

**CONSOLIDATED FINANCIAL STATEMENTS
AT 31 DECEMBER 2022**

Consolidated income statement

| <i>(in millions of euros)</i> | <i>Notes</i> | 2022 | 2021 |
|---|--------------|-----------------|---------------|
| Sales | 5.1 | 143,476 | 84,461 |
| Fuel and energy purchases | 5.2 | (121,010) | (44,299) |
| Other external expenses ⁽¹⁾ | | (9,420) | (8,595) |
| Personnel expenses | 5.3 | (15,236) | (14,494) |
| Taxes other than income taxes | 5.4 | (3,163) | (3,330) |
| Other operating income and expenses | 5.5 | 367 | 4,262 |
| Operating profit before depreciation and amortisation | 5 | (4,986) | 18,005 |
| Net changes in fair value on energy and commodity derivatives, excluding trading activities | 6 | (849) | (215) |
| Net depreciation and amortisation | | (11,079) | (10,789) |
| (Impairment)/reversals | 10.8 | (1,762) | (653) |
| Other income and expenses | 7 | (687) | (1,123) |
| Operating profit | | (19,363) | 5,225 |
| Cost of gross financial indebtedness | 8.1 | (1,730) | (1,459) |
| Discount effect | 8.2 | 174 | (2,670) |
| Other financial income and expenses | 8.3 | (1,997) | 4,489 |
| Financial result | 8 | (3,553) | 360 |
| Income before taxes of consolidated companies | | (22,916) | 5,585 |
| Income taxes | 9 | 3,926 | (1,400) |
| Share in net income of associates and joint ventures | 12 | 759 | 644 |
| Net income of discontinued operations | | 6 | (1) |
| CONSOLIDATED NET INCOME | | (18,225) | 4,828 |
| EDF net income | | (17,940) | 5,113 |
| EDF net income - continuing operations | | (17,946) | 5,114 |
| EDF net income - discontinued operations | | 6 | (1) |
| Net income attributable to non-controlling interests | | (285) | (285) |
| Net income attributable to non-controlling interests - continuing operations | | (285) | (285) |
| Net income attributable to non-controlling interests - discontinued operations | | - | - |
| Earnings per share (EDF share) in euros: | 14.7 | | |
| Basic earnings per share | | (5.03) | 1.46 |
| Diluted earnings per share | | (5.03) | 1.36 |
| Basic earnings per share of continuing operations | | (5.03) | 1.46 |
| Diluted earnings per share of continuing operations | | (5.03) | 1.36 |

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

Consolidated statement of comprehensive income

| | Notes | 2022 | | | 2021 | | |
|--|--------|-----------------|--|-----------------|----------------|--|----------------|
| | | EDF net income | Net income attributable to non-controlling interests | Total | EDF net income | Net income attributable to non-controlling interests | Total |
| <i>(in millions of euros)</i> | | | | | | | |
| Consolidated net income | | (17,940) | (285) | (18,225) | 5,113 | (285) | 4,828 |
| Fair value of cash flow hedges | | | | | | | |
| Fair value of cash flow hedges - gross change | 18.7.5 | (3,579) | 57 | (3,522) | (3,292) | (33) | (3,325) |
| Fair value of cash flow hedges - tax effects | | 936 | (14) | 922 | 779 | 8 | 787 |
| Fair value of net investment hedges | | | | | | | |
| Fair value of net investment hedges - gross change | 18.7.5 | 308 | - | 308 | (673) | - | (673) |
| Fair value of net investment hedges - tax effects | | 65 | - | 65 | (83) | - | (83) |
| Change in fair value of debt instruments | | | | | | | |
| Gross change in fair value of debt instruments | 18.1.2 | (1,660) | - | (1,660) | (346) | - | (346) |
| Related tax effect | | 428 | - | 428 | 101 | - | 101 |
| Fair value of hedging costs (foreign currency basis spread) | | | | | | | |
| Fair value of hedging costs (foreign currency basis spread) - gross change ⁽¹⁾ | 18.7.5 | 155 | - | 155 | - | - | - |
| Fair value of hedging costs (foreign currency basis spread) - tax effects | | (40) | - | (40) | - | - | - |
| Translation adjustments - controlled entities | | (1,114) | (546) | (1,660) | 1,935 | 606 | 2,541 |
| Share in net income of associates and joint ventures - items that can be recycled to profit and loss | | 521 | - | 521 | (80) | - | (80) |
| Gains and losses recorded in equity with recycling | | (3,980) | (503) | (4,483) | (1,659) | 581 | (1,078) |
| Change in fair value of equity instruments | | | | | | | |
| Gross change in fair value of equity instruments | 18.1.2 | (16) | - | (16) | 15 | 1 | 16 |
| Related tax effect | | - | - | - | - | - | - |
| Change in actuarial gains and losses on post-employment benefits | | | | | | | |
| Gross change in actuarial gains and losses on post-employment benefits ⁽²⁾ | 16.1.3 | 3,899 | (405) | 3,494 | 1,144 | 263 | 1,407 |
| Related tax effect ⁽²⁾ | | 458 | 103 | 561 | (421) | (89) | (510) |
| Share in net income of associates and joint ventures - items that cannot be recycled to profit and loss | | 216 | - | 216 | (83) | - | (83) |
| Gains and losses recorded in equity with no recycling | | 4,557 | (302) | 4,255 | 655 | 175 | 830 |
| Total gains and losses recorded in equity | | 577 | (805) | (228) | (1,004) | 756 | (248) |
| CONSOLIDATED COMPREHENSIVE INCOME | | (17,363) | (1,090) | (18,453) | 4,109 | 471 | 4,580 |
| Comprehensive income of continuing operations | | (17,369) | (1,090) | (18,459) | 4,110 | 471 | 4,581 |
| Comprehensive income of discontinued operations | | 6 | - | 6 | (1) | - | (1) |

⁽¹⁾The change in hedging costs includes the €125 million effect of restatements of prior-year figures.

⁽²⁾Actuarial gains included in equity principally concern France (see note 16.1). They have a limited tax effect due to the policy for recognition of deferred tax assets: deferred tax assets are recognised in full for temporary differences that are expected to reverse within 10 years, and recognised to the extent of concurrent deferred tax liabilities for temporary differences that are expected to reverse after that horizon. Most of the actuarial gains originating in 2022 concern the portion of the provision for employee benefits on which the reversal will occur after more than 10 years, and for which no corresponding deferred tax asset was recognised at 31 December 2021.

Consolidated balance sheet

| ASSETS | Notes | 31/12/2022 | 31/12/2021 |
|--|-----------------|-------------------|-------------------|
| <i>(in millions of euros)</i> | | | |
| Goodwill | 10.1 | 9,513 | 10,945 |
| Other intangible assets | 10.2 | 10,619 | 10,221 |
| Property, plant and equipment used in generation and other tangible assets owned by the Group, including right-of-use assets | 10.3 | 101,126 | 98,237 |
| Property, plant and equipment operated under French public electricity distribution concessions | 11.1 | 63,966 | 62,132 |
| Property, plant and equipment operated under concessions other than French public electricity distribution concessions | 10.5 | 6,816 | 6,881 |
| Investments in associates and joint ventures | 12 | 9,421 | 8,084 |
| Non-current financial assets | 18.1 | 48,512 | 55,609 |
| Other non-current receivables | 13.3.4 | 2,165 | 2,092 |
| Deferred tax assets | 9.3 | 8,696 | 1,667 |
| Non-current assets | | 260,834 | 255,868 |
| Inventories | 13.2 | 17,661 | 16,197 |
| Trade receivables | 13.3 | 24,844 | 22,235 |
| Current financial assets | 18.1 | 58,033 | 39,937 |
| Current tax assets | | 497 | 544 |
| Other current receivables | 13.3.4 | 15,165 | 16,197 |
| Cash and cash equivalents | 18.2 | 10,948 | 9,919 |
| Current assets | | 127,148 | 105,029 |
| Assets classified as held for sale | 3.2 | 150 | 69 |
| TOTAL ASSETS | | 388,132 | 360,966 |
| EQUITY AND LIABILITIES | Notes | 31/12/2022 | 31/12/2021 |
| <i>(in millions of euros)</i> | | | |
| Capital | 14 | 1,944 | 1,619 |
| EDF net income and consolidated reserves | | 32,396 | 48,592 |
| Equity (EDF share) | | 34,340 | 50,211 |
| Equity (non-controlling interests) | 14.6 | 12,272 | 11,778 |
| Total equity | 14 | 46,612 | 61,989 |
| Provisions related to nuclear generation - back-end of the nuclear cycle, plant decommissioning and last cores | 15 | 56,021 | 62,067 |
| Provisions for employee benefits | 16 | 16,231 | 21,716 |
| Other provisions | 17 | 4,671 | 5,442 |
| Non-current provisions | | 76,923 | 89,225 |
| Special French public electricity distribution concession liabilities | 11.2 | 49,459 | 48,853 |
| Non-current financial liabilities | 18.3 | 71,058 | 56,543 |
| Other non-current liabilities | 13.5 | 4,968 | 4,816 |
| Deferred tax liabilities | 9.3 | 1,533 | 2,401 |
| Non-current liabilities | | 203,941 | 201,838 |
| Current provisions | 15, 16.1 and 17 | 7,943 | 6,836 |
| Trade payables | 13.4 | 23,284 | 19,565 |
| Current financial liabilities | 18.3 | 71,844 | 45,014 |
| Current tax liabilities | | 967 | 446 |
| Other current liabilities | 13.5 | 33,504 | 25,248 |
| Current liabilities | | 137,542 | 97,109 |
| Liabilities classified as held for sale | 3.2 | 37 | 30 |
| TOTAL EQUITY AND LIABILITIES | | 388,132 | 360,966 |

