	+1.3
EDF Renewables	1,505	1,280	225	+17.6	+8.4
Dalkia	4,189	3,751	438	+11.7	+8.5
Framatome	3,313	-	3,313	-	-
United Kingdom	8,970	8,688	282	+3.2	+3.9
Italy	8,507	7,722	785	+10.2	+6.2
Other international	2,411	3,166	(755)	-23.8	+3.4
Other activities	2,601	2,475	126	+5.1	+5.3
Eliminations	(4,664)	(3,110)	(1,554)	+50.0	+4.2
GROUP SALES	**68,976**	**64,892**	**4,084**	**+6.3**	**+4.0**

(1) *The figures published at 31 December 2017 have been restated to reflect the impact of application of IFRS 15 standard on sales, and changes in segment reporting (IFRS 8).*

(2) *Generation, supply and optimisation in mainland France, and sales of engineering and consulting services.*

(3) *Regulated activities comprise distribution in mainland France, which is carried out by Enedis [1], EDF's island activities and the activities of Électricité de Strasbourg. In mainland France, distribution network activities are regulated via the network access tariff TURPE* (Tarifs d'Utilisation des Réseaux Publics d'Électricité).

5.1.2.1 France – Generation and supply activities

Sales by the **France - Generation and supply activities** segment amounted to €26,096 million, an organic increase of €1,012 million (+4.0%) from 2017.

Resales of electricity subject to purchase obligations developed favourably due to the higher levels of renewable energy generation and the rise in market prices. This had a positive impact estimated at +€606 million on sales (the effect on EBITDA was neutral because expenses relating to purchase obligations are compensated by the CSPE tax).

Downstream market conditions had a positive effect estimated at +€220 million on sales since the negative effect of shrinking electricity sales to final customers was more than offset by favourable electricity price effects and growth in income from gas supply activities.

Sales of capacity certificates had a positive impact of +€55 million compared to 2017.

The changes in the non-delivery component of regulated sale tariffs for electricity [2] had a positive impact of around +€48 million.

The volumes sold under the ARENH mechanism and the balance of purchases and sales on the wholesale markets, excluding weather effects, changes in demand and losses of customers, had an estimated -€203 million negative impact on sales.

Electricity generation

Nuclear output stood at 393.2TWh in 2018, an increase of +14.1TWh from 2017. This increase is explained by better availability of the nuclear plant fleet in 2018, as 2017 was marked by several reactor outages, notably in connection with the Creusot manufacturing record checks, the carbon segregation issue and the temporary shutdown of four generation units at the Tricastin plant.

Hydropower output stood at 46.5TWh [3] in 2018, a 25.4% increase from 2017 (+9.4TWh). This increase is explained by hydrological conditions, which were particularly unfavourable in 2017 and then favourable in 2018 (see section 2.3 "Weather conditions: temperatures and rainfall").

Less use was made of thermal generation facilities. Their output was down by 5.1TWh compared to 2017 to 11.0TWh.

Sales volumes to final customers (a market segment that includes local distribution companies and excludes foreign operators) were down by -17.0TWh, including -13.1TWh reflecting the impact of losses of customers.

EDF was a net seller on the wholesale markets to the extent of 78.6TWh. The +26.1TWh rise in net market sales compared to 2017 is explained by a more favourable situation in nuclear and hydropower generation, and growth in supplies under purchase obligations.

(1) Enedis is an independent EDF subsidiary as defined in the French Energy Code.
(2) +1.70% from 1 August 2017 on "blue" tariffs for residential and non-residential customers (notably incorporating an indexed adjustment of +2.71% to the TURPE 5 distribution tariff at 1 August 2017) and tariff changes in 2018 (+0.70% on "blue" tariffs for residential customers, +1.60% on "blue" tariffs for non-residential customers from 1 February 2018, and -0.5% on "blue" tariffs for residential customers and +1.10% on "blue" tariffs for non-residential customers from 1 August 2018), including an indexed adjustment of -0.21% to the TURPE 5 distribution tariff at 1 August 2018.
(3) After deduction of pumped volumes, hydropower production stood at 39.2TWh for 2018 (30.0TWh for 2017).

5.1.2.2 France – Regulated activities

Sales by the **France - Regulated activities** segment amounted to €16,048 million, an organic rise of €212 million (+1.3%) from 2017.

Sales essentially benefited from favourable effects for Enedis, relating to the rise in the TURPE 5 distribution tariff (€242 million [(1)]) and income from connection services (€37 million).

5.1.2.3 EDF Renewables

EDF Renewables's sales totalled €1,505 million in 2018, an organic increase of €107 million (+8.4%) from 2017.

This rise was mainly due to the commissioning of wind and solar power projects in 2017, which contributed to organic growth of 10.2% in revenues attributable to generation, as most sales of plants (with change of control) took place towards the end of 2018.

5.1.2.4 Dalkia

Dalkia's contribution to consolidated sales in 2018 was €4,189 million, corresponding to organic growth of €319 million (+8.5%) compared to 2017.

This growth is mainly explained by the positive impact of higher energy prices, favourable trends in the indexes for revising service contract prices, and the conclusion or renewal of contracts, for example the contract for a new heat network in Perpignan and Montbéliard (France), and the 15-year energy efficiency contract signed with Saint-Etienne hospital (also in France).

5.1.2.5 Framatome [(2)]

Framatome's sales amounted to €3,313 million in 2018. A significant portion of these sales is realised within the Group.

Order intake amounted to €3 billion (more than 60% from non-Group entities).

Framatome registered a good level of activity in the Fuel business, with notable achievements in 2018 such as delivery of the first batch of fuel cladding tubes for the Hualong-1 reactor at the Fuqing nuclear power plant. Framatome also won new contracts with Vattenfall for the delivery of fuel assembly reloads. Oh the other hand, the Installed Base activity registered a slight slowdown, particularly in the United States.

Thanks to the purchase of Schneider Electric's nuclear instrumentation and control (I&C) offering in North America in February 2018, Framatome is expanding its engineering expertise and broadening its portfolio of I&C solutions. It supplied a complete I&C system for unit 3 of the Tianwan nuclear power plant (a VVER type pressurized water reactor with net installed capacity of 1,000MW). In Sweden, Framatome completed the successful commissioning of a safety I&C system upgrade for unit 3 of the Forsmark nuclear power plant.

5.1.2.6 United Kingdom

The **United Kingdom**'s contribution to Group sales amounted to €8,970 million in 2018, up by €282 million from 2017. The pound sterling's decline against the Euro had an unfavourable impact of €82 million compared to 2017. Excluding foreign exchange effects and changes in the scope of consolidation, the organic growth in sales compared to 2017 was 3.9%.

The positive change in UK sales reflects higher electricity tariffs and prices on the residential and business market, and higher electricity volumes sold to business customers. This growth was partly offset by a decline in sales volumes on the wholesale markets, due to the lower level of nuclear power generation, and a decrease in sales volumes to residential electricity customers in line with the smaller number of customer accounts.

5.1.2.7 Italy

Italy contributed €8,507 million to consolidated sales, an organic increase of €478 million (+6.2%) compared to 2017.

Sales from exploration-production activities increased as a result of the favourable change in Brent prices and gas prices.

Sales were up for the electricity activities, principally due to higher sales volumes to business customers and growth in hydropower generation.

5.1.2.8 Other international

The **Other international** segment principally covers operations in Belgium, the United States, Brazil and Asia (China, Vietnam and Laos).

This segment contributed €2,411 million to Group sales in 2018, €755 million less than in 2017. Excluding foreign exchange effects (-€81 million) and changes in the scope of consolidation (-€783 million, mainly relating to the sale of EDF Polska's assets in 2017), sales showed organic growth of 3.4%.

In **Belgium** [(3)], sales amounted to €1,806 million, corresponding to organic growth of 3.1% compared to 2017, including a price increase and a decrease in volumes for the supply business in an intensely competitive market. In energy generation, wind power capacities rose to 440MW, up by +17% from 2017. Generation levels remain affected by lengthy outages of nuclear reactors operated by the Engie group. Service sales continued the upward trend begun in 2015.

In **Brazil,** sales amounted to €422 million, an organic increase of +9.5% from 2017. The favourable impact of the introduction of the IMCS tax invoiced on PPA sales (with a neutral effect on EBITDA) was partly counterbalanced by the decline in sales on the spot market.

5.1.2.9 Other activities

Other activities comprise, among other entities, EDF Trading and the gas activities.

Sales by the **Other activities** segment amounted to €2,601 million in 2018, an organic increase of €130 million from 2017.

(1) Indexed adjustment of the TURPE 5 distribution tariff: +2.71% at 1 August 2017 and -0.21% at 1 August 2018.

(2) Framatome has been included in the consolidation since 31 December 2017. Its total net income for 2018 is included in the effect of changes in the scope of consolidation.

(3) Belgium comprises EDF Luminus and EDF Belgium.

EDF Trading's sales totalled €873 million, a substantial 47.8% organic increase. This growth reflects the volatility in commodity markets which EDF Trading turned to its advantage, a positive weather effect, and occasional favourable tensions in the supply-demand balance in Europe and the United States. Activities related to LNG (Liquefied Natural Gas) also contributed to this performance, thanks to rising demand in Asia and upward oil price trend until late September 2018.

5.2 Operating profit before depreciation and amortisation (EBITDA)

EBITDA increased by 11.1%, and registered organic growth of +11.3%.