Consolidated cash flow statement

| <i>(in millions of euros)</i> | Notes | 2022 | 2021 |
|---|-------------|-----------------|-----------------|
| Operating activities: | | | |
| Consolidated net income | | (18,225) | 4,828 |
| Net income of discontinued operations | | 6 | (1) |
| Net income of continuing operations | | (18,231) | 4,829 |
| Impairment/(reversals) | | 1,762 | 653 |
| Accumulated depreciation and amortisation, provisions and changes in fair value | | 6,820 | 10,488 |
| Financial income and expenses | | 446 | (89) |
| Dividends received from associates and joint ventures | | 590 | 467 |
| Capital gains/losses | | (143) | (67) |
| Income taxes | | (3,926) | 1,401 |
| Share in net income of associates and joint ventures | | (759) | (644) |
| Change in working capital | 13.1.3 | 8,301 | (1,526) |
| Net cash flow from operations | | (5,140) | 15,512 |
| Net financial expenses disbursed | | (1,003) | (588) |
| Income taxes paid | | (1,282) | (2,276) |
| Net cash flow from continuing operating activities | | (7,425) | 12,648 |
| Net cash flow from operating activities relating to discontinued operations | | - | - |
| Net cash flow from operating activities | | (7,425) | 12,648 |
| Investing activities: | | | |
| Acquisitions of equity investments, net of cash acquired | | (198) | (165) |
| Disposals of equity investments, net of cash transferred | | 694 | 1,154 |
| Investments in intangible assets and property, plant and equipment | 10.7 | (18,324) | (17,606) |
| Net proceeds from sale of intangible assets and property, plant and equipment | | 87 | 264 |
| Changes in financial assets | | (7,344) | 1,776 |
| Net cash flow from continuing investing activities | | (25,085) | (14,577) |
| Net cash flow from investing activities relating to discontinued operations | | - | - |
| Net cash flow from investing activities | | (25,085) | (14,577) |
| Financing activities: | | | |
| EDF capital increase | 14.1 | 3,252 | - |
| Transactions with non-controlling interests ⁽¹⁾ | | 1,795 | 2,076 |
| Dividends paid by parent company | 14.3 | (72) | (84) |
| Dividends paid to non-controlling interests | | (407) | (163) |
| Purchases/sales of treasury shares | | 4 | (3) |
| Cash flows with shareholders | | 4,572 | 1,826 |
| Issuance of borrowings | 18.3.2.1 | 34,165 | 6,943 |
| Repayment of borrowings | 18.3.2.1 | (5,876) | (5,161) |
| Issuance of perpetual subordinated bonds | 14.4 | 994 | 1,235 |
| Payments to bearers of perpetual subordinated bonds | 14.4 | (606) | (547) |
| Funding contributions received for assets operated under concessions and investment subsidies | | 694 | 677 |
| Other cash flows from financing activities | | 29,371 | 3,147 |
| Net cash flow from continuing financing activities | | 33,943 | 4,973 |
| Net cash flow from financing activities relating to discontinued operations | | - | - |
| Net cash flow from financing activities | | 33,943 | 4,973 |
| Net cash flow from continuing operations | | 1,433 | 3,044 |
| Net cash flow from discontinued operations | | - | - |
| Net increase/(decrease) in cash and cash equivalents | | 1,433 | 3,044 |
| CASH AND CASH EQUIVALENTS - OPENING BALANCE | | 9,919 | 6,270 |
| Net increase/(decrease) in cash and cash equivalents | | 1,433 | 3,044 |
| Currency fluctuations | | (397) | 180 |
| Financial income on cash and cash equivalents | | 100 | 38 |
| Other non-monetary changes | | (107) | 387 |
| CASH AND CASH EQUIVALENTS - CLOSING BALANCE | 18.2 | 10,948 | 9,919 |

⁽¹⁾Capital increases/reductions and acquisitions/disposals of minority interests in controlled companies. In 2022, this item mainly includes €1,351 million relating to CGN's payments for the capital increases at NNB Holding Company (HPC) Ltd. (for the Hinkley Point C project), €176 million of partner contributions for the Seraing CCGT project in Belgium, and a €54 million price supplement received following the sale in 2021 of 49% of Italian renewable energy assets without loss of control. In 2021, this item included an amount of €1,304 million relating to CGN's payment for the capital increases by NNB Holding Company (HPC) Ltd (for the Hinkley Point C project) and NNB Holding Company (SZC) Ltd. (for the Sizewell C project), an amount of €865 million relating to the sale of 49% of Edison Renewables and an amount of €(276) million relating to the acquisition of 70% of E2i Energie Speciali.

Change in consolidated equity

Details of the change in equity between 1 January and 31 December 2022 are as follows:

| <i>(in millions of euros)</i> | Capital | Treasury shares | Translation adjustments ⁽¹⁾ | Fair value adjustment of financial instruments (OCI with recycling) ⁽²⁾ | Other consolidated reserves and net income ⁽³⁾ | Equity (EDF share) | Equity (non-controlling interests) | Total equity |
|--|--------------|-----------------|--|--|---|--------------------|------------------------------------|-----------------|
| Equity as published at 31/12/2020 | 1,550 | (10) | (871) | (1,116) | 46,080 | 45,633 | 9,593 | 55,226 |
| Gains and losses recorded in equity | - | - | 1,699 | (3,358) | 655 | (1,004) | 756 | (248) |
| Net income | - | - | - | - | 5,113 | 5,113 | (285) | 4,828 |
| Consolidated comprehensive income | - | - | 1,699 | (3,358) | 5,768 | 4,109 | 471 | 4,580 |
| Payments on perpetual subordinated bonds | - | - | - | - | (547) | (547) | - | (547) |
| Issuance/Redemption of perpetual subordinated bonds (see note 14.4) | - | - | - | - | 972 | 972 | - | 972 |
| Dividends paid | - | - | - | - | (1,599) | (1,599) | (163) | (1,762) |
| Purchases/sales of treasury shares | - | (4) | - | - | - | (4) | - | (4) |
| Capital increase by EDF (see note 14.1) | 69 | - | - | - | 1,446 | 1,515 | - | 1,515 |
| Other changes ⁽⁴⁾ | - | - | - | - | 132 | 132 | 1,877 | 2,009 |
| EQUITY AT 31/12/2021 | 1,619 | (14) | 828 | (4,474) | 52,252 | 50,211 | 11,778 | 61,989 |
| Gains and losses recorded in equity | - | - | (1,003) | (2,977) | 4,557 | 577 | (805) | (228) |
| Net income | - | - | - | - | (17,940) | (17,940) | (285) | (18,225) |
| Consolidated comprehensive income | - | - | (1,003) | (2,977) | (13,383) | (17,363) | (1,090) | (18,453) |
| Payments on perpetual subordinated bonds | - | - | - | - | (606) | (606) | - | (606) |
| Issuance/Redemption of perpetual subordinated bonds (see notes 14.4) | - | - | - | - | (1,025) | (1,025) | - | (1,025) |
| Dividends paid | - | - | - | - | (1,050) | (1,050) | (407) | (1,457) |
| Purchases/sales of treasury shares | - | 7 | - | - | - | 7 | - | 7 |
| Capital increase by EDF (see note 14.1) | 325 | - | - | - | 3,915 | 4,240 | - | 4,240 |
| Other changes ⁽⁵⁾ | - | - | - | - | (74) | (74) | 1,991 | 1,917 |
| EQUITY AT 31/12/2022 | 1,944 | (7) | (175) | (7,451) | 40,029 | 34,340 | 12,272 | 46,612 |

⁽¹⁾Changes in translation adjustments amount to €(1,003) million at 31 December 2022. This variation is mainly due to the depreciation of the pound sterling against the euro (£1 = €1.190 at 31 December 2021 and £1 = €1.127 at 31 December 2022).

⁽²⁾Changes in reserves recorded in OCI (Other Comprehensive Income) with recycling are shown in the Statement of Comprehensive Income. They correspond to the effects of fair value adjustments of debt securities and financial instruments hedging cash flows and net foreign investments, and amounts recycled to profit and loss in respect of terminated contracts and debt instruments transferred. They also include changes in the value of hedging costs resulting from the foreign currency basis spread on cross-currency swaps.

⁽³⁾Fair value changes recorded in OCI with no recycling are presented in this column.

⁽⁴⁾In 2021, "Other changes" in equity (non-controlling interests) include the effect of capital increases funded by CGN for NNB Holding Company (HPC) Ltd. (for the Hinkley Point C project) and NNB Holding Company (SZC) Ltd. (for the Sizewell C project) amounting to €1,304 million.

In 2021, "Other changes" in equity (EDF share) also include:

- adjustment of prior year provisions for post-employment employee benefits, amounting to €49 million net of tax, resulting from application of the IFRIC decision on attribution of benefits;
- reclassification of net book values for previously capitalised configuration and customisation costs on SaaS (software as a service), amounting to €(64) million net of tax, following the IASB's confirmation of the IFRIC decision on recognition of these costs.

"Other changes" in equity (EDF share and non-controlling interests) also include the effect on equity of transactions with minority shareholders in the form of acquisitions and disposals not entailing a change of consolidation method (sale of 49% of Edison Renewables, acquisition of 70% of E2i and the IPO by PodPoint, see note 3.1.2).

⁽⁵⁾In 2022, "Other changes" in equity (non-controlling interests) include capital increases funded by CGN at NNB Holding Company (HPC) Ltd. (for the Hinkley Point C project) amounting to €1,351 million. They also include:

- the effect of the UK Government's (HMG) investment in and CNG's withdrawal from NNB Holding Company (SZC) Ltd. on 30 November 2022, with an effect of €(170) million on equity (EDF share) and €361 million on equity (non-controlling interests) (see note 14.6);

- the effect of disposals not entailing a loss of control and partner contributions concerning projects owned in Belgium (the Seraing CCGT project) and by EDF Renewables (a project in Israel), with an effect of €56 million on equity (EDF share) and €281 million on equity (non-controlling interests);

- the adjustment for the expense resulting from the Employee Reserved Offer (ERO), with an effect of €44 million on equity (EDF share) (see note 7).

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

| | | | | | |
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| 3.2 | Assets held for sale and related liabilities | 18 | | NOTE 12 | Investments in associates and joint ventures |
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| 5.1 | Sales | 27 | 13.2 | Inventories | 70 |
| 5.2 | Fuel and energy purchases | 35 | 13.3 | Trade receivables | 71 |
| 5.3 | Personnel expenses | 35 | 13.4 | Trade payables | 73 |
| 5.4 | Taxes other than income taxes | 36 | 13.5 | Other liabilities | 73 |
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| NOTE 7 | Other income and expenses | 39 | 14.2 | Treasury shares | 75 |
| NOTE 8 | Financial result | 40 | 14.3 | Dividends | 75 |
| 8.1 | Cost of gross financial indebtedness | 40 | 14.4 | Perpetual subordinated bonds | 76 |
| 8.2 | Discount effect | 40 | 14.5 | Convertible green bonds (OCEANES) | 77 |
| 8.3 | Other financial income and expenses | 41 | 14.6 | Non-controlling interests (minority interests) | 78 |
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| 10.1 | Goodwill | 44 | 16.1 | Group provisions for employee benefits | 99 |
| 10.2 | Other intangible assets | 45 | 16.2 | France (regulated activities, and generation and supply) | 100 |
| 10.3 | Property, plant and equipment used in generation and other tangible assets by the Group | 47 | 16.3 | United Kingdom | 106 |
| 10.4 | Right-of-use assets | 49 | | NOTE 17 | Other provisions and contingent liabilities |
| 10.5 | Property, plant and equipment operated under concessions other than French | 50 | 17.1 | Other provisions for decommissioning | 107 |
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| | | | | | |
|----------------|---|------------|----------------|---|------------|
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Notes to the consolidated financial statements

Electricité de France (EDF or the “Company”) is a French *société anonyme* governed by French law, and registered in France (22-30, Avenue de Wagram, 75008 Paris).

The consolidated financial statements reflect the accounting position of the Company and its subsidiaries (which together form the “Group”) and the Group’s interests in associates, joint arrangements classified as joint operations, and joint ventures, for the year ended 31 December 2022.

The Group is an integrated energy operator engaged in all aspects of the energy business: power generation (nuclear power, hydropower, wind and solar power, thermal energy, etc.), transmission, distribution, supply, trading, energy services, production of equipment and fuel assemblies, and reactor services.

The Group’s consolidated financial statements at 31 December 2022 were prepared under the responsibility of the Board of Directors and approved by the Directors at the Board meeting held on 16 February 2023. They will become final after approval at the General Shareholders’ Meeting to be held on 14 June 2023.

Note 1 Group accounting policies

1.1 Declaration of conformity and group accounting policies

Pursuant to European regulation 1606/2002 of 19 July 2002 on the adoption of international accounting standards, the EDF group’s consolidated financial statements at 31 December 2022 are prepared under the presentation, recognition and measurement rules set out in the international accounting standards published by the IASB and approved by the European Union for application at 31 December 2022. These international standards are IAS (International Accounting Standards), IFRS (International Financial Reporting Standards), and SIC and IFRIC interpretations.

The Group has not opted for early application of standards and interpretations that were not yet mandatory in 2022.

1.2 Changes in accounting standards

The parent company’s functional currency is the Euro. The Group’s financial statements are presented in millions of euros.

The accounting and valuation methods applied by the Group in the consolidated financial statements at 31 December 2022 are identical to those used in the consolidated financial statements at 31 December 2021, with the exception of the changes presented below in notes 1.2.1 to 1.2.4. Information is also given on the standards, amendments and interpretations adopted by the European Union that are applicable from 1 January 2023 (note 1.2.5).

For purposes of clarity, the accounting principles and methods used are now described in individual notes to the financial statements.

1.2.1 Amendments to IAS 16 “Property, plant and equipment - Proceeds before intended use”

From 1 January 2022, the proceeds from sales of items produced by an asset that has not yet been commissioned (for example sales of electricity during a testing phase) are no longer deducted from the cost of the asset. These proceeds and the related costs are included in profit and loss as and when they are received or incurred.

Application of these amendments has no material impact on the Group’s financial statements at 31 December 2022. For the Group, they will mostly concern the trial and testing phases of the Flamanville 3 EPR.

1.2.2 Amendments to IAS 37 “Onerous contracts - cost of fulfilling a contract”

These amendments require the provision for onerous contracts to be based on unavoidable costs, corresponding to all the costs necessary to fulfil the contract, not only incremental costs.

This broadens the scope of costs to be taken into consideration, which comprise both incremental costs to fulfil contractual obligations (e.g. labour and materials costs), and a portion of other costs directly related to the contract (e.g. a portion of depreciation of the equipment used, or insurance costs).

Application of these amendments has no material impact on the Group’s financial statements.

1.2.3 Interest Rate Benchmark Reform - Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16

These amendments have been applicable since 1 January 2021 to financial assets and liabilities for which contractual modifications result directly from the interest rate reform.

This reform is applied prospectively, with no impact on profit and loss, keeping the hedging relationships for the instruments concerned. Its effects are mainly operational (renegotiation of contracts, fallback provisions, information system upgrades). The interest rate replacements already applied are described in note 1.2.1 to the consolidated financial statements at 31 December 2021.

When the Group adhered to the ISDA Fallback protocol in November 2021, the Libor GBP was replaced by the Sonia for all the derivatives concerned from 1 January 2022.

The replacement operations for the USD Libor will take place in line with the end date for its publication, *i.e.* by 30 June 2023.

1.2.4 Other amendments applicable from 1 January 2022

The Group does not anticipate any material impact in connection with the following amendments:

- “Annual improvements – 2018-2020 cycle”;
- Amendments to IFRS 3 “Business combinations - Reference to the conceptual framework”.

1.2.5 Standards adopted by the European Union and applicable for financial years beginning on or after 1 January 2023

1.2.5.1 Amendments to IAS 12 “Income taxes” - Deferred tax related to assets and liabilities arising from a single transaction

From 1 January 2023, entities will be required to recognise deferred taxes on transactions that give rise upon initial recognition to equal amounts of taxable and deductible temporary differences. The amendments to IAS 12 aim to clarify the treatment of deferred taxes associated with lease agreements and decommissioning costs.

The Group does not anticipate that their application will have a material impact.

1.2.5.2 IFRS 17 “Insurance contracts”

IFRS 17 defines the recognition, measurement, presentation and disclosure principles for insurance contracts that fall within the standard’s scope of application.

The Group does not anticipate that its application will have a material impact.

1.2.5.3 Other amendments

The Group does not anticipate any material impact in connection with the following amendments:

- IAS 1 “Presentation of financial statements” - Classification of liabilities as current or non-current;
- IAS 8 “Accounting policies, changes in accounting estimates and errors” - Definition of accounting estimates.

1.3 Basis for preparation of the financial statements

1.3.1 Valuation

The consolidated financial statements are prepared on a historical cost basis, with the exception of assets acquired and liabilities assumed through business combinations, and of certain financial instruments, which are stated at fair value.

1.3.2 Translation methods

1.3.2.1 Functional currency

An entity’s functional currency is the currency of the economic environment in which it primarily operates. In most cases, the local currency is the functional currency. But for some entities, a functional currency other than the local currency may be used when it reflects the currency used in the principal transactions.

1.3.2.2 Translation of the financial statements of foreign companies whose functional currency is not the Euro

The financial statements of foreign companies whose functional currency is not the Euro are translated as follows:

- balance sheets are translated into Euros at the closing rate;
- income statements and cash flows are translated at the average rate for the period;
- resulting differences are recognised in equity under the heading “Translation adjustments”.

Translation adjustments affecting a monetary item that is an integral part of the Group’s net investment in a consolidated foreign company are included in consolidated equity until the disposal or liquidation of the net investment, at which date they are recognised as income or expenses in the income statement, in the same way as other exchange differences concerning the Company.

1.3.2.3 Translation of transactions in foreign currencies

In application of IAS 21, transactions expressed in foreign currencies are initially translated and recorded in the functional currency of the entity concerned, using the rate in force at the transaction date.

At each reporting date, monetary assets and liabilities expressed in foreign currencies are translated at the closing rate. The resulting foreign exchange differences are taken to the income statement.

However, any payment or receipt of a non-monetary advance in a foreign currency is translated at the exchange rate of the transaction date, with no subsequent adjustment.

1.3.3 Financial statement presentation rules

Assets and liabilities contributing to working capital used in the entity's normal operating cycle are classified as current in the consolidated balance sheet. Other assets and liabilities are classified as current if they mature within one year of the closing date, and non-current if they mature more than one year after the closing date.

The income statement presents items by nature. The heading "Other income and expenses" presented below the operating profit before depreciation and amortisation comprises items of an unusual nature or amount.

1.3.4 Management judgements and estimates

The preparation of the financial statements requires the use of judgments, best estimates and assumptions in determining the value of assets and liabilities, income and expenses recorded for the period, considering positive and negative contingencies existing at year-end. The figures in the Group's future financial statements could differ significantly from current estimates due to changes in these assumptions or economic conditions.

In a context characterised by volatility on the financial and energy markets, the parameters used to prepare estimates are based on macro-economic assumptions appropriate to the very long-term cycle of Group assets.

The principal operations for which the Group uses estimates and judgments are the following:

1.3.4.1 Depreciation period of nuclear power plants in France

In the specific case of the depreciation period of its French nuclear power plants, the EDF group's industrial strategy is to continue operation beyond 40 years, in optimum conditions as regards safety and efficiency.

The Group has therefore been making preparations for several years to extend the operation period, and making the necessary investments under its *Grand Carénage* industrial refurbishment programme which was approved in principle by the Board of Directors in January 2015.

The depreciation period of 900MW-series power plants was extended from 40 years to 50 years in 2016 (except for Fessenheim where both reactors were permanently shut down in the first half of 2020) since all the technical, economic and governance conditions were fulfilled.

On 23 February 2021, the Nuclear Safety Authority (*Autorité de Sûreté Nucléaire - ASN*) issued a resolution on the conditions for continued operation of EDF's 900MW reactors beyond their fourth 10-year inspection. The ASN considered that "the measures planned by EDF combined with those prescribed by ASN open the prospect of continued operation of these reactors for a further ten years following their fourth 10-year inspection". This resolution ends the "generic" phase of the review, which concerns the studies and modifications of facilities common to all the 900MW reactors, which all have a similar design model.

After the pilot reactor Tricastin 1 in December 2019, and Bugey 2, Bugey 4 and Tricastin 2 in 2021, six more reactors reached the milestone of 40 years of operation in 2022, and were restarted after a successful fourth 10-year inspection: Dampierre 1, Gravelines 1, Bugey 5, Tricastin 3, Gravelines 3 and Dampierre 2. The fourth 10-year inspection of Blayais 1 began in August 2022 and was in progress at 31 December 2022.

In 2021, the technical, economic and governance conditions for extending the depreciation period of 1300MW-series plants were fulfilled, and their depreciation period was extended from 40 to 50 years.

The depreciation period of the 1450MW-series units (the four reactors at Chooz and Civaux), which are much more recent, currently remains at 40 years as the conditions for extension are not yet fulfilled.

These depreciation periods take into account the date of recoupling with the network after the most recent 10-year inspection.

1.3.4.2 Nuclear provisions

The measurement of provisions for the back-end of the nuclear cycle, decommissioning and last cores is sensitive to assumptions concerning technical processes, costs, inflation rates, long-term discount rates, the depreciation period of plants currently in operation and disbursement schedules.