(in millions of Euros)	2018	2017 (1)	Variation	Variation (%)	Organic growth (%)
Sales	**68,976**	**64,892**	**4,084**	**+6.3**	**+4.0**
Fuel and energy purchases	(33,012)	(32,901)	(111)	+0.3	+1.0
Other external expenses	(9,364)	(8,739)	(625)	+7.2	+0.1
Personnel expenses	(13,690)	(12,456)	(1,234)	+9.9	-0.6
Taxes other than income taxes	(3,697)	(3,541)	(156)	+4.4	+3.3
Other operating income and expenses	6,052	6,487	(435)	-6.7	-9.7
EBITDA	**15,265**	**13,742**	**1,523**	**+11.1**	**+11.3**

(1) The figures published at 31 December 2017 have been restated to reflect the impact of application of IFRS 15 standard on sales.

5.2.1 Change in consolidated EBITDA and analysis

Consolidated **EBITDA** for 2018 amounted to €15,265 million, an increase of 11.1% from 2017. Excluding foreign exchange effects (-€58 million) and changes in the scope of consolidation (+€26 million), EBITDA showed organic growth of +11.3%.

The Group's **fuel and energy purchases** amounted to €33,012 million in 2018, up by €111 million (+0.3%) from 2017, or an organic increase of €344 million (+1.0%):

- In the **France - Generation and supply activities** and **France - Regulated activities** segments, fuel and energy purchases registered an organic decrease of €760 million (-4.1%) to €17,935 million, principally due to the higher levels of nuclear power and hydropower generated, and the decrease in purchase prices, particularly to respond to demand under the ARENH mechanism.
- The organic increase in fuel and energy purchases observed in the **United Kingdom** (+€468 million or +8.7%) principally relates to the rise in regulatory costs and increases in energy prices and coal costs.
- **Italy** saw an organic increase of €566 million (+9.5%) in fuel and energy purchases, mainly reflecting higher volumes, delivery costs and network services in the electricity business, and higher gas and Brent prices in the hydrocarbon business.

Other external expenses amounted to €9,364 million, +€625 million more than in 2017 (+7.2%). Excluding foreign exchange effects (+€26 million) and changes in the scope of consolidation (-€646 million, mainly relating to the acquisition of Framatome), other external expenses were stable on an organic basis (+€5 million) despite the growth in business, particularly in renewable energies and services.

- In the **France - Generation and supply activities** and **France - Regulated activities** segments, other external expenses totalled €4,638 million. The organic decrease of €216 million (-4.4%) notably reflects continued cost-cutting actions implemented as part of performance improvement plans across all areas of business.
- The organic increase in other external expenses for **EDF Renewables** (+€67 million) principally relates to growth in service activities in the United States, and development costs.
- The organic increase in other external expenses observed at **Dalkia** (+€112 million) is attributable to the expansion of its service activities.

The Group's **personnel expenses** totalled €13,690 million, up by €1,234 million from 2017. Excluding foreign exchange effects (+€25 million) and changes in the scope of consolidation (-€1,336 million, mainly relating to the acquisition of Framatome), the organic change in personnel expenses was a decrease of €0.6%.

- In the **France - Generation and supply activities** segment, personnel expenses totalled €6,013 million, a €177 million decrease from 2017 reflecting the efforts made to control payroll costs. The average workforce shrank by 3.1% [1] over 2018, with decreases in all areas of business.
- In the **France - Regulated activities** segment, personnel expenses totalled €3,141 million, down by €17 million from 2017. Average workforce numbers were stable compared to 2017.
- The organic increase in personnel expenses observed at **Dalkia** (+€35 million) is chiefly explained by an increase in the average workforce, in keeping with its expanding service activities.

Taxes other than income taxes amounted to €3,697 million for 2018, €156 million or +4.4% more than in 2017 (+3.3% in organic terms).

- This increase mainly concerned the **France - Generation and supply activities** segment, where non-income taxes were up by €50 million due to a rise in taxes correlated with value added.

Other operating income and expenses generated net income of €6,052 million in 2018, €435 million less than in 2017 (an organic change of -€629 million or -9.7%).

- In the **France - Generation and supply activities** segment, the income generated by other operating income and expenses was down by €816 million. Notable causes of this decrease were the higher cost of energy savings certificate obligations, movements in provisions, and positive items that were recorded in 2017 and had no equivalent in 2018.

(1) Excluding apprentices and work-study contracts.

- The **Other activities** segment registered an organic increase of €115 million in other operating income and expenses, principally generated by the sale of real estate assets in France.

5.2.2 Change in consolidated EBITDA and analysis by segment

(in millions of Euros)	2018	2017 [1]	Variation	Variation (%)	Organic growth (%)
France - Generation and supply activities	6,327	4,896	1,431	+29.2	+29.2
France - Regulated activities	4,916	4,898	18	+0.4	+0.4
EDF Renewables	856	751	105	+14.0	+4.1
Dalkia	292	259	33	+12.7	+12.0
Framatome	202	-	202	-	-
United Kingdom	783	1,035	(252)	-24.3	-15.4
Italy	791	910	(119)	-13.1	-12.7
Other international	240	457	(217)	-47.5	-3.1
Other activities	858	536	322	+60.1	+62.1
GROUP EBITDA	**15,265**	**13,742**	**1,523**	**+11.1**	**+11.3**

(1) The figures published at 31 December 2017 have been restated to reflect changes in segment reporting (IFRS 8).

5.2.2.1 France – Generation and supply activities

EBITDA for the **France - Generation and supply activities** segment amounted to €6,327 million, corresponding to an organic increase of €1,431 million (+29.2%) from 2017.

The increase in hydropower and nuclear power output had a very favourable impact on EBITDA estimated at +€1,079 million. Better conditions on the wholesale markets also contributed an estimated +€413 million improvement in EBITDA.

Conditions on the downstream market [1] had a positive impact of +€150 million compared to 2017, as favourable price developments on new market-price offers made up for erosion of market shares (-13.1TWh).

Price developments and the end of the tariff adjustment component on the regulated sales tariff, excluding the Energy Savings Certificate component, led to an estimated -€152 million decrease compared to 2017.

Under the EDF group's performance plan, operating expenses [2] were reduced by €313 million (-3.5%) through control of purchases and payroll costs. These measures are in application across all entities, notably in support functions and in the supply business, and reducing operating costs for the nuclear, hydropower and thermal power plant fleet.

A number of factors had a total effect of -€372 million on EBITDA: principally the rise on taxes based on value added (the CVAE tax), movements in provisions, and positive items that were recorded in 2017 and had no equivalent in 2018.

5.2.2.2 France - Regulated activities

EBITDA for the **France - Regulated activities** segment stood at €4,916 million, an organic increase of €18 million (+0.4%) from 2017.

EBITDA benefited from favourable indexed adjustments to the TURPE 5 tariffs [3] amounting to an estimated +€68 million.

The favourable +€37 million effects of business growth in network connection services (particularly for energy producers) and the reduction in operating expenses (+€38 million) had a positive impact on EBITDA.

However, the unfavourable weather effect, the negative price effect on grid losses purchases, and making provision for the risk of changes in Enedis' and Électricité de Strasbourg's contributions to the Electricity Equalisation Fund for the period 2012-2018, had the combined effect of a -€125 million decrease in EBITDA.

5.2.2.3 EDF Renewables

EDF Renewables's contribution to Group EBITDA for 2018 was €856 million, corresponding to organic growth of +€31 million (+4.1%).

EBITDA from generation recorded an organic increase of 15% to €903 million, underpinned by energy production levels of 15.2TWh in 2018. This was particularly attributable to facilities commissioned in late 2017, as sales of facilities (with change of control) took place in late 2018.

Development and Sales of Structured Assets made a lower contribution to EBITDA in 2018 than in 2017. Development and support function costs increased, in order to support business growth.

The gross capacities brought into operation by EDF Renewables during 2018 totalled 1.6GW, including 0.9GW for solar power. The net installed capacities at 31 December 2018 showed a year-on-year increase of 0.5GW to 8.3GW (12.9GW gross). The gross portfolio of projects under construction at 31 December 2018 amounted to 2.4GW, consisting of 1.2GW for wind power and 1.2GW for solar power.

(1) Excluding the Energy Savings Certificate component of market-price offers.
(2) Sum of personnel expenses and other external expenses. Based on comparable scope and exchange rates and constant discount rates for pensions. Excluding changes in operating expenses of the service activities.
(3) Indexed adjustment of the TURPE 5 distribution tariff: +2.71% at 1 August 2017 and -0.21% at 1 August 2018; indexed adjustment of the TURPE 5 transmission tariff: +6.76% at 1 August 2017 and +3.0% at 1 August 2018.

In 2018, EDF Renewables sold a 49% minority stake in twenty-four of its UK wind farms. This operation has no impact on EBITDA as EDF Renewables retains control of the operations concerned.

5.2.2.4 Dalkia

Dalkia's contribution to Group EBITDA for 2018 amounted to €292 million, reflecting organic growth of €31 million (+12.0%). This increase takes into account the difficulties encountered on a contract by one Dalkia subsidiary in 2017, which had no equivalent in 2018. Corrected for that factor, the organic growth in EBITDA is +1.3% driven by competitivity improvements resulting from the operational performance plan, and good control of overheads. Signatures and renewals of commercial contracts had a favourable effect on EBITDA, especially in the fields of energy efficiency and heat networks. However, Dalkia's EBITDA was adversely affected by maintenance operations at several important plants, the weather, and movements in prices.

5.2.2.5 Framatome (1)

Framatome's EBITDA was €465 million, including the margin realised with other EDF group entities. Framatome's contribution to Group EBITDA for 2018 stood at €202 million

Framatome registered good levels of business in the Fuel activity, with notable achievements in 2018, and a slight slowdown in the Installed Base activity, particularly in the United States.

Framatome's EBITDA is supported by the implementation of the operating and structure costs reduction plan, in line with expectations. In 2018 it includes a non-recurring €42 million expense related to the revaluation of inventories undertaken in the context of Framatome's purchase price allocation.

5.2.2.6 United Kingdom

The **United Kingdom**'s contribution to Group EBITDA for 2018 was €783 million, down by 15.4% in organic terms from 2017.