These parameters are therefore re-estimated at each closing date to ensure that the amounts accrued correspond to the best estimate of the costs eventually to be borne by the Group.

The Group considers that the assumptions used at 31 December 2022 are appropriate and justified. However, any future change in assumptions could have a significant impact on the Group's financial statements (see note 15).

For France, the main assumptions and sensitivity analyses relating to EDF's nuclear provisions are presented in note 15.1.1.5.

The calculation of provisions incorporates a level of risks and unknowns as appropriate to the operations concerned, together with uncertainty factors such as:

- changes in the regulations, particularly on safety, security and environmental protection, and financing of long-term nuclear expenses;
- changes in the regulatory decommissioning process and the time necessary for issuance of administrative authorisation;

- future methods for storing long-lived radioactive waste and provision of storage facilities by the French agency for radioactive waste management ANDRA (*Agence nationale pour la gestion des déchets radioactifs*);
- changes in the contractual terms for spent fuel management and more generally the outlook for Orano's long-term industrial strategy in line with French energy policy, the operating performance of its installations, and the level of associated costs and investments;
- changes in certain financial parameters such as discount rates and/or inflation rates;
- the useful life of nuclear facilities (calculation of decommissioning provisions for nuclear plants in operation is based on the depreciation period of the assets concerned, *i.e.* 50 years for 900MW-series and 1300MW-series power plants and 40 years for 1450MW-series power plants).

1.3.4.3 Pensions and other long-term and post-employment benefit obligations

The value of pensions and other long-term and post-employment benefit obligations is based on actuarial valuations that are sensitive to all the actuarial assumptions used, particularly concerning discount rates, inflation rates and wage increase rates.

The principal actuarial assumptions used to calculate these post-employment and long-term benefits at 31 December 2022 are presented in note 16. These assumptions are updated annually. The Group considers the actuarial assumptions used at 31 December 2022 appropriate and well-founded, but future changes in these assumptions could have a significant effect on the amount of the obligations and the Group's equity and net income. Sensitivity analyses are therefore presented in note 16.

1.3.4.4 Impairment of goodwill and long-term assets

Impairment tests on goodwill and long-term assets are sensitive to the macro-economic and segment assumptions used – particularly concerning changes in energy prices – and medium-term financial forecasts. The Group therefore revises the underlying estimates and assumptions based on regularly updated information.

These assumptions, which are specific to Group companies, are presented in note 10.8.

1.3.4.5 Financial instruments

In measuring the fair value of unlisted financial instruments (essentially energy contracts), the Group uses valuation models based on a certain number of assumptions subject to unforeseeable developments.

1.3.4.6 Energy supplied but not yet measured and billed

As explained in note 5.1, the quantities of energy supplied but not yet measured and billed are calculated at the reporting date based on consumption statistic models and selling price estimates. Determination of the unbilled portion of sales revenues at the year-end is sensitive to the assumptions used to prepare these statistics and estimates.

1.3.4.7 Obligations concerning French public distribution concession assets to be replaced

In view of the specific nature of French public electricity distribution concessions, the Group has opted to present its obligations to replace concession assets in the balance sheet at a value based on the amount of contractual commitments as calculated and disclosed to the concession-granting authorities in the annual business reports (see note 11). Measurement of the concession liabilities concerning assets to be replaced is notably subject to unforeseeable developments in terms of costs, the useful life of assets and disbursement dates.

1.3.4.8 Deferred tax assets

The use of estimates and assumptions over recovery horizons is particularly important in the recognition of deferred tax assets.

1.3.4.9 Other judgements and estimates

When there is no standard or interpretation applicable to a specific transaction, the Group exercises judgment to define and apply accounting methods that supply relevant and reliable information for preparation of its financial statements.

For the application of IFRS 10 and IFRS 11, the Group uses judgment to assess control or classify the type of partnership arrangement represented by a jointly-controlled entity. For example EDF has set up "reserved" investment funds (FCPRs) for some of its funds set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste (see note 15.1.2.2). In view of the funds' characteristics, the prerogatives exercised by their managers and the procedures for defining the management strategies applicable to them, the Group considers that it does not have control, as defined by IFRS 10, over these funds. They are consequently treated as debt securities, in application of IFRS 9.

Through its subsidiary Luminus, the Group has a 49% stake in Luminus Seraing 2.0 SA. The governance and contractual agreements give Luminus exclusive control over this entity, which is fully consolidated in application of IFRS 10.

1.3.5 Nature and extent of restrictions on the Group's ability to access and use assets or settle liabilities

The main restrictions that may limit the Group's ability to access or use its assets or settle its liabilities concern the following items:

- assets held to fund employee benefits (principally in France and the United Kingdom – see note 16) and expenses related to nuclear liabilities (principally in France – see note 15.1.2 – and the United Kingdom – see note 15.2);

- tangible and intangible assets and the related liabilities associated with concession agreements, whether or not they are subject to regulatory mechanisms (obligations to supply energy or energy-related services, rules governing investments, an obligation to return concession facilities at the end of the contract, amounts payable at the end of the contract, tariff constraints, etc.). These restrictions mainly apply to assets of this type in France (EDF, Enedis, Electricité de Strasbourg and Dalkia), and to a lesser extent in Italy (see note 10.5);
- the disposal of Group investments in certain subsidiaries may require authorisations from State bodies, particularly when they exercise a regulated activity or operate nuclear power plants (this is the case for EDF Nuclear Generation Ltd. in the United Kingdom and Taishan (TNPJVC) in China);
- prudential reserves established and measures taken as regards distribution capacity, so that the insurance subsidiaries will meet their prudential ratio requirements;
- the cash of certain entities that use financing arrangements stipulating that dividend distribution is subject to conditions concerning repayment of bank debt (or qualification for loans) and shareholders, or are subject to regulatory limitations in certain countries.

Certain shareholder agreements concerning companies controlled by the Group include clauses to protect minority shareholders, requiring approval from minority shareholders for certain particularly important decisions.

Finally, certain financing loans granted to Group entities contain early repayment clauses (see note 18.3.4), and certain items of cash and cash equivalents are subject to restrictions (see note 18.2).

1.4 Comparability

1.4.1 Effects of market price levels on comparability

The level and volatility of market prices affect the financial statements, and for certain aggregated items this effect is more pronounced than at 31 December 2021.

The balance sheet total has increased from €361 billion to €388 billion, particularly as a result of the higher fair value of derivatives (see notes 18.1.1 and 18.3.1) (trading derivatives: +€10.5 billion in the assets and +€6.9 billion in the liabilities; hedging derivatives: +€2.3 billion in the assets and +€7.8 billion in the liabilities). The balance sheet total had already increased from €306 billion to €361 billion between 31 December 2020 and 31 December 2021, similarly due to a rise in the fair value of derivatives and also in the working capital relating to trade receivables and payables, and margin calls on assets and liabilities in the trading activities (see note 13 to the consolidated financial statements at 31 December 2021). In "Other current receivables", the normal debit position of the CSPE for EDF SA (a receivable of some €2 billion at 31 December 2020) is in a credit position in "Other current liabilities" at the value of €0.3 billion at 31 December 2021 and €6.1 billion at 31 December 2022 (see note 13.5.4).

In the income statement, the main points of note are as follows:

- sales excluding the trading activity increased from €82.9 billion to €136.4 billion (+64%), reflecting the effect of market price rises for electricity and gas. In France, the rise in electricity sales revenues was restricted by government measures to limit the amounts billed to final customers (the *bouclier tarifaire* tariff cap). Some other countries, for example the United Kingdom, particularly from September 2022, provided support measures in the form of direct aid to final customers, which consequently had no effect on the sales revenues recognised under IFRS 15. Other countries preferred to introduce tax measures, imposing additional income taxes as in Italy;
- fuel and energy purchases increased from €44.3 billion to €121 billion (+173%): this includes the very significant price effect of electricity purchases made necessary by the lower nuclear power output due to the stress corrosion phenomenon (see note 5.2);
- the trading margin reached €7 billion compared to €1.5 billion for 2021. This margin includes an increase in the provisions for counterparty risks in the specific context of the European market;
- the volatility of commodities (IFRS 9) in the income statement was €(0.8) billion, compared to €(0.2) billion for the year 2021.

1.4.2 Effect of inflation and interest rates on comparability

The financial statements are also affected by current inflationary pressure, which led to a substantial rise in interest rates in 2022 through the action taken by the central banks to control inflation expectations, with the following main consequences:

- an increase in the real discount rates used for provisions related to nuclear generation, resulting in a €(4.6) billion decrease in provisions in France in 2022 (see note 15.1.1), in contrast to the +€1.1 billion increase in provisions in 2021 after a reduction in the real discount rate in France; the higher discount rates also resulted in a €(2.9) billion decrease in nuclear provisions in the United Kingdom (see note 15.2), and a concurrent decrease in the receivable on the NLF and the British government, which is discounted at the same rate as the provisions it funds;
- an increase in the real discount rates used for the actuarial assumptions concerning employee benefit obligations, which principally explains the €(12.8) billion decrease in obligations in 2022 (see notes 16.1.1 and 16.1.2). In 2021, the actuarial gains and losses associated with these assumptions varied by €(0.2) billion;
- an increase in the WACC used for impairment testing of goodwill, intangible assets and property, plant and equipment: the average increase was 100-130 base points, leading to partial impairment of EDF Energy goodwill, in the amount of €1.2 billion (see note 10.8).

Meanwhile, the context of inflation and rising interest rates was the primary explanation for developments on the financial markets during the year, and thus for the difference in the balance sheet value of EDF's dedicated assets between 31 December 2021 and 31 December 2022 (a decrease of €(3.6) billion – see note 15.1.2.4) and the assets funding employee benefit obligations (a decrease of €(10) billion – see note 16.1.1). Between 31 December 2020 and 31 December 2021, the balance sheet value of dedicated assets and

assets funding employee benefit obligations varied by +€3.1 billion and +€1.7 billion respectively.

1.4.3 Impacts of the war in Ukraine

The Group has very limited direct exposure in Russia and Ukraine. Its dependency on Russian uranium imports is low in view of its existing stocks and diversified, long-term supply contracts. For gas, the Group has only one contract (through Edison) with a European subsidiary of a Russian company, which represents 4% of the Group's gas supplies and terminates at the end of 2022. The Group has no exposure with respect to businesses or banks that are currently affected by international sanctions. The Moscow office has been closed down, and the subsidiary Dalkia Russia was sold during the first half of 2022 (see the Dalkia press release of 23 May 2022, and note 7).

Note 2 Summary of significant events

The main significant events and transactions for the Group in 2022 and up to the date of approval of the consolidated financial statements were the following:

● Nuclear developments:

- ▶ Zero-carbon electricity generation ended and defueling began at Hunterston B (see the EDF Energy press releases of 7 January 2022 and 17 May 2022, and note 15);
- ▶ An update was released on the Flamanville EPR (see the Group press release of 12 January 2022, and note 10.6);
- ▶ On 13 January 2022 EDF updated its estimated nuclear output in France for 2022 (see the Group press release of 13 January 2022, and note 5);
- ▶ On 7 February 2022 EDF adjusted its estimated nuclear output in France for 2022 (see the Group press release of 7 February 2022, and note 5);
- ▶ On 11 February 2022 EDF adjusted its estimated nuclear output in France for 2023 (see the Group press release of 11 February 2022);
- ▶ Hinkley Point C update: the project schedule and costs were reviewed (see the Group press release of 19 May 2022, and notes 10.6 and 10.8);
- ▶ An update was released on the stress corrosion phenomenon and the 2022 French nuclear output estimate was adjusted (see the Group press release of 19 May 2022, and notes 5 and 10.6);
- ▶ A major milestone was reached as the UK Government granted the Development Consent Order to Sizewell C (see the EDF Energy press release of 20 July 2022, and note 10.6);
- ▶ On 15 September 2022, EDF adjusted the estimated impact of the decline in nuclear power output for 2022 following the French government's announcement that price increases would be capped in 2023 (see the Group press release of 15 September 2022, and note 5);
- ▶ On 3 November 2022, EDF updated its estimated nuclear output in France for 2022 (see the Group press release of 3 November 2022, and note 5);
- ▶ EDF signed an exclusive agreement to acquire part of GE Steam Power's Nuclear Activities (see the Group press release of 10 February 2022 and 4 November 2022, and note 3.1);
- ▶ EDF welcomed the UK government's decision to cofinance development of the Sizewell C project (see the Group press release of 29 November 2022, and note 10.6);
- ▶ An update was released on the Flamanville EPR (see the Group press release of 16 December 2022, and note 10.6).

● Disposals:

- ▶ Edison signed an agreement to sell its stake in North Reggane to Repsol and Wintershall Dea (see the Edison press releases of 5 May 2022 and 29 June 2022, and note 3.1);
- ▶ EDF completed the sale of its interest in the Sloe CCGT plant (870MW) in the Netherlands (see the Group press releases of 27 September 2022 and 25 January 2023, and note 3.1);
- ▶ EDF Trading sold its north American retail business to bp (see the EDF Trading press release of 12 September and 30 November 2022, and note 3.1);
- ▶ Imtech, a Dalkia group company in the United Kingdom, signed an agreement with Duke Street for the sale of its subsidiary Suir Engineering (see the Dalkia press releases of 14 November 2022 and 1 February 2023, and note 3.1).

● Financing operations:

- ▶ EDF signed agreements for €10.25 billion of banking facilities (see the Group press release of 16 March 2022, and note 18.3.2.1);
- ▶ EDF announced a successful capital increase of over €3.150 billion, maintaining preferential subscription rights (see the Group press release of 5 April 2022, and note 14.1);
- ▶ EDF Group launched a capital increase reserved for members of the EDF Group Savings Plan and the EDF International Group Savings Plan (see the Group press release of 12 May 2022, and notes 7 and 14.1);
- ▶ EDF and the European Investment Bank (EIB) announced the signing of an €800 million loan contract to finance the energy transition of the power distribution network managed by Enedis (see the Group press release of 19 May 2022, and note 18.3.2.1);

- › EDF announced the issue of a senior multi-tranche bond, including a green tranche, for a nominal amount of €3 billion euros on 5 October 2022 (see the Group press release of 5 October 2022, and note 18.3.2.1);
 - › EDF and Crédit Agricole CIB signed a €1 billion financing agreement specifically for the maintenance of French power plants (see the Group press release of 18 November 2022, and note 18.3.2.1);
 - › EDF signed agreements for €2.1 billion of additional banking facilities (see the Group press release of 29 November 2022, and note 18.3.2.1);
 - › EDF announced an issue of hybrid notes for a nominal amount of €1 billion and its intention to exercise its option to redeem outstanding USD hybrid notes with a January 2023 redemption option (see the Group press releases of 30 November 2022 and 21 December 2022, and notes 14.4 and 18.3.2.1);
 - › EDF announced an issue of senior multi-tranche bond issue for a nominal amount of €2 billion and £950 million (see the Group press release of 19 January 2023).
- **Renewable energies:**
 - › EDF won a maritime zone in New York bight to develop offshore wind energy (see the Group and EDF Renewables press releases of 1 March 2022, and note 12.3);
 - › EDF Renewables commissioned four solar power plants, including two floating plants, in Israel (see the EDF Renewables press release of 8 June 2022, and note 12.3);
 - › A consortium consisting of EDF, KEPCO and Kyushu Electric Power Co. finalised the financing of a strategic power transmission project with ADNOC and TAQA in the United Arab Emirates (see Group press release of 26 September 2022, and note 12.3);
 - › France's first offshore wind farm at Saint-Nazaire is now fully operational (see the EDF Renewables press releases of 13 April, 22 September and 23 November 2022, and note 12.3).
- **Planned operation on the Group's capital:**
 - › Trading of the Group's equity securities was suspended (see the Group press release of 13 July 2022);
 - › An *ad hoc* committee was set up (see the Group press release of 19 July 2022);
 - › An independent expert was designated (see the Group press release of 27 July 2022);
 - › EDF's Board of Directors issued a positive reasoned opinion on the draft simplified public tender offer filed by the French State (see the Group press release of 27 October 2022);
 - › The simplified public tender offer for the equity securities of EDF opened (see the Group press release of 23 November 2022);
 - › The Paris Commercial Court issued its decision (see the Group press releases of 10 November 2022 and 19 December 2022);
 - › The timetable of the simplified tender offer for the equity securities of EDF was updated (see the Group press release of 26 January 2023);
 - › The result of the simplified public tender offer for the equity securities of EDF was published (see the Group press release of 8 February 2023 and notes 14.1 et 22.2.1);
 - › EDF OCEANes due 2024: a new conversion/exchange ratio was set following the result of the French State's simplified public tender (see the Group press release of 8 February 2023 and notes 14.5 and 18.3.2.2).
- **Other significant events:**
 - › Exceptional measures were announced by the French Government (see the Group press release of 13 January 2022, and note 5);
 - › EDF issued a statement concerning the decision made by the French Competition Authority (see the Group press release of 22 February 2022, and note 17);
 - › Following publication of the decree and orders relating to the additional allocation of 20TWh of ARENH volumes for 2022, an update of the impact on the 2022 EBITDA outlook was released (see the Group press release of 14 March 2022, and notes 5 and 17.2);
 - › An appeal was filed concerning the allocation of additional ARENH electricity volumes for 2022 (see the Group press release of 9 August 2022 and 27 October 2022, and note 5.1.1);
 - › The Council of State issued its decision on the application for cancellation of the additional allocation of 20TWh of electricity for the ARENH system in 2022 (see the Group press release of 5 February 2023, and note 5.1.1).

The main significant events and transactions for the Group in 2021 were the following:

- **Nuclear developments:**
 - › EDF decided to move Dungeness B into the defueling phase (see the EDF Energy press release of 7 June 2021, and note 7);
 - › Reactors of the Civaux and Chooz nuclear power plants: replacements and preventive checks on parts of the piping of a safety system (see the Group press release of 15 December 2021, and note 23 to the consolidated financial statements at 31 December 2021);
 - › AGR (Advanced Gas-cooled Reactor) lifetime reviews were carried out (see the EDF Energy press release of 15 December 2021, and note 10.8 to the consolidated financial statements at 31 December 2021).
- **Disposals:**

- › Edison completed the sale of Edison Norge to Sval Energi for a value of \$374 million (see the Edison press release of 25 March 2021, and note 3.1.2);
 - › Edison completed the sale of Infrastrutture Distribuzione Gas (IDG) to 2I ReteGas for a value of €150 million (see the Edison press release of 30 April 2021, and note 3.1.2);
 - › Dalkia completed the sale of its subsidiary Dalkia Wastenergy to Paprec (see the Dalkia press release of 28 July 2021, and note 3.1.2);
 - › EDF completed the sale of its interest in CENG (see the Group press release of 9 August 2021, and note 3.1.2);
 - › EDF completed the sale of the West Burton B CCGT gas power station to EIG (see the EDF Energy press release of 31 August 2021, and note 3.1.2);
 - › Edison and Credit Agricole Assurances completed the transaction to accelerate the development of renewables in Italy together (see the Edison press releases of 3 and 14 December 2021, and note 3.1.2);
 - › EDF transferred a property portfolio in the Île-de-France region to a joint venture with POWERHOUSE HABITAT (see the Group press release of 16 December 2021, and note 5.4 to the consolidated financial statements at 31 December 2021).
- **Renewable energies:**
 - › Edison completed the acquisition of E2i (see the Edison press release of 16 February 2021, and note 3.1.2).
 - EDF and Areva reached a settlement agreement (see the Group press release of 30 June 2021, and note 7);
 - EDF put an end to Ecocombust, a project to develop a new class B wood-based fuel (see the Group press release of 8 July 2021, and note 10.3 to the consolidated financial statements at 31 December 2021).

Note 3 Scope of consolidation

Accounting principles and methods

Controlled entities

Subsidiaries are companies in which the Group exercises exclusive control and are fully consolidated. The Group controls an entity when the three following conditions are fulfilled:

- it holds power over the entity;
- it is exposed, or has rights, to variable returns from its involvement with the entity;
- it has the ability to use its power to affect the amount of the investor's returns.

The Group considers all facts and circumstances when assessing control. All substantive potential voting rights exercisable, including by another party, are also taken into consideration.

Investments in associates and joint ventures

An associate is an entity in which the Group exercises significant influence on financial and operational policies without having exclusive or joint control. Significant influence is presumed to exist when the Group's investment is at least 20%.

A joint venture is a partnership in which the parties (joint venturers) that exercise joint control over the entity have rights to the entity's net assets. Joint control is the contractually agreed sharing of control of an entity operated jointly by a limited number of partners or shareholders, such that the financial and operational policies result from unanimous consent of the parties.