EBITDA in the United Kingdom was impacted by the downturn in nuclear power generation and the lower realised net prices for nuclear power, which were partly attributable to purchases undertaken due to lower nuclear fleet availability as the market rose. Nuclear generation output for 2018 totalled 59.1TWh, down by 4.8TWh from 2017. The decrease is mainly explained by Hunterston B inspection and extension of the shutdowns of Dungeness B.

The supply activities benefited from increases in residential tariffs, although the customer portfolio showed a year-on-year decrease of -4.2% in a highly competitive environment.

5.2.2.7 Italy

Italy's contribution to Group EBITDA for 2018 amounted to €791 million, corresponding to an organic decrease of 12.7% compared to 2017.

In 2017, Italy's EBITDA benefited from the gain of around €100 million on the sale of Edison's Milan headquarters. After elimination of this non-recurring item, EBITDA was practically stable.

EBITDA for the electricity activities was up, essentially due to a good performance in hydropower generation and electricity system services. However, wind power generation was lower, reflecting a negative price effect. The supply activity, which mainly concerns business customers, progressed despite lower margins in a more competitive market.

EBITDA for the gas activities was down, principally as a result of unfavourable price effect that affected the margin on long-term contracts.

The exploration-production activity benefited from positive price and volume effects thanks to the rise in Brent oil prices and the commissioning of a new field in Algeria.

5.2.2.8 Other international

EBITDA for the **Other international** segment stood at €240 million in 2018, an organic decrease of €14 million (-3.1%) compared to 2017.

In **Belgium,** EBITDA showed an organic decline of -€8 million (-5.5%). The extended outages of 4 nuclear reactors partly owned by EDF Luminus and operated by Engie penalised EBITDA by an estimated €76 million in 2018. Thermal generation partly counterbalanced this effect, and production of renewable energy benefited from the increase in installed wind power capacities, which totalled 440MW at 31 December 2018 (up by +17% compared to 2017). Supply activities are still marked by the strongly competitive environment, but are benefiting from growth in service activities.

EBITDA in **Brazil** also showed an organic decline (-€46 million), principally due to the suspension of gas supplies caused by work on the transmission network, and scheduled outages in 2018 for major inspections at the EDF Norte Fluminense plant. These events made significant purchases on the energy markets necessary to cover the Power Purchase Agreement (PPA) at a time of rising market prices.

5.2.2.9 Other activities

Other activities contributed €858 million to Group EBITDA for 2018, an organic increase of €333 million (+62.1%) from 2017.

EBITDA at **EDF Trading** amounted to €633 million in 2018, an organic increase of €263 million (+73.5%) from 2017. This rise follows the increase in the trading margin mentioned earlier in the discussion of sales, which was driven by high volatility on the markets (see section 5.1.2.9).

EBITDA for the Other activities segment also benefited from a substantial capital gain on the final operation of the real estate sale programme initiated in 2015.

(1) Framatome has been included in the consolidation since 31 December 2017. Its total net income for 2018 is included in the effect of changes in the scope of consolidation.

5.3 Operating profit (EBIT)

EBIT was down by 6.3% from 2017.

(in millions of Euros)	2018	2017	Variation	Variation (%)
EBITDA	**15,265**	**13,742**	**1,523**	**+11.1**
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	(224)	(355)	131	-36.9
Net depreciation and amortisation	(9,006)	(8,537)	(469)	+5.5
Net increases in provisions for renewal of property, plant and equipment operated under concessions	(50)	(58)	8	-13.8
(Impairment)/reversals	(598)	(518)	(80)	+15.4
Other income and expenses	(105)	1,363	(1,468)	-107.7
EBIT	**5,282**	**5,637**	**(355)**	**-6.3**

The Group's consolidated **EBIT** amounted to €5,282 million for 2018, down by €355 million from 2017. This downturn, despite the higher EBITDA, is essentially explained by the sale of 49.9% of CTE during 2017, which had no equivalent in 2018, and the rise in net depreciation and amortisation.

5.3.1 Net changes in fair value on Energy and Commodity derivatives, excluding trading activities

The net changes in fair value on Energy and Commodity derivatives, excluding trading activities, amounted to -€355 million in 2017 and -€224 million in 2018.

In **Italy**, this change was mainly attributable to the renegotiation of long-term gas contracts in recent years, which has reduced the impact of volatility.

5.3.2 Net depreciation and amortisation

Net depreciation and amortisation was up by €469 million compared to 2017.

The **France - Generation and supply activities** segment registered a €169 million increase in net depreciation and amortisation, essentially explained by a volume effect related to newly-commissioned facilities in the nuclear fleet. This rise was partly offset by the effect of oil-fired thermal plant closures.

The **France - Regulated activities** segment registered a €145 million increase in net depreciation and amortisation, principally attributable to the step-up of the Linky [1] project and investments in connections and network reinforcements.

5.3.3 Net increases in provisions for renewal of property, plant and equipment operated under concessions

The €8 million decrease between 2017 and 2018 in net increases in provisions for renewal of property, plant and equipment operated under concessions is attributable to the **France - Regulated activities** segment.

5.3.4 Impairment/reversals

In 2018, impairment amounted to €598 million (see note 13 to the 2018 consolidated financial statements).

In 2017, impairment amounted to €518 million.

5.3.5 Other income and expenses

In 2018, other income and expenses amounted to -€105 million (see note 14 to the 2018 consolidated financial statements for details).

In 2017, other income and expenses amounted to +€1,363 million and principally comprised a gain of €1,462 million on the sale of 49.9% of the Group's investment in CTE.

(1) Linky is a project led by Enedis, an independent EDF subsidiary as defined in the French Energy Code.

5.4 Financial result

(in millions of Euros)	2018	2017 [1]	Variation	Variation (%)
Cost of gross financial indebtedness	(1,716)	(1,778)	62	-3.5
Discount effect	(3,486)	(2,959)	(527)	+17.8
Other financial income and expenses	393	2 501	(2,108)	-84.3
FINANCIAL RESULT	**(4,809)**	**(2,236)**	**(2,573)**	**+115.1**

(1) No restatements have been made for the first application of IFRS 9 from 1 January 2018, in accordance with the simplified approach allowed by IFRS 9.

The financial result for 2018 corresponds to a financial expense of €4,809 million, €2,573 million higher than in 2017. This change is explained by:

- a €62 million decrease in the cost of gross financial indebtedness. The expenses on bond issues of 2018 and the full-year effect of the issues of October 2017 were more than offset by the lower financial expenses following redemption of a bond during the year;
- an unfavourable change of €527 million in the discount effect, principally due to a larger decrease between 2017 and 2018 in the real discount rate applied to calculate nuclear provisions in France at 31 December 2018 (-0.2% for the real rate) than the previous year (-0.1% for the real rate). At 31 December 2018 the discount rate was 3.9% incorporating an average inflation rate of 1.5% (respectively 4.1% and 1.5% at 31 December 2017, and 4.2% and 1.5% at 31 December 2016).
- a €2,108 million decrease in other financial income and expenses, principally due to impacts associated with dedicated assets, particularly due to the performance by growth assets (equities and equity funds): +12.7% in 2017 followed by -7.0% in 2018 in reflection of unfavourable market developments, with overall effects of:
  - net changes in the fair value of debt and equity instruments, after hedging, of -€989 million in 2018 after application of IFRS 9;
  - net gains on sales of EDF's dedicated assets amounting to -€12 million in 2018 (compared to +€985 million in 2017 before application of IFRS 9).

5.5 Income taxes

Income taxes amounted to +€149 million in 2018, corresponding to an effective tax rate of -31.5% (compared to -€147 million in 2017, corresponding to an effective tax rate of +4.3%). This change essentially reflects the lower pre-tax income of consolidated companies, and non-recurring items.

After eliminating these non-recurring items, the effective tax rate for current taxes in 2018 was +25.7%, compared to +18.1% in 2017. The increase in the Group's effective current tax rate between 2017 and 2018 mainly results from the favourable impact in 2017 of disposals subject to reduced-rate taxation, which had no equivalent in 2018.

5.6 Share in net income of associates and joint ventures

The Group's share in net income of associates and joint ventures was a positive €569 million in 2018, compared to €35 million in 2017.

This +€534 million change is mainly explained by the increase in CTE's net income and the impairment of €491 million booked in 2017 on the assets of CENG, for which there was no equivalent in 2018.

The share in net income of associates in 2018 includes impairment totalling €39 million. Details of this impairment are given in note 23 to the 2018 consolidated financial statements, "Investments in associates and joint ventures".

5.7 Net income attributable to non-controlling interests

Net income attributable to non-controlling interests amounted to €14 million in 2018, €102 million less than in 2017. This downturn is mainly explained by the sale of EDF Polska's assets in 2017, and by Centrica's lower income from nuclear generation in the **United Kingdom**, due to the lower level of both nuclear generation and realised net prices for nuclear power.

5.8 EDF net income

EDF net income totalled €1,177 million for 2018, down by €1,996 million (-62.9%) from 2017, notably as a result of the gain on the sale of CTE in 2017, which had no equivalent in 2018, and a deterioration of the situation on the financial markets which had a significant impact on the financial result.

5.9 Net income excluding non-recurring items

The Group's net income excluding non-recurring items [1] stood at €2,452 million for 2018, down by 13.1% from 2017 due to significant gains on financial assets in 2017 that had no equivalent in 2018.

(1) Group net income excluding non-recurring items, net changes in fair value on Energy and Commodity derivatives, excluding trading activities, and net changes in the fair value of debt and equity instruments, net of tax.
The amounts of non-recurring items, net changes in fair value on Energy and Commodity derivatives, excluding trading activities, and net changes in the fair value of debt and equity instruments, net of tax, are:

- *-€385 million for miscellaneous risks and impairment in 2018 compared to +€617 million in 2017.*
- *-€145 million of net changes in fair value on Energy and Commodity derivatives, excluding trading activities, net of tax in 2017, compared to -€264 million in 2017.*
- *-€745 million of net changes in the fair value of debt and equity instruments in 2018 (IFRS 9).*

6 NET INDEBTEDNESS, CASH FLOW AND INVESTMENTS

Net indebtedness comprises total loans and financial liabilities, less cash and cash equivalents and liquid assets. Liquid assets are financial assets consisting of funds or securities with initial maturity of over three months that are readily convertible into cash and are managed according to a liquidity-oriented policy.

The Group's net indebtedness stood at €33,388 million at 31 December 2018 compared to €33,015 million at 31 December 2017.

(in millions of Euros)	2018	2017	Variation	Variation (%)
Operating profit before depreciation and amortisation (EBITDA)	**15,265**	**13,742**	**1,523**	**+11.1**
Cancellation of non-monetary items included in EBITDA	(1,253)	(1,796)		
Net financial expenses disbursed	(1,062)	(1,209)		
Income taxes paid	(389)	(771)		
Other items including dividends received from associates and joint ventures	383	221		
Operating cash flow (1)	**12,944**	**10,187**	**2,757**	**+27.1**
Change in working capital	462	1,476		
Net investments (2)	(12,107)	(9,810)		
Cash flow after net investments	**1,299**	**1,853**		
Dedicated assets	(501)	(1,171)		
Cash flow before dividends (3)	**798**	**682**		
Dividends paid in cash	(1,278)	(891)		
Group cash flow	**(480)**	**(209)**		
Other monetary changes	(111)	3,855		
(Increase)/decrease in net indebtedness, excluding the impact of changes in exchange rate	**(591)**	**3,646**		
Effect of change in exchange rates	97	701		
Effect of other non-monetary changes	121	63		
(Increase)/decrease in net indebtedness	**(373)**	**4,410**		
Net indebtedness at beginning of period	**33,015**	**37,425**		
NET INDEBTEDNESS AT END OF PERIOD	**33,388**	**33,015**		

(1) 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"), is equivalent to net cash flow from operating activities excluding changes in working capital after adjustment where relevant for the impact of non-recurring effects, less net financial expenses disbursed and income taxes paid.

(2) 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 received, non-Group partner investments, Linky, new developments and the assets disposal plan of the Group.

(3) Cash flow before dividends 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 defined in note (1) after the change in working capital, net investments defined in note (2), and net allocations to dedicated assets.

6.1 Operating cash flow

The operating cash flow amounted to €12,944 million in 2018 compared to €10,187 million in 2017, an increase of €2,757 million (+27.1%).

This change mainly reflects:

- the increase of EBITDA (+€1,523 million);
- a decrease in income taxes paid (-€389 million in 2018 versus -€771 million in 2017), mainly due to lower taxable income for the Group in France.

6.2 Change in working capital

Working capital improved by €462 million in 2018.

This change is mainly explained by:

- gains resulting from the working capital improvement plan, essentially on inventories and trade receivables (+€242 million);
- favourable effects relating to the CSPE (+€258 million), principally resulting from excess compensation which was affected by the rise in market prices (expenses on purchase obligations decreased).

The difference between the 2017 and 2018 change in working capital (-€1,014 million) is essentially explained by:

- receipts of margin calls in 2017 in connection with the optimisation and trading activity, compared to payments in 2018 of approximately -€700 million;
- purchases of capacity certificates at high prices (-€201 million).

6.3 Net investments

Net investments amounted to €12,107 million in 2018 compared to €9,810 million in 2017, an increase of €2,297 million (+23.4%). Details are as follows:

(in millions of Euros)	2018	2017	Variation	Variation (%)
France - Generation and supply activities	5,275	5,849	(574)	-9.8
France - Regulated activities	3,345	3,212	133	+4.1
EDF Renewables	458	701	(243)	-34.7
Dalkia	293	339	(46)	-13.6
Framatome	261	-	261	n.a.
United Kingdom	568	643	(75)	-11.7
Italy	438	511	(73)	-14.3
Other international	252	553	(301)	-54.4
Other activities	45	160	(115)	-71.9
NET INVESTMENTS EXCLUDING LINKY, NEW DEVELOPMENTS AND GROUP ASSETS DISPOSAL PLAN	**10,935**	**11,968**	**(1,033)**	**-8.6**
LINKY, NEW DEVELOPMENTS AND GROUP ASSETS DISPOSAL PLAN	**1,172**	**(2,158)**	**3,330**	**n.a.**
NET INVESTMENTS	**12,107**	**9,810**	**2,297**	**+23.4**

n.a.: not applicable.

6.3.1 Net investments excluding Linky, new developments and Group assets disposal plan

Net investments by the **France – Generation and supply activities** segment decreased by €574 million or -9.8%. This change is mainly attributable to investments in the Bouchain thermal power plant in 2017, and lower expenses in 2018 than 2017 on emergency diesel generators. The Group's takeover of its supplier Framatome also contributed to the decrease in net investments.

Net investments by the **France – Regulated activities** segment were up by €133 million (+4.1%), primarily as a result of higher numbers of connections for residential customers and an increase in regulatory obligations.

Net investments by **EDF Renewables** decreased by €243 million (-34.7%), mainly as a result of the substantial increase between 2017 and 2018 in sales of structured assets (especially the wind farm sale in the United Kingdom), which was partly counterbalanced by the acquisition during 2018 of development rights for the "Neart na Gaoithe1" offshore wind farms in Scotland.

- In the **United Kingdom**, the decrease of €75 million or -11.7% is explained, among other factors, by lower investments in coal-fired plants, and the slower pace of investment in smart metering, and to a lesser extent in renewable energies.
- In **Italy**, net investments were down by €73 million, principally due to lower investments in the exploration-production activity.

In the **Other international** segment, net investments were down by €301 million or -54.4%. This is explained by the lower level of expenditures on construction of the EPR at the Taishan nuclear power plant in China, which started commercial operation in December 2018, slower-paced investment in the SINOP project in Brazil, and the sale of the Polish entities in 2017.

- Net investments by the **Other activities** segment were down by €115 million. This decrease is attributable in particular to the lower investments by Dunkerque LNG due to its sale during 2018, and disposals of real estate assets in recent years.

6.3.2 Linky, new developments and the Group assets disposal plan

Investments in the Linky programme, which was stepped up from 2017, amounted to €792 million in 2018.

New developments correspond to the Group's significant development projects, which do not immediately generate EBITDA, and significant acquisitions. In 2018, these new developments essentially concerned New Nuclear investments in the United Kingdom totalling €1,646 million (progress on the Hinkley Point C project), acquisitions by Edison totalling €402 million (principally Edison Energie [(1)] and Zephyro), and to a lesser degree, offshore wind farm projects in France.

Asset disposals essentially concerned the sale by EDF of its stake in Dunkerque LNG, which contributed to a reduction of €1,468 million in the net indebtedness.

6.4 Dedicated assets

In compliance with the 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 for secure financing of its long-term nuclear obligations which amounted to €26,232 million at 31 December 2018.

(1) Formerly Gas Natural Vendita Italia.

Overall, the changes in dedicated assets comprise:

- allocations to reach full coverage of obligations;
- reinvestment of 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 change of -€501 million in dedicated assets in 2018 corresponds to the first three categories above.

6.5 Cash flow before dividends

The cash flow before dividends in 2018 amounted to €798 million (compared to €682 million in 2017) and is mainly explained by the following factors:

- operating cash flow of €12,944 million;
- net investments of -€12,107 million;
- a net allocation to dedicated assets of -€501 million;
- a favourable change of €462 million in working capital.

The €116 million difference from 2017 essentially results from a favourable change in operating cash flow, and also in dedicated assets. However, these developments were partly counterbalanced by a €2,297 million rise in net investments and a smaller improvement in working capital (-€1,014 million).

6.6 Dividends paid in cash

Dividends paid in cash during 2018 (-€1,278 million) comprise:

- the balance of the 2017 dividend (-€60 million), mostly paid in the form of shares;
- the interim dividend for 2018 (-€451 million) decided by the Board of Directors on 6 November 2018 and paid on 10 December 2018 at the rate of €0.15 per share;
- payments made in 2018 to bearers of perpetual subordinated bonds for the "hybrid" bond issues of January 2013 and January 2014 (-€584 million);
- dividends paid by Group subsidiaries to their minority shareholders (-€183 million).

6.7 Group cash flow

The Group cash flow amounted to -€480 million, versus -€209 million in 2017.

6.8 Effect of change in exchange rates

The foreign exchange effect had a favourable impact of +€97 million on the Group's net indebtedness at 31 December 2018.

6.9 Other monetary changes

Other monetary changes had an unfavourable impact of -€3,966 million on the Group's net indebtedness at 31 December 2018, principally in line with the EDF SA's capital increase that took place in 2017, for which there was no equivalent in 2018.

6.10 Financial ratios

	2018	2017	2016
Net indebtedness/EBITDA	2.2	2.4	2.3
Net indebtedness/(Net indebtedness + equity)(1)	39%	40%	48%

(1) Equity including non-controlling interests.

7 MANAGEMENT AND CONTROL OF MARKET RISKS

7.1 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 the EDF group. 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.

Since 2002, a dedicated body - the Financial Risks Control department *(Département Contrôle des Risques Financiers et Investissements - CRFI)* - has been in charge of financial risk control at Group level, mainly by ensuring correct application of the principles of the Strategic Financial Management Framework (July 2015). This department, which has reported to the Group's Risk Division since 2008, is an independent unit that 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. The CRFI department also 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.

7.1.1 Liquidity position and management of liquidity risk

7.1.1.1 Liquidity position

At 31 December 2018, the Group's liquidities, consisting of liquid assets, cash and cash equivalents, totalled €23,828 million and available credit lines amounted to €11,393 million.