Investments in associates and joint ventures are accounted for by the equity method. They are carried in the balance sheet at historical cost, adjusted for the share in net assets generated after the acquisition, less any impairment. The share in the net income for the period is reported in "Share in net income of associates and joint ventures" in the income statement (see note 12).

Investments in joint operations

A joint operation is a joint arrangement in which the parties (joint operators) that exercise joint control over the entity have direct rights to its assets, and obligations for its liabilities. The Group, as an operator in a joint operation, reports the assets and liabilities and income and expenses related to its investment line by line.

The Group's principal joint operations are the LNG optimisation activities of JERA Global Markets, co-owned by EDF Trading, and the gas storage operator activity carried out by Friedeburger Speicherbetriebsgesellschaft mbH (FSG).

Business combinations

In application of IFRS 3 business combinations arising since 1 January 2010 are measured and recognised under the following principles:

- at the date of acquisition, the identifiable assets acquired and liabilities assumed, measured at fair value, and any non-controlling interests in the company acquired (minority interests) are recorded separately from goodwill;
- non-controlling interests may be valued either at fair value (full goodwill method) or their share in the fair value of the net assets of the acquired company (partial goodwill method). The decision is made individually for each transaction;
- any acquisition or disposal of an investment in a subsidiary that does not affect control is considered as a transaction between shareholders and must be recorded directly in equity;

- if additional interests are acquired in a joint venture, joint operation or associate without resulting in acquisition of control, the value of the previously-acquired assets and liabilities remains unchanged in the consolidated financial statements;
- if control is acquired in stages, the cost of the business combination includes the fair value, at the date control is acquired, of the purchaser's previously-held interest in the acquired company;
- related costs directly attributable to an acquisition leading to control are treated as expenses for the periods in which they were incurred, except for issuance costs for debt securities or equity instruments, which must be recorded in compliance with IAS 32 and IFRS 9;
- IFRS 3 does not apply to common control business combinations, which are examined on a case-by-case basis to determine the appropriate accounting treatment;
- commitments given by the Group to purchase minority interests in Group-controlled companies are included in liabilities. For commitments of this kind given since 1 January 2010, the date of the Group's first application of IAS 27 (amended) and IFRS 3 (revised), the differential between the value of the non-controlling interests and the liability corresponding to the commitment is recorded in equity.

3.1 Changes in the scope of consolidation

3.1.1 Changes in the scope of consolidation in 2022

The following changes in the Group's scope of consolidation took place during 2022 :

- acquisition by Imtech (a Dalkia subsidiary) of SPIE UK on 19 December 2022. This acquisition has no significant impact on the Group's financial statements;
- disposal of EDF Trading North America's retail business to bp : on 12 September 2022, EDF Trading Limited entered into a binding share purchase agreement with bp to sell 100% of EDF Energy Services LLC (EDFES). EDF Trading's business in Europe and Asia and its wholesale trading business in North America are unaffected by the agreement. Following the satisfaction of all necessary conditions precedent, EDF Trading Limited announced the completion of the sale of its North American retail business, EDF Energy Services, to bp on 30 November 2022. This transaction reduced the Group's net indebtedness by €0.5 billion.

The Group also signed other binding agreements for operations that were not finalised by the end of 2022 and will affect the scope of consolidation in 2023:

- sale by Edison of its stake in the North Reggane licence in Algeria;
- acquisition by EDF of GE Steam Power's nuclear activities;
- sale of Suir Engineering by Imtech on 1 February 2023;
- sale of the investment in the Sloe CCGT plant (870MW) in the Netherlands on 25 January 2023.

Sale of Edison's stake in North Reggane

On 4 May 2022, Edison announced that it had signed an agreement to sell its stake in the North Reggane licence in Algeria, completing the divestment of all Exploration and Production (E&P) operations following the company's strategic realignment towards its energy transition businesses. Under this agreement, Edison was to sell its 11.25% stake in the North Reggane onshore gas field to Wintershall Dea Algeria GmbH.

On 29 June 2022 Edison announced the signature of an amendment to this agreement, after Repsol exercised its pre-emption right in accordance with the corresponding Joint Operating Agreement. The contract signed on 4 May was consequently modified to reflect the fact that Edison's stake in the North Reggane licence would be sold to Repsol (6.75%) and Wintershall Dea (4.50%).

The agreement is based on a value of approximately \$100 million for Edison's participating interest in North Reggane.

Completion of the sale is considered highly probable even though it still requires certain authorisations, and consequently the corresponding assets and liabilities were classified as assets held for sale and related liabilities at 31 December 2022 (see note 3.2).

Acquisition of GE Steam Power's Nuclear Activities

On 4 November 2022, GE and EDF signed a final agreement related to EDF's acquisition of GE Steam Power's nuclear activities. These activities include the manufacturing of conventional island equipment for new nuclear power plants, including the Arabelle steam turbine as well as maintenance and upgrade activities for existing nuclear power plants in all regions other than the Americas. The transaction also includes steam turbine technology for first and second-generation European pressurized reactors (EPR and EPR2) and small modular reactors (SMR).

This agreement is the next milestone in the process that began with the exclusive agreement signed on 10 February 2022⁽¹⁾.

This acquisition will enable EDF Group to strengthen the conventional island technologies and skills, which are essential for the durability of the existing nuclear fleet and future projects.

(1) See the Group press release of 10 February 2022 "EDF Signs an Exclusive Agreement to Acquire Part of GE Steam Power's Nuclear Activities".

The transaction is expected to close in the second half of 2023 and is subject to customary closing conditions including regulatory approvals.

Sale of Suir Engineering by Imtech

The Imtech group, jointly owned by Dalkia and EDF Energy, announced that it had signed a binding agreement on 14 November 2022 with the British private equity fund Duke Street for the sale of 100% of its Irish subsidiary Suir Engineering Ltd.

Following the required clearances by the regulatory authorities, on 1 February 2023 Imtech announced that the sale of Suir Engineering Ltd. to Duke Street had been finalised.

This transaction will have an impact of €0.1 billion on the Group's net indebtedness in 2023.

Sale of the investment in the Sloe CCGT plant (870MW) in the Netherlands

On 27 September 2022, EDF announced that it had reached an agreement to sell its interest in the 870MW Sloe CCGT plant in the Netherlands. EDF is a 50% owner and operator of this plant, jointly with its partner Pzem. On 27 September 2022 EDF signed an agreement with EPH, the Czech electricity producer and grid operator, for the sale of Sloe.

Following the required clearances by the regulatory authorities, the Group announced on 25 January 2023 that it had closed the sale of its investment in the Sloe plant to EPH.

This transaction has an impact of €0.2 billion on the Group's income statement in 2022 (principally due to reversal of a provision for onerous contracts that is no longer relevant) and will have a non-significant impact on the Group's net indebtedness in 2023.

3.1.2 Changes in the scope of consolidation in 2021

The following changes in the Group's scope of consolidation took place during 2021 (see note 3.1.1 to the consolidated financial statements at 31 December 2021):

- acquisition of 70% of E2i on 16 February 2021;
- disposal of Edison Norge on 25 March 2021;
- disposal of Infrastrutture Distribuzione Gas (IDG) on 30 April 2021;
- disposal of Dalkia Wastenergy on 28 July 2021;
- disposal of interests in CENG on 9 August 2021;
- disposal of West Burton B on 31 August 2021;
- initial public offering of Pod Point on 4 November 2021;
- acquisition of Rolls Royce Civil Nuclear I&C on 8 November 2021;
- disposal of 49% of Edison Renewables on 3 December 2021;
- consolidation of IZI Solutions Renov and Hynamics.

3.2 Assets held for sale and related liabilities

Accounting principles and methods

Assets that qualify as held for sale and related liabilities are disclosed separately from other assets and liabilities in the balance sheet.

When assets or groups of assets are classified as discontinued operations, income and expenses relating to these discontinued operations are disclosed in a single net amount after taxes in the income statement and net changes in cash and cash equivalents of discontinued operations are also reported separately in the cash flow statement.

Impairment is booked when the realisable value is lower than the net book value.

In accordance with IFRS 5:

- for assets or groups of assets that are identified and classified as held for sale during the year, there is no change of presentation or retrospective restatement in prior year balance sheets;
- assets or groups of assets that qualify as discontinued operations are restated in the income statement and the cash flow statement for the prior periods presented in the financial statements.

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|------------|------------|
| ASSETS HELD FOR SALE | 150 | 69 |
| LIABILITIES RELATED TO ASSETS HELD FOR SALE | 37 | 30 |

In application of IFRS 5, assets held for sale and related liabilities are shown below:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|---|------------|------------|
| Non-current non-financial assets ⁽¹⁾ | 62 | - |
| Non-current financial assets | - | - |
| Current non-financial assets ⁽²⁾ | 88 | 69 |
| Current financial assets | - | - |
| TOTAL ASSETS HELD FOR SALE | 150 | 69 |

⁽¹⁾Non-current non-financial assets comprise tangible assets and property, plant and equipment.

⁽²⁾Current non-financial assets comprise components of working capital.

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|------------|------------|
| Non-current non-financial liabilities ⁽¹⁾ | - | - |
| Non-current financial liabilities | - | - |
| Current non-financial liabilities | 37 | 30 |
| Current financial liabilities | - | - |
| TOTAL LIABILITIES RELATED TO ASSETS HELD FOR SALE | 37 | 30 |

⁽¹⁾Non-financial liabilities comprise provisions.

At 31 December 2022, assets held for sale and related liabilities concern the following balance sheet items:

- Assets:
 - › the price supplement on the Dvalin gas project (E&P in Norway) and Cassiopea (E&P in Italy),
 - › the sale in progress of Edison's Algerian E&P assets;
- Liabilities: the sale in progress of Edison's Algerian E&P liabilities.

3.3 Scope of consolidation at 31 December 2022

The Group's business sectors are defined as follows:

- **"Generation/Supply"** (G): generation of nuclear energy, thermal energy, and renewable energies (wind, photovoltaic and hydro) and energy sales to industry, local authorities, small businesses and private customers. This segment also includes trading activities;
- **"Distribution"** (D): management of the low and medium-voltage public electricity distribution networks;
- **"Transmission"** (T): operation, maintenance and development of the high-voltage and very-high-voltage electricity transmission networks;
- **"Reactors and Services (Framatome)"** (R): services and production of equipment and fuel for nuclear reactors;
- **"Services and other activities"** (O): energy services (district heating, thermal energy services, etc.) for industry and local authorities. This activity also includes EDF Invest's holding companies and entities that are classified as dedicated assets.

The companies and subgroups included in the EDF Group consolidation are listed below.

3.3.1 Fully consolidated companies

| | | Percentage ownership at 31/12/2022 | Percentage ownership at 31/12/2021 | Business sector |
|---|---------|------------------------------------|------------------------------------|-----------------|
| France – Generation and Supply | | | | |
| Electricité de France – Parent Company | | 100.00 | 100.00 | G,D,O |
| Group Support Services (G2S) | | 100.00 | 100.00 | O |
| Edvance | | 95.10 | 95.10 | O |
| Cyclife | | 100.00 | 100.00 | O |
| IZI Confort (formerly CHAM SAS) | | 100.00 | 100.00 | O |
| Sowee | | 100.00 | 100.00 | O |
| IZI Solutions | | 100.00 | 100.00 | O |
| IZI Solutions Renov | | 100.00 | 100.00 | O |
| IZIVIA | | 100.00 | 100.00 | O |
| EDF Pulse Holding | | 100.00 | 100.00 | O |
| Hynamics | | 100.00 | 100.00 | G |
| Agregio | | 100.00 | 100.00 | O |
| Energy2Market (E2M) | | 100.00 | 100.00 | O |
| EDF ENR (formerly ENRS) | | 100.00 | 100.00 | O |
| Immo C47 | | 51.00 | 51.00 | O |
| Other holding companies (EDF Invest) | | 100.00 | 100.00 | O |
| France – Regulated activities | | | | |
| Enedis | | 100.00 | 100.00 | D |
| Electricité de Strasbourg | | 88.64 | 88.64 | G, D |
| EDF Production Electrique Insulaire (EDF PEI) | | 100.00 | 100.00 | G |
| Framatome | | | | |
| Framatome | France | 75.50 | 75.50 | R |
| United Kingdom | | | | |
| EDF Energy Holdings Limited (EDF Energy) | | 100.00 | 100.00 | G, O |
| EDF Energy UK Ltd. | | 100.00 | 100.00 | O |
| Italy | | | | |
| Edison SpA (Edison) | | 97.17 | 97.17 | G, O |
| Transalpina di Energia SpA (TdE SpA) | | 100.00 | 100.00 | O |
| Other international | | | | |
| EDF International SAS | France | 100.00 | 100.00 | O |
| EDF Belgium SA | Belgium | 100.00 | 100.00 | G |
| Luminus SA | Belgium | 68.63 | 68.63 | G, O |
| EDF Norte Fluminense SA | Brazil | 100.00 | 100.00 | G |
| EDF (China) Holding Ltd. | China | 100.00 | 100.00 | O |
| EDF Inc. | USA | 100.00 | 100.00 | O |
| Mekong Energy Company Ltd. (MECO) | Vietnam | 56.25 | 56.25 | G |
| Lingbao ⁽¹⁾ | Chine | 65.00 | n.c. | G |
| EDF Andes Spa | Chili | 100.00 | 100.00 | G |

Business sectors: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other

n.c. = not consolidated

⁽¹⁾ Lingbao is fully consolidated from 2022.

| | | Percentage ownership at 31/12/2022 | Percentage ownership at 31/12/2021 | Business sector |
|---------------------------------------|----------------|------------------------------------|------------------------------------|-----------------|
| EDF Renewables | | | | |
| EDF Renewables | France | 100.00 | 100.00 | G,O |
| Dalkia | | | | |
| Dalkia | France | 99.94 | 99.94 | O |
| Other activities | | | | |
| EDF Développement Environnement SA | France | 100.00 | 100.00 | O |
| EDF IMMO and real estate subsidiaries | France | 100.00 | 100.00 | O |
| Société C3 | France | 100.00 | 100.00 | O |
| EDF Holding SAS | France | 100.00 | 100.00 | O |
| Citelum ⁽¹⁾ | France | n.c. | 100.00 | O |
| Citégestion ⁽¹⁾ | France | 100.00 | 100.00 | O |
| EDF Trading Ltd. | United Kingdom | 100.00 | 100.00 | G |
| Wagram Insurance Company DAC | Ireland | 100.00 | 100.00 | O |
| EDF Investissements Groupe SA | Belgium | 92.46 | 92.46 | O |
| Océane Re | Luxembourg | 99.98 | 99.98 | O |
| EDF Gas Deutschland GmbH | Germany | 100.00 | 100.00 | O |

Business sectors: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.

n.c. = not consolidated.

⁽¹⁾ Following the sale of its subsidiaries to other Group entities (Dalkia, Edison, Luminus) and non-group entities (for non-material amounts), the holding company Citelum is no longer consolidated. Citégestion is the only entity remaining fully consolidated.

3.3.2 Joint operations

| | | Percentage ownership at 31/12/2022 | Percentage ownership at 31/12/2021 | Business sector |
|--|---------|------------------------------------|------------------------------------|-----------------|
| Other activities | | | | |
| Friedeburger Speicherbetriebsgesellschaft GmbH (Crystal) | Germany | 50.00 | 50.00 | O |

Business sectors: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.

3.3.3 Companies accounted for by the equity method

| | | Percentage ownership at 31/12/2022 | Percentage ownership at 31/12/2021 | Business sector |
|---|----------------|------------------------------------|------------------------------------|-----------------|
| France – Generation and Supply | | | | |
| Domofinance | France | 45.00 | 45.00 | O |
| CTE (EDF Invest) ⁽¹⁾ | France | 50.10 | 50.10 | O |
| Elisandra IV (Madrileña Red de Gas Holding) (EDF Invest) | Spain | 20.00 | 20.00 | O |
| Géosel Manosque (EDF Invest) | France | - | 38.35 | O |
| Transport Stockage Hydrocarbures (EDF Invest) | France | - | 50.00 | O |
| Central Sicaf (EDF Invest) | Italy | 24.50 | 24.50 | O |
| Thyssengas (EDF Invest) | Germany | - | 50.00 | O |
| Aéroports Côte d'Azur (EDF Invest) | France | 19.40 | 19.40 | O |
| Ecowest (EDF Invest) | France | 50.00 | 50.00 | O |
| Fallago Rig (EDF Invest) | United Kingdom | 20.00 | 20.00 | G |
| Fenland Wind Farm (EDF Invest) | United Kingdom | 20.00 | 20.00 | G |
| Catalinar Solar (EDF Invest) | USA | 50.00 | 50.00 | G |
| Switch (EDF Invest) | USA | 50.00 | 50.00 | G |
| MiRose (EDF Invest) | USA | - | 50.00 | G |
| Red Pine (EDF Invest) | USA | 50.00 | 50.00 | G |
| Energy Assets Group (EDF Invest) | United-Kingdom | 40.00 | 40.00 | O |
| Valentine Solar (EDF Invest) | USA | 50.00 | 50.00 | G |
| Glacier's Edge (EDF Invest) | USA | 50.00 | 50.00 | G |
| Nicolas Riou (EDF Invest) | Canada | 50.00 | 50.00 | G |
| Korian & Partenaires Immobilier 1 & 2 (EDF Invest) | France | 24.50 | 24.50 | O |
| Issy Shift (EDF Invest) | France | 33.33 | 33.33 | O |
| Orange Concessions (EDF Invest) | France | 16.67 | 16.67 | O |
| 92 France (EDF Invest) | France | 50.00 | 50.00 | O |
| Other international | | | | |
| Compagnie Énergétique de Sinop (CES) | Brazil | 51.00 | 51.00 | G |
| SLOE Centrale Holding BV | Netherlands | 50.00 | 50.00 | G |
| Shandong Zhonghua Power Company, Ltd. | China | 19.60 | 19.60 | G |
| Datang Sanmenxia Power Generation Co., Ltd. | China | 35.00 | 35.00 | G |
| Taishan Nuclear Power Joint Venture Company Ltd. (TNPJVC) | China | 30.00 | 30.00 | G |
| Jiangxi Datang International Fuzhou Power Generation Company Ltd. | China | 49.00 | 49.00 | G |
| Nam Theun 2 Power Company (NTPC) (EDF Invest) | Laos | 40.00 | 40.00 | G |
| Generadora Metropolitana (GM) | Chile | 50.00 | 50.00 | G |
| Nachtigal Hydro Power Company | Cameroon | 40.00 | 40.00 | G |

Business segments: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.
⁽¹⁾Coentreprise de Transport d'Electricité or CTE, the company holding 100% of RTE.

3.3.4 Companies in which the EDF group's voting rights differ from its percentage ownership

The percentage of voting rights, which is decisive for assessing control, differs from the Group's percentage ownership for the following entities:

| | Percentage ownership at 31/12/2022 | Percentage of voting rights held at 31/12/2022 |
|-------------------------------|------------------------------------|--|
| Edison SpA | 97.17 | 99.48 |
| EDF Investissements Groupe SA | 92.46 | 50.00 |

Note 4 Segment reporting

4.1 Reporting by operating segment

Accounting principles and methods

Segment reporting presentation complies with IFRS 8, "Operating segments".

Segment reporting is presented before inter-segment eliminations. Inter-segment transactions take place at market prices.

In accordance with IFRS 8, the breakdown used by the EDF group corresponds to the operating segments as regularly reviewed by the Management Committee (the Group's chief operating decision-maker).

The Group's segments are:

- **"France – Generation and Supply"**: EDF SA's energy production and sales activities. This segment also includes entities operating on the downstream sectors (B2B and B2C, aggregation) and all EDF Invest's shareholdings;
- **"France – Regulated activities"**: Enedis and Electricité de Strasbourg's distribution activities, and EDF's island activities;
- **"Framatome"**: the entities of the Framatome subgroup;
- **"United Kingdom"**: the entities of the EDF Energy subgroup;
- **"Italy"**: Edison entities and TdE SpA;
- **"Other international"**: EDF International and the entities located in continental Europe, the US, Latin America and Asia;
- **"EDF Renewables"**: the entities of the EDF Renewables subgroup;
- **"Dalkia"**: the entities of the Dalkia subgroup;
- **"Other activities"**: comprising in particular EDF Trading and EDF Investissements Groupe.

No segments have been merged.