For 2019, the Group's scheduled debt repayments (principal and interest) are forecast at 31 December 2018 at €11,749 million, including €5,583 million for bonds (excluding hybrid bonds).

No Group company was in default on any borrowing at 31 December 2018.

7.1.1.2 Management of liquidity risk

On 19 September 2018, EDF raised $3.75 billion through three senior bonds:

- a $1.8 billion bond, with 10-year maturity and a fixed coupon of 4.5%;
- a $650 million bond, with 20-year maturity and a fixed coupon of 4.875%;
- a $1.3 billion bond, with 30-year maturity and a fixed coupon of 5.0%.

In addition, on 25 September 2018 EDF launched a €1 billion senior bond, with 12-year maturity and a fixed coupon of 2%.

These operations enable the EDF group to further reinforce the structure of its balance sheet, and to refinance upcoming financial obligations.

Details of the Group's bond borrowings are given in note 38.2 to the 2018 consolidated financial statements "Loans and other financial liabilities".

The average maturity of the Group's gross debt was 13.6 years at 31 December 2018, compared to 13.7 years at 31 December 2017. For EDF SA, the average maturity was 14.2 years at 31 December 2018, against 14.3 years at 31 December 2017.

At 31 December 2018, the residual maturities of financial liabilities (including interest payments) are as follows under IAS 39 (valued on the basis of exchange and interest rates at 31 December 2018):

31 December 2018		**Hedging instruments (1)**		
(in millions of Euros)	**Debt**	**Interest rate swaps**	**Currency swaps**	**Guarantee given on borrowings**
2018	11,749	(521)	(140)	138
2019-2022	20,007	(1,855)	(426)	335
2023 and later	67,993	(3,020)	(1,997)	501
Total	**99,749**	**(5,396)**	**(2,563)**	**974**
debt repayment	57,849			
interest expense	41,900			

(1) Data on hedging instruments include both assets and liabilities.

The EDF group was able to meet its financing needs by conservative liquidity management, and has obtained financing on satisfactory terms.

A range of specific levers are used to manage the Group's liquidity risk:

- the Group's cash pooling system, which centralises cash management for controlled subsidiaries. The subsidiaries' cash balances are made available to EDF SA in return for interest, so as to optimise the Group's cash management and provide subsidiaries with a system that guarantees them market-equivalent financial terms;
- centralisation of financing for controlled subsidiaries at the level of the Group's cash management department. Changes in subsidiaries' working capital are financed by this department in the form of stand-by credit lines provided for subsidiaries, which may also be granted

revolving credit from the Group. EDF SA and the investment subsidiary EDF Investissements Groupe (EDF IG), set up in partnership with the bank Natixis Belgique Investissements, also provide medium and long-term financing for EDF group operations outside France, arranged by EDF SA and EDF IG on a totally independent basis: each company sets its own terms, which are the same as the subsidiary would have in an arm's-length market transaction;

- active management and diversification of financing sources used by the Group: the Group has access to short-term resources on various markets through programmes for French commercial paper *(billets de trésorerie)* and US commercial paper. For EDF, the ceilings for these programmes are €6 billion for its French commercial paper and $10 billion for its US commercial paper.

At 31 December 2018, the amount of the Group's commercial paper outstanding was €955 million for French commercial paper, and US$1,193 million for US commercial paper. EDF has access to the world's main bond markets: the Euro markets through its EMTN programme, which currently has a ceiling of €45 billion, particularly for Euro and sterling issues; and the domestic markets used for stand-alone issues in US dollars (144A bonds), yen (Samurai bonds) and Swiss francs.

The Group's main borrowings at 31 December 2018 are as follows:

Type of borrowing *(in millions of currency units)*	**Entity**	**Issue date** [(1)]	**Maturity**	**Nominal amount**	**Currency**	**Rate**
Bond	EDF	01/2009	01/2019	2,000	USD	6.50%
Bond	EDF	01/2014	01/2019	1,250	USD	2.15%
Bond	EDF	01/2010	01/2020	1,400	USD	4.60%
Euro MTN	EDF	05/2008	05/2020	1,200	EUR	5.38%
Bond	EDF	10/2015	10/2020	1,500	USD	2.35%
Euro MTN	EDF	01/2009	01/2021	2,000	EUR	6.25%
Euro MTN (green bond)	EDF	11/2013	04/2021	1,400	EUR	2.25%
Euro MTN	EDF	01/2012	01/2022	2,000	EUR	3.88%
Euro MTN	EDF	09/2012	03/2023	2,000	EUR	2.75%
Euro MTN	EDF	09/2009	09/2024	2,500	EUR	4.63%
Bond (green bond)	EDF	10/2015	10/2025	1,250	USD	3.63%
Euro MTN	EDF	11/2010	11/2025	750	EUR	4.00%
Euro MTN (green bond)	EDF	10/2016	10/2026	1,750	EUR	1.00%
Bond	EDF	01/2017	01/2027	107,900	JPY	1.09%
Euro MTN	EDF	03/2012	03/2027	1,000	EUR	4.13%
Bond	EDF	09/2018	09/2028	1,800	USD	4.50%
Euro MTN	EDF	04/2010	04/2030	1,500	EUR	4.63%
Euro MTN	EDF	10/2018	10/2030	1,000	EUR	2.00%
Euro MTN	EDF	07/2001	07/2031	650	GBP	5.88%
Euro MTN	EDF	02/2003	02/2033	850	EUR	5.63%
Euro MTN	EDF	06/2009	06/2034	1,500	GBP	6.13%
Euro MTN	EDF	10/2016	10/2036	750	EUR	1.88%
Bond	EDF	09/2018	09/2038	650	USD	4.88%
Bond	EDF	01/2009	01/2039	1,750	USD	6.95%
Euro MTN	EDF	11/2010	11/2040	750	EUR	4.50%
Euro MTN	EDF	10/2011	10/2041	1,250	GBP	5.50%
Bond	EDF	01/2014	01/2044	1,000	USD	4.88%
Bond	EDF	10/2015	10/2045	1,500	USD	4.75%
Bond	EDF	10/2015	10/2045	1,150	USD	4.95%
Bond	EDF	09/2018	09/2048	1,300	USD	5.00%
Euro MTN	EDF	09/2010	09/2050	1,000	GBP	5.13%
Euro MTN	EDF	10/2016	10/2056	2,164	USD	4.99%
Bond	EDF	01/2014	01/2114	1,350	GBP	6.00%

(1) Date funds were received

At 31 December 2018, EDF has an overall amount of €10,292 million in available credit facilities (syndicated credit and bilateral lines):

- the syndicated credit line amounts to €4 billion and expires in December 2023. No drawings had been made on this syndicated credit line at 31 December 2018;
- bilateral lines represent an available amount of €6,162 million, with expiry dates extending to September 2023. The level of this available financing is very frequently reviewed to ensure the Group has sufficient backup credit facilities;
- the amount available from the credit lines with the European Investment Bank is €130 million. €70 million had been drawn on one credit line of €200 million at 31 December 2018. Three other credit lines were fully drawn at 31 December 2018 for amounts of €225 million, €500 million and €500 million.

EDF Investissements Groupe has a syndicated credit facility for €400 million (expiring in September 2020). At 31 December 2018, there were no drawings on this credit facility.

Edison has a credit line with the European Investment Bank for €268 million (which is fully drawn) and a credit line with a pool of banks for €350 million, on which no drawings had been made at 31 December 2018.

7.1.2 Credit rating

The financial ratings agencies Standard & Poor's, Moody's and Fitch Ratings attributed the following long-term and short-term ratings to EDF group entities at 31 December 2018:

Company	Agency	Long-term rating	Short-term rating
	Standard & Poor's	A-, negative outlook (1)	A-2
	Moody's	A3, stable outlook	P-2
EDF	Fitch Ratings	A-, stable outlook	F2
EDF Trading	Moody's	Baa2, stable outlook	n.a.
EDF Energy	Standard & Poor's	BBB-, negative outlook (2)	A-3
	Standard & Poor's	BBB-, stable outlook (3)	A-3
Edison	Moody's	Baa3, stable outlook	n.a.

n.a.= not applicable.

(1) S&P revised EDF's outlook from stable to negative on 20 November 2017.

(2) S&P revised EDF Energy's outlook from stable to negative on 20 November 2017.

(3) S&P revised EDISON's long-term rating from BB+ to BB- and short-term rating from B to A-3 on 19 June 2018.

7.1.3 Management of foreign exchange risk

Due to the diversification of its activities and geographical locations, the Group is exposed to the risk of exchange rate fluctuations, which may have an impact on the translation differences affecting balance sheet items, Group financial expenses, equity and net income.

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 involving 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, ranging from 31% to 72% for the principal exposures. 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 the relevant local currencies, with the exception of flows related to fuel purchases which are primarily in US dollars, and certain flows related to purchases of equipment, which concern lower amounts. Under the principles laid down in the Strategic financial management framework, EDF and the main subsidiaries concerned by foreign exchange risks (EDF Energy, EDF Trading, Edison, EDF Renewables) are required to hedge firm or highly probable commitments related to these future operating cash flows.

As a result of the financing and foreign exchange risk hedging policy, the Group's gross debt at 31 December 2018 breaks down as follows by currency after hedging:

GROSS DEBT STRUCTURE BY CURRENCY BEFORE AND AFTER HEDGING

31 December 2018 *(in millions of Euros)*	Initial debt structure	Impact of hedging instruments (1)	Debt structure after hedges	% of debt
Borrowings in EUR	26,783	21,438	48,221	81%
Borrowings in USD	20,546	(17,564)	2,982	5%
Borrowings in GBP	9,250	(2,414)	6,836	12%
Borrowings in other currencies	2,609	(1,460)	1,149	2%
TOTAL DEBT	**59,188**	**-**	**59,188**	**100%**

(1) Hedges of liabilities and net assets of foreign subsidiaries.

The table below presents the impact on equity of a variation in exchange rates on the Group's gross debt at 31 December 2018:

EXCHANGE RATE SENSITIVITY OF THE GROUP'S GROSS DEBT

31 December 2018 *(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 EUR	48,221	-	48,221
Borrowings in USD	2,982	298	3,280
Borrowings in GBP	6,836	684	7,520
Borrowings in other currencies	1,149	115	1,264
TOTAL DEBT	**59,188**	**1,097**	**60,285**

Due to the Group's hedging policy for foreign exchange risk on the Group's gross debt, the income statement for companies controlled by the Group is marginally exposed to foreign exchange rate 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 2018 [(1)] *(in millions of Euros)*	**Net assets**	**Bonds**	**Derivatives**	**Net assets after management**
USD	4,937	1,350	1,480	2,107
CHF (Switzerland)	710	-	508	202
GBP (United Kingdom)	16,164	5,435	(356)	11,085
CLP (Chile)	(6,663)	-	-	(6,663)
PLN (Poland)	307	-	153	154
BRL (Brazil)	1,164	-	-	1,164
CNY (China)	9,932	-	-	9,932

(1) Net assets as stated at 31 December 2017; bonds and derivatives as stated at 31 December 2017. The net positions shown exclude certain non-significant exposures.

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 of 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 2018, 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.

EXCHANGE RATE SENSITIVITY OF NET ASSETS

	At 31 December 2018			**At 31 December 2017**		
(in millions of currency units)	**Net assets after management into currency**	**Net assets after management converted into Euros**	**Impact on equity of a 10% variation in exchange rates**	**Net assets after management into currency**	**Net assets after management converted into Euros**	**Impact on equity of a 10% variation in exchange rates**
USD	2,107	1,840	184	2,606	2,173	217
CHF (Switzerland)	202	179	18	245	209	21
GBP (United Kingdom)	11,085	12,392	1,239	9,153	10,316	1,032
CLP (Chile)	(6,663)	(8)	(1)	1,135	2	-
PLN (Poland)	154	36	4	35	8	1
BRL (Brazil)	1,164	262	26	1,066	268	27
CNY (China)	9,932	1,261	126	10,028	1,285	129

The foreign exchange risk on available-for-sale securities is mostly concentrated in EDF's dedicated asset portfolio, which is discussed in section 7.1.6 "Management of financial risk on EDF SA's dedicated asset portfolio".

The foreign exchange risk associated with short-term investments and operating liabilities in foreign currencies remains restricted for the Group at 31 December 2018.

7.1.4 Management of interest rate risk

The exposure of the Group's net indebtedness 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 indebtedness, defined by reference to the risk/return for net financial expenses, taking into consideration expected movements in interest rates.

Some of the debt is variabilised and the Group may use interest rate derivatives for hedging purposes. The distribution of exposure between fixed and floating rates is monitored.

The Group's debt after hedging instruments at 31 December 2018 comprised 57.2% at fixed rates and 42.8% at floating rates.

A 1% uniform annual rise in interest rates would generate an approximate €253 million increase in financial expenses at 31 December 2018, based on gross floating-rate debt after hedging.

The average cost of Group debt (weighted interest rate on outstanding amounts) was 2.87% at the end of 2018.

The table below sets forth the structure of Group debt and the impact of a 1% variation in interest rates at 31 December 2018. The impact of the change in interest rates is stable in comparison to 2017.

STRUCTURE AND INTEREST RATE SENSITIVITY OF GROUP'S DEBT

31 December 2018 *(in millions of Euros)*	**Initial debt structure**	**Impact of hedging instruments**	**Debt structure after hedging**	**Impact on income of a 1% variation in interest rates**
Fixed rate	55,810	(21,949)	33,861	-
Floating rate	3,378	21,949	25,327	253
TOTAL	**59,188**	**-**	**59,188**	**253**

Concerning financial assets, the table below presents the interest rate risk on the floating-rate notes and short-term deposits held by EDF, and their sensitivity to interest rate risks (impact on net income).

INTEREST RATE SENSITIVITY OF FLOATING-RATE INSTRUMENTS

31 December 2018 *(in millions of Euros)*	**Value**	**Impact on income of a 1% variation of interest rates**	**Value after a 1% variation in interest rates**
FLOATING-RATE INSTRUMENTS	**2,165**	**(22)**	**2,143**

The Group's interest rate risk notably relates to the value of the Group's long-term nuclear obligations (see note 29 to the 2018 consolidated financial statements) and its pension and other specific employee benefit obligations (see note 31 to the 2018 consolidated financial statements), which are adjusted to present value using discount rates that depend on interest rates at various time horizons, and debt securities held in connection with the management of the dedicated assets set aside to cover these obligations (see section 7.1.6 "Management of financial risk on EDF's dedicated asset portfolio").

7.1.5 Management of equity risks

The equity risk is concentrated in the following areas:

Coverage of EDF's nuclear obligations

Analysis of the equity risk is presented in section 7.1.6 "Management of financial risk on EDF SA's dedicated asset portfolio".

Coverage of employee benefit obligations for EDF SA, EDF Energy and British 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.

28% of the assets covering EDF's employee benefit obligations were invested in equities at 31 December 2018, representing an amount of €3.1 billion of equities.

At 31 December 2018, the two pension funds sponsored by EDF Energy (EDF Energy Pension Scheme and EDF Energy Group Electricity Supply Pension Scheme) were invested to the extent of 22.9% in equities and 8.1% in equity funds, representing an amount of £258 million of equities.

At 31 December 2018, the British Energy pension funds were invested to the extent of 8.1% in equities and equity funds, representing an amount of £505 million of equities.

CENG fund

CENG is exposed to equity risks in the management of its funds established to cover nuclear decommissioning expenses.

EDF's long-term cash management

As part of its long-term cash management policy, EDF has continued its strategy to reduce the portion of equity-correlated investments, resulting in a non-significant position well below €1 million at 31 December 2018.

7.1.6 Management of financial risk on EDF's dedicated asset portfolio

Dedicated assets have been built up progressively by EDF since 1999 for secure financing of its long-term nuclear obligations. The Law of 28 June 2006 and its implementing regulations defined provisions not related to the operating cycle, which must therefore be covered by dedicated assets; they are listed in note 45 to the 2018 consolidated financial statements, “EDF’s dedicated assets”.

The dedicated asset portfolio is managed under the supervision of the Board of Directors and its advisory committees (Nuclear commitments monitoring committee, Audit committee).

The **Nuclear Commitments Monitoring Committee (CSEN)** is a specialised Committee set up by EDF’s Board of Directors in 2007.

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. They are selected for their skills and diversity of experience, particularly in the fields of asset/liability management, economic and financial research, and asset management.

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. 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 expenses. 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 during 2018. 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), the CSPE receivable and cash. These portfolios are managed by the Listed Asset Management division and by EDF Invest (formed in 2013 following the decree of 24 July 2013).

The “cash” pocket of the portfolio exists to provide secure coverage for future disbursements related to the purpose of the asset covered, and may be reinforced tactically, particularly when a conservative approach is required in the event of a market crisis.

The CSPE receivable was allocated to dedicated assets on 13 February 2013 (see note 45 to the 2018 consolidated financial statements).

Tactical management of the growth assets and fixed-income assets has several focal areas:

- monitoring of exposure between growth assets and fixed-income assets;
- within each sub-portfolio, allocation by “secondary asset class”;
- selection of investment funds, aiming for diversification:
  - by style (growth securities, unlisted securities, yield securities),
  - by capitalisation (major stocks, medium and small stocks),
  - by investment process (macroeconomic and sector-based approach, selection of securities on a “quantitative” basis, etc.),
  - by investment vehicle (for compliance with maximum investment ratios);
- for bonds, a choice of securities held directly, through brokers, or via investment funds incorporating the concern for diversification:
  - by type of issue (fixed income, indexed income),
  - by type of instrument (government or supranational bonds, covered bonds and similar, corporate bonds),
  - by issuer and by maturity.

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 market appreciation in different markets and market segments, and risk analyses produced by the CRFI department.

Content and performance of EDF’s dedicated asset portfolio

BREAKDOWN OF THE PORTFOLIO

	31/12/2018	31/12/2017
Yield assets	19.3%	18.5%
Growth assets	36.5%	35.9%
Fixed-income assets	44.2%	45.6%
TOTAL	**100%**	**100%**

At 31 December 2018, the total value of the portfolio was €27,689 million compared to €28,115 million in 2017.

The content of the financial portfolio is also presented in note 45 to the 2018 consolidated financial statements, "Dedicated assets".

(1) A permanent internal committee for evaluation, consultation and operational decision-making in the management of dedicated assets.

PORTFOLIO CONTENT UNDER THE CLASSIFICATION FROM ARTICLE 4, DECREE 2007-243 OF 23 FEBRUARY 2007

Categories *(in millions of Euros)*	31 December 2018 Net book value (1)	31 December 2018 Realisable value	31 December 2017 Net book value (1)	31 December 2017 Realisable value
CTE (the holding company that holds 100% of RTE) (2)	2,705	2,738	2,705	2,705
Other unlisted securities	2,333	2,618	2,221	2,505
YIELD ASSETS	**5,038**	**5,356**	**4,926**	**5,210**
Funds not exclusively invested in OECD bonds	9,370	9,844	8,372	9,942
Hedges, deposits, amounts receivable	20	45	-	30
Other unlisted securities	198	219	132	127
GROWTH ASSETS	**9,588**	**10,108**	**8,504**	**10,099**
OECD government bonds and similar	4,362	4,443	4,261	4,363
OECD corporate (non-government) bonds	946	950	618	636
Funds investing in the above two categories	4,580	4,647	4,210	4,387
CSPE after funding	2,060	2,080	3,294	3,349
Other unlisted securities	114	105	74	71
FIXED INCOME ASSETS	**12,062**	**12,225**	**12,457**	**12,806**
TOTAL DEDICATED ASSETS	**26,688**	**27,689**	**25,887**	**28,115**

(1) Net book value in the parent company financial statements.

(2) In 2018 and 2017, dedicated assets include 50.1% of Coentreprise de Transport d'Électricité (CTE).

PERFORMANCE OF EDF'S DEDICATED ASSET PORTFOLIO

The table below presents the performance by portfolio at 31 December 2018 and 31 December 2017:

(in millions of Euros)	31/12/2018 Stock market or realisable value	Performance for 2018 Portfolio	31/12/2017 Stock market or realisable value	Performance for 2017 Portfolio
YIELD ASSETS	**5,356**	**7.0%**	**5,210**	**9.1%**
GROWTH ASSETS	**10,108**	**-7.0%**	**10,099**	**12.7%**
FIXED-INCOME ASSETS	**12,225**	**-0.4%**	**12,806**	**1.4%**
TOTAL DEDICATED ASSETS	**27,689**	**-1.6%**	**28,115**	**6.6%**

BREAKDOWN OF PORTFOLIO PERFORMANCE UNDER THE CLASSIFICATION FROM ARTICLE 4, DECREE 2007-243 OF 23 FEBRUARY 2007

(in millions of Euros)	31/12/2018 Stock market or realisable value	Performance for 2018 Portfolio	31/12/2017 Stock market or realisable value	Performance for 2017 Portfolio
CTE (the holding company that holds 100% of RTE) (1)	2,738	7.0%	2,705	7.3%
Other unlisted securities(2)	2,942	7.9%	2,703	11.2%
Equity funds including derivatives	9,889	-7.4%	9,972	12.9%
Bonds and bond funds	10,010	-0.8%	9,282	2.1%
Monetary funds	30	-0.3%	104	-0.1%
CSPE after funding	2,080	0.4%	3,349	0.4%
TOTAL DEDICATED ASSETS	**27,689**	**-1.6%**	**28,115**	**6.6%**

(1) In 2018 and 2017, dedicated assets include 50.1% of Coentreprise de Transport d'Électricité (CTE).

(2) EDF Invest without CTE.

Changes in the portfolio during 2018

For the financial markets, 2018 had two phases. Until the end of the summer, volatility remained generally low and the equity markets were steady, particularly thanks to the American market which broke new records. The situation was more unsettled at the end of the year which brought substantial readjustment, especially in the month of December. This readjustment was accompanied by a notable rise in volatility. The credit markets, which also reached record levels in 2018 with the narrowest spreads since 2007, were subject to tensions that grew stronger towards the end of the year. The Fed continued its policy of gradually raising rates, causing tension on US government bonds, which reached a 10-year rate of 3.25% before the falling equity markets brought those rates down by more than 0.50%. In Europe, Italian rates reacted strongly to tensions relating to the Italian budget: the 10-year rate rose from 1.80% in April to more than 3.60% in October, before dropping back to 2.70% at the end of the year.

EDF made significant investments following repayment of some of the CSPE receivable, but took a prudent approach in this unsettled context. EDF Invest was nonetheless able to continue building up its portfolio, consisting of three classes of assets: infrastructures, real estate and investment funds.

In the yield assets, in November 2018 EDF Invest completed the purchase from EDF Renewables of a minority interest in six UK companies (Bicker Fen, Fallago Rig, Fenland, Glass Moor II, Green Rigg, Rusholme) which between them own 131 onshore wind farms with total capacity of 310MW.

In December 2018, part of EDF International's minority stake in Nam Theun Power Company (NTPC) was sold to EDF nvest, which will acquire the rest in 2019. NTPC is a hydroelectric dam in operation in Laos, with installed capacity of 1,070MW. It is operated under a long-term concession agreement. Income is generated by long-term electricity sales contracts signed with EGAT (Electricity Generating Authority of Thailand) and Électricité du Laos.

These new investments were added to EDF Invest's "infrastructures" asset class alongside investments in CTE, Terega (formerly TIGF), Porterbrook, Madrileña Red de Gas, Géosel, Thyssengas, Aéroports de la Côte d'Azur, Autostrade per l'Italia and Q-Park, diversifying EDF Invest's portfolio into renewable energies.

EDF Invest's annual performance (excluding CTE) for 2018 was 7.9%, or 7.5% including CTE. The value of the portfolio including CTE was €5.7 billion at 31 December 2018.

In the growth assets, protection purchases were introduced in late June, in the form of put spreads on the S&P 500. These options, with original maturity of 1 year, are still held. They played their protective role in the growth pocket when the markets fell sharply at the end of the year. The -7% performance by growth assets remains, however, largely attributabe to listed equities. The policy begun five years ago of investing in listed assets is to be continued by reinforcing index-linked management, particularly on the US market.

In the fixed-income assets, the portolio also took a very prudent positioning on three levels: maintaining low overall sensitivity in order to limit the duration risk in a low-rate environment, selling a large prtion of the Investment Grade credit portfolio, and substantially reducing exposure to the risk on Italian state instruments. It was only at the end of the year that the very large monetary amounts accumulated by these operatons began to be reinvested in credit assets, still prioritising short maturities in order to take advantage of portage arrangements while limiting risks.

In 2018, the overall after-tax performance of dedicated assets (impacts on reserves and net income) was -€23 million, comprising +€31 million for the CSPE (+€46 million before tax), +€283 million for the CTE shares allocated to dedicated assets, and -€337 million for other securities (-€641 million before tax).

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 €9,889 million at 31 December 2018. The volatility of the listed equities at the same date was 14.3% based on 52 weekly performances, compared to 6.0% at 31 December 2017. Applying this volatility to the value of listed equity assets at the same date, the Group estimates the annual volatility of the equities portion of dedicated assets at €1,414 million.

At 31 December 2018, the sensitivity of the listed bonds (€10,010 million) was 5.3, i.e. a uniform 100 base point rise in interest rates would result in a €530 million decline in market value. This sensitivity was 5.1 at 31 December 2017.

7.1.7 Management of counterparty/credit risks

Counterparty risk is defined as the total loss that the EDF group would sustain on its business and market transactions if a counterparty defaulted and failed to perform its contractual obligations.

The Group has a counterparty risk management policy which applies to EDF and all operationally controlled subsidiaries. This policy sets out the governance associated with monitoring for this type of risk, and organisation of the counterparty risk management and monitoring. The policy also involves monthly consolidation of the Group's exposures, updated monthly for financial and energy market activities and quarterly for other activities. The CRFI (Financial Risks Control) department closely monitors Group counterparties (daily review of alerts, special cautionary measures for certain counterparties).

The Group's counterparty rise has increased now that PG&E has filed for bankruptcy in the US. EDF Renewables' exposure amounts to several hundred million euros due to existing PPAs, and the difficulties of the GE group.

The table below gives details, by rating, of the EDF group's consolidated exposure to counterparty risk. At 30 September 2018, 90% of the Group's exposure concerns "investment grade" counterparties, mainly as a result of 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
31/03/2018	91%	7%	2%	100%
30/09/2018	90%	8%	2%	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
31/03/2018	6%	1%	9%	78%	6%	100%
30/09/2018	6%	1%	11%	75%	7%	100%

Exposure in the energy trading activities is concentrated in EDF Trading, where each counterparty 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 establishment of guarantees from banks or affiliates.

For counterparties dealing with EDF's trading room, the 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.

As the political and financial situation in the Euro zone is still uncertain, EDF has continued to apply a conservative management policy for its cash investments in non-core countries. Only banking, sovereign and corporate counterparties with good credit ratings are authorised, for limited amounts and maturities.

7.2 Management and control of energy market

7.2.1 Management and control of energy market risks

In keeping with the opening of the final customer market, the growth of wholesale markets and its international development, the EDF group is exposed to price variations on the energy market which can significantly affect its financial statements.

Consequently, the Group has an "energy markets" 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 energy market risks, governing the various Group entities' asset portfolio management activities (energy generation, optimisation and sale), and trading for 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.

At entities not operationally controlled by EDF, the risk management framework is reviewed by the governance bodies.

7.2.2 Organisation of risk control and general risk hedging principle

The process for controlling energy market risks for entities operationally controlled by the Group is based on:

- a governance and market risk exposure measurement system, clearly separating management and risk control responsibilities;
- an express delegation to each entity, defining hedging strategies and establishing the associated risk limits. This enables the Executive Committee to set out and monitor an annual Group risk profile consistent with the financial objectives, and thus direct operational management of energy market risks over market horizons (generally three years).

The basic principle for hedging is:

- netting of upstream/downstream positions; wherever possible, sales to final customers are hedged by Internal sales;
- gradual closing of 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.

On the French electricity market, EDF is exposed to very high uncertainty over its net exposure due to the fact that the ARENH system is optional. Since the volumes subscribed are only known shortly before the delivery period, EDF is obliged to use assumptions for ARENH subscriptions, which include prudence margins. EDF thus remains subject to risks that the assumptions may not correspond to reality, such that during the year it could find itself obliged to sell reserved volumes that in the end were not actually subscribed, or conversely to purchase volumes sold before the ARENH bids took place on the assumption that there would be no subscriptions. This risk is particularly high as the energy + capacity price on the wholesale market is close to the ARENH price (€42/MWh).

Given its close interaction with the decisions made in the generation, supply and trading activities, the energy risk management 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 Group's exposure to energy market risks through operationally controlled entities is reported four times a year to the Executive Committee. The control processes are regularly evaluated and audited.

7.2.3 Principles for operational management and control of energy market risks

The principles for operational management and control of energy market risks for the Group's operationally controlled entities are based on strict segregation of responsibilities for managing those risks, distinguishing between management of assets (generation and supply) and trading.

Managers of generation and supply assets are responsible for implementing a risk management strategy that minimises the impact of

(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.

energy market risks on the variability of their financial statements (the accounting classifications of these hedges are described in note 41 to the 2018 consolidated financial statements, "Derivatives and Hedge accounting"). However, a residual risk remains that cannot be hedged on the market due to factors such as insufficient liquidity or market depth, and uncertainty over volumes.

For operationally controlled entities in the Group, positions on the energy markets are taken predominantly by EDF Trading, the Group's trading entity, which operates on the markets on behalf of other Group entities and for the purposes of its own trading activity associated with the Group's industrial assets. 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 risk limits (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 [(1)]. 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 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 2018, EDF Trading's commitment on the markets was subject to a VaR limit of €35 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.

These limits were not exceeded and EDF Trading managed its risks within the boundaries of its mandate from EDF at all times. The stop-loss has never been triggered since its introduction.

For an analysis of fair value hedges of the Group's commodities, see note 41.4.3 to the 2018 consolidated financial statements. For details of commodity derivatives not classified as hedges by the Group, see note 42.3 to the same consolidated financial statements.

7.3 Management of insurable risks

The EDF group has insurance programmes that cover EDF SA and its controlled subsidiaries as they are integrated. The coverage, exclusions, excesses and limits are appropriate to each business and the specificities of these subsidiaries.

The main insurance programmes cover:

- **Conventional damage to Group property**: EDF is a member of the international mutual insurance company for energy operators, OIL [(2)]. Additional insurance coverage is provided by EDF's captive insurance company Wagram Insurance Company DAC [(3)], as well as other insurers and reinsurers.
- **Damage to the EDF group's nuclear facilities**: EDF's membership of OIL provides insurance coverage for physical damage in the cold area in both France and the United Kingdom (excluding damage caused by a nuclear accident), of 60% of US$400 million above an excess of US$15 million;
- Until 30 September 2018, in addition to that coverage, physical damage (including following a nuclear accident) to EDF's nuclear plants in France and EDF Energy's nuclear plants in the United Kingdom, and nuclear decontamination costs, were covered by a common insurance policy principally involving the British atomic pool National Risk Insurers (NRI), Axa and Allianz (reinsured by the French nuclear pool Assuratome), and the European Mutual Association for Nuclear Insurance (EMANI), for a total capacity of €1,760 million above an amount of €240 million.
- From 1 October 2018:
    - In France, the coverage provided by OIL is complemented in the event of a nuclear accident, including site decontamination costs, by insurance coverage of €90 million above an excess of €10 million, provided by EMANI, Axa and Allianz (reinsured by Assuratome), and Wagram Insurance Company DAC (reinsured by the Group's captive insurer Océane Re);
    - In the United Kingdom, additional insurance for the consequences of a nuclear accident, including site decontamination costs, is provided through an insurance programme with total capacity of €1,510 million above an amount of €240 million, provided by EMANI, NRI and Northcourt, a group of specialist British insurers.

  In connection with CENG's operations in the United States, EDF Inc. is a member of NEIL [(4)].
- **Damage to merchandise transported**: this programme covers damage to goods in transit, for all Group entities and subsidiaries.
- **Nuclear operator's civil liability**:

  In **France**, EDF's insurance policies comply with French laws 68-943 of 30 October 1968, 90-488 of 16 June 1990 and 2006-686 of 13 June 2006 (the "TSN" law on nuclear transparency and safety) which are now part of the French Environment Code. These laws transposed the civil liability obligations imposed on nuclear facility operators by the Paris convention (for more information in the regulations concerning the nuclear operator's civil liability, see section 1.5.6.2.2 "Specific regulations applicable to basic nuclear facilities" on Reference Document).

  The Law on the Energy Transition for Green Growth enacted on 17 August 2015 amended the provisions of articles L.597-28 and L.597-32 of the French Environment Code. Among the changes, the civil liability limits for nuclear operators were raised with effect from 18 February 2016 to €700 million for nuclear facilities, €70 million for reduced-risk facilities, and €80 million for risks during transport.

  To meet the new legal requirements regarding insurance levels, EDF published a contract notice on 10 August 2015 entitled "EDF SA Nuclear Civil Liability Insurance Programme" to obtain and set up the insurance coverage needed for its nuclear civil liability and management of the associated claims.

  With the insurance obtained in response to this notice, the Group meets its obligations. The coverage took effect on 18 February 2016 for a three-year term and is shared between the nuclear insurance market (Axa, reinsured by the French nuclear pool Assuratome) the Group's captive insurance companies, and the nuclear mutual insurance company ELINI.

  In view of probable changes to nuclear operators' obligations during this period (particularly the application of protocols amending the

(1) EDF Trading estimates the VaR by the "Monte Carlo" method, which is based on volatilities and historical correlations measured using observed market prices over the 40 most recent business days. The VaR limit applies to the total EDF Trading portfolio.
(2) Oil Insurance Limited.
(3) An Irish insurance company fully-owned by EDF.
(4) Nuclear Electric Insurance Limited.

Paris and Brussels Conventions), withdrawal clauses were included in the contract.

Management of claims is the responsibility of ELINI, which has a computerised claim processing system, and EQUAD, which has the necessary human and network resources.

In the **United Kingdom**, where EDF Energy operates nuclear power plants, the nuclear operator's civil liability rules are similar to French rules. On 4 May 2016 the British parliament approved the Nuclear Installations Order (for transposition of the protocols of February 2004 amending the existing conventions) which in substance introduced the same changes as the French TSN law of 2006, but will mostly only come into force at the same time as the protocols.

This Order raised the British operators' obligations from the current limit of £140 million to the equivalent of €700 million, and they will be progressively increased over a five-year period to reach a ceiling equal to the sterling equivalent of €1.2 billion.

EDF Energy is currently insured by ELINI and Wagram Insurance Company DAC. The Group's captive insurer Océane Re also bears the risk via a reinsurance contract for Wagram Insurance Company DAC.

The entry into force of France's Energy Transition law on 18 February 2016 led to a 40% increase in the Group's insurance premiums for the nuclear operator's civil liability. The forthcoming implementation of the protocols amending the Paris and Brussels Conventions will also lead to a substantial increase in the Group's insurance premiums.

- **General civil liability**: this programme covers the Group against the possible financial consequences for third parties of the (non-nuclear) risks inherent to the EDF group's businesses.
- **Civil liability of directors and senior executives**: EDF's insurance programme covers defence costs and other financial consequences arising from third party claims of liability against the Group's managers and key executives in connection with their duties.
- **Construction risks**: EDF takes out insurance policies covering specific worksite risks (general worksite risks/general assembly and testing risks). These policies are not part of a Group programme but are purchased on an ad hoc basis for major projects such as the Flamanville and Hinkley Point C EPRs, or construction or renovation of generation or distribution units. The Group has put framework agreements in place for work on similar facilities (source substations, hydropower plants).
- **Enedis' overhead distribution network**: to renew its insurance cover for storm and gale damage, on 27 June 2016 Enedis signed a parametric insurance contract for significant storm damage to the overhead distribution network. In the event of damage, this innovative five-year contract with total capacity of €275 million provides pay-outs based on a composite parametric index referring to wind speeds recorded by Météo France weather stations, weighted by the distribution network's vulnerability for each region included in the scope of Enedis' concession.
- **Cyber risk:** Cyber risk cover was been put in place on 1 July 2017, with a €100 million two-year insurance policy covering all entities of EDF SA and Group subsidiaries for the costs of handling major disruption caused by a cyber-attack on the group's information systems.

The total value of the Group's insurance premiums for all types of coverage was €248 million in 2018.

8 TRANSACTIONS WITH RELATED PARTIES

The types of transaction undertaken with related parties are detailed in note 48 to the 2018 consolidated financial statements, "Related parties".

9 SCOPE OF CONSOLIDATION

A list of all consolidated companies is presented in note 51 to the 2018 consolidated financial statements; "Scope of consolidation".

10 PRINCIPAL RISKS AND UNCERTAINTIES

The principal risk factors to which the EDF group considers itself exposed are presented in section 2 of the 2017 Reference Document.

The Group's policies for risk management and control are described in section 2 of the 2017 Reference Document.

This presentation of the principal risks describes the major risks and uncertainties affecting the Group. The Group remains subject to the usual risks specific to its business.

11 OUTLOOK

Targets 2019 (1)

- **EBITDA (2)**: between €15.3 billion and €16.0 billion;
- **Operating expenses (3)**: €1.1billion decrease compared with 2015 ;
- **Cash flow** excluding Hinkley Point C and Linky: > 0.

2019-2020 Ambitions (1)

- **Total net investments (4)** excluding acquisitions and 2019-2020 Group disposals: around €15 billion per year;
- **2019-2020 Group disposals**: between €2 billion and €3 billion;
- **Net financial debt/EBITDA (2):** ≤ 2.5x;
- **Targeted payout ratio,** based on net income excluding non-recurring items (5)(6): 45% - 50%.

(1) Before IFRS 16 application. At constant legal and regulatory framework in France.
(2) On the basis of the scope and exchange rates at 1 January 2019 and of an assumption of a 395TWh France nuclear output. At prevailing price conditions beginning of February 2019 (around €50/MWh) for the unhedged 2020 France volumes.
(3) Sum of personnel expenses and other external expenses. At comparable scope and exchange rates. At constant pension discount rates. Excluding change in operating expenses of the service activities.
(4) In accordance with the Group's anticipations regarding the Flamanville 3 project completion costs and schedule.
(5) Adjusted for the remuneration of hybrid bonds accounted for in equity.
(6) French State committed to scrip for the balance of the 2018 dividend and dividends relating to 2019 and 2020 full year.