4.1.1 At 31 December 2022

| (in millions of euros) | France – Generation and Supply | France – Regulated activities | Framatome | United Kingdom | Italy | Other internatio nal | EDF Renewabl es | Dalkia | Other activities ⁽⁵⁾ | Inter- segment eliminatio ns | Total |
|--|--------------------------------------|-------------------------------------|--------------|-------------------|---------------|----------------------------|-----------------------|--------------|------------------------------------|---------------------------------------|-----------------|
| Income statement: | | | | | | | | | | | |
| External sales | 46,787 | 17,888 | 2,099 | 16,085 | 29,278 | 5,369 | 1,404 | 5,825 | 18,741 | - | 143,476 |
| Inter-segment sales | 1,899 | 194 | 2,023 | 13 | 24 | 290 | 754 | 838 | 983 | (7,018) | - |
| TOTAL SALES | 48,686 | 18,082 | 4,122 | 16,098 | 29,302 | 5,659 | 2,158 | 6,663 | 19,724 | (7,018) | 143,476 |
| OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION | (23,144) | 6,723 | 589 | 1,325 | 1,115 | 336 | 909 | 333 | 7,089 | (261) | (4,986) |
| OPERATING PROFIT | (28,739) | 3,142 | 271 | (1,166) | 481 | (40) | 179 | 120 | 6,650 | (261) | (19,363) |
| Balance sheet: | | | | | | | | | | | |
| Goodwill | 132 | 223 | 1,448 | 6,541 | 148 | 49 | 187 | 643 | 142 | - | 9,513 |
| Intangible assets and property, plant and equipment | 61,310 | 69,070 | 2,894 | 26,676 | 5,876 | 2,276 | 11,595 | 2,347 | 483 | - | 182,527 |
| Investments in associates and joint ventures ⁽¹⁾ | 3,421 | - | 84 | 180 | 234 | 1,965 | 2,519 | 63 | 955 | - | 9,421 |
| Financial assets and cash ⁽²⁾ | 57,926 | 450 | 402 | 15,202 | 1,209 | 879 | 2,583 | 293 | 38,549 | - | 117,493 |
| Other segment assets ⁽³⁾ | 32,997 | 5,402 | 2,156 | 6,072 | 5,501 | 1,415 | 1,127 | 3,311 | 11,047 | - | 69,028 |
| Assets classified as held for sale | - | - | - | - | 150 | - | - | - | - | - | 150 |
| TOTAL ASSETS | 155,787 | 75,145 | 6,984 | 54,671 | 13,118 | 6,584 | 18,011 | 6,657 | 51,176 | - | 388,132 |
| Other information: | | | | | | | | | | | |
| Net depreciation and amortisation ⁽⁴⁾ | (4,552) | (3,560) | (310) | (915) | (480) | (314) | (601) | (294) | (53) | - | (11,079) |
| Impairment | (4) | (54) | (1) | (1,447) | (68) | (57) | (129) | - | (2) | - | (1,762) |
| Equity (non-controlling interests) | 117 | 48 | 63 | 9,347 | 479 | 558 | 916 | 225 | 519 | - | 12,272 |
| Investments in intangible assets and property, plant and equipment | 5,745 | 4,739 | 283 | 4,541 | 560 | 306 | 1,806 | 319 | 25 | - | 18,324 |
| Loans and other financial liabilities | 103,476 | 5,270 | 326 | 7,945 | 1,733 | 16,442 | 9,694 | 2,467 | 5,251 | (56,551) | 96,053 |
| - external liabilities | 89,547 | 797 | 267 | 309 | 902 | 157 | 3,593 | 347 | 134 | - | 96,053 |
| - intersegment liabilities ⁽⁶⁾ | 13,929 | 4,473 | 59 | 7,636 | 831 | 16,285 | 6,101 | 2,120 | 5,117 | (56,551) | - |

⁽¹⁾At 31 December 2022, investments in associates and joint ventures include 50.1% of CTE (the joint venture holding RTE's shares) which is part of the France – Generation and Supply segment.

⁽²⁾Financial assets and cash mainly comprise dedicated assets amounting to €27,369 million in the France – Generation and Supply segment (see note 18.1.2), the NLF receivable (see note 18.1.3) amounting to €14,000 million in the United Kingdom segment and the positive fair value of EDF Trading's derivatives, amounting to €29,861 million (in "Other activities").

⁽³⁾Other segment assets include inventories, trade receivables, other receivables and tax assets.

⁽⁴⁾Including net increases in provisions for renewal of property, plant and equipment operated under concessions.

⁽⁵⁾Sales by the "Other activities" segment include the €7,038 million trading margin realised by EDF Trading.

⁽⁶⁾The amount of intersegment liabilities corresponds to the group's centralised cash management (cash pooling by EDF SA, included in the France – Generation and Supply segment) and financing of controlled subsidiaries, particularly EDF International (Other international segment), EDF Energy (United Kingdom segment) and EDF Trading (in the "Other activities" segment).

4.1.2 At 31 December 2021

| (in millions of euros) | France – Generation and Supply | France – Regulated activities | Framatome | United Kingdom | Italy | Other internatio- nal | EDF Renewabl- es | Dalkia | Other activities ⁽⁵⁾ | Inter- segment eliminations | Total |
|--|--------------------------------------|-------------------------------------|--------------|-------------------|---------------|-----------------------------|------------------------|--------------|------------------------------------|-----------------------------------|----------------|
| Income statement: | | | | | | | | | | | |
| External sales | 31,532 | 17,483 | 1,862 | 10,103 | 11,166 | 3,148 | 1,203 | 4,503 | 3,461 | - | 84,461 |
| Inter-segment sales | 1,650 | 81 | 1,500 | 11 | 46 | 205 | 564 | 693 | 444 | (5,194) | - |
| TOTAL SALES | 33,182 | 17,564 | 3,362 | 10,114 | 11,212 | 3,353 | 1,767 | 5,196 | 3,905 | (5,194) | 84,461 |
| OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION | | | | | | | | | | | |
| | 7,394 | 5,992 | 584 | (21) | 1,046 | 267 | 815 | 378 | 1,824 | (274) | 18,005 |
| OPERATING PROFIT | 2,394 | 2,610 | 265 | (2,016) | 608 | (475) | 241 | 217 | 1,655 | (274) | 5,225 |
| Balance sheet: | | | | | | | | | | | |
| Goodwill | 126 | 223 | 1,428 | 8,095 | 108 | 46 | 185 | 592 | 142 | - | 10,945 |
| Intangible assets and property, plant and equipment | 61,468 | 67,273 | 2,826 | 24,408 | 5,744 | 2,084 | 10,842 | 2,248 | 578 | - | 177,471 |
| Investments in associates and joint ventures ⁽¹⁾ | 3,474 | - | 70 | 187 | 178 | 2,071 | 1,453 | 64 | 587 | - | 8,084 |
| Financial assets and cash ⁽²⁾ | 55,415 | 420 | 323 | 18,949 | 1,512 | 697 | 1,788 | 262 | 26,099 | - | 105,465 |
| Other segment assets ⁽³⁾ | 22,024 | 4,204 | 1,997 | 5,240 | 5,913 | 1,265 | 1,166 | 2,708 | 14,415 | - | 58,932 |
| Assets classified as held for sale | - | - | - | - | 69 | - | - | - | - | - | 69 |
| TOTAL ASSETS | 142,507 | 72,120 | 6,644 | 56,879 | 13,524 | 6,163 | 15,434 | 5,874 | 41,821 | - | 360,966 |
| Other information: | | | | | | | | | | | |
| Net depreciation and amortisation ⁽⁴⁾ | (4,449) | (3,381) | (291) | (1,071) | (422) | (305) | (520) | (281) | (69) | - | (10,789) |
| Impairment | (24) | - | (5) | (713) | 149 | - | (54) | (5) | (1) | - | (653) |
| Equity (non-controlling interests) | 115 | 43 | 86 | 8,899 | 552 | 407 | 897 | 258 | 521 | - | 11,778 |
| Investments in intangible assets and property, plant and equipment | 5,327 | 4,784 | 280 | 4,325 | 592 | 129 | 1,849 | 295 | 25 | - | 17,606 |
| Loans and other financial liabilities | 71,214 | 3,386 | 304 | 5,417 | 1,902 | 13,761 | 7,513 | 2,143 | 3,267 | (39,501) | 69,406 |
| - external liabilities | 63,378 | 820 | 237 | 201 | 988 | 112 | 3,165 | 303 | 202 | - | 69,406 |
| - intersegment liabilities ⁽⁶⁾ | 7,836 | 2,566 | 67 | 5,216 | 914 | 13,649 | 4,348 | 1,840 | 3,065 | (39,501) | - |

⁽¹⁾At 31 December 2021, investments in associates and joint ventures include 50.1% of CTE (the joint venture holding RTE's shares) which is part of the France – Generation and Supply segment.

⁽²⁾Financial assets and cash mainly comprise dedicated assets amounting to €31,013 million in the France – Generation and Supply segment (see note 18.1.2), the NLF receivable (see note 18.1.3) amounting to €15,986 million in the United Kingdom segment and the positive fair value of EDF Trading's derivatives, amounting to €19,605 million (in "Other activities").

⁽³⁾Other segment assets include inventories, trade receivables, other receivables and tax assets.

⁽⁴⁾Including net increases in provisions for renewal of property, plant and equipment operated under concessions.

⁽⁵⁾Sales by the "Other activities" segment include the €1,518 million trading margin realised by EDF Trading.

⁽⁶⁾The amount of intersegment liabilities corresponds to the group's centralised cash management (cash pooling by EDF SA, included in the France – Generation and Supply segment) and financing of controlled subsidiaries, particularly EDF International (Other international segment), EDF Energy (United Kingdom segment) and EDF Trading (in the "Other activities" segment).

4.2 Sales to external customers, by product and service group

The Group's sales are broken down by product and service group as follows:

- **"Generation/Supply"**: energy generation and energy sales to industry, local authorities, small businesses and residential consumers. This segment also includes EDF Trading;
- **"Distribution"**: management of the low and medium-voltage public electricity distribution networks;
- **"Other"**: services and production of equipment and fuel for reactors, energy services (district heating, thermal energy services, etc.) for industry and local authorities, and electricity generation through cogeneration and renewable energy sources (e.g. wind turbines, photovoltaic panels, etc.).

| (in millions of euros) | Generation - Supply | Distribution | Other ⁽¹⁾ | Total |
|--------------------------------------|---------------------|---------------|----------------------|----------------|
| 2022 : | | | | |
| External sales: | | | | |
| - France ⁽²⁾ | 47,087 | 17,077 | 511 | 64,675 |
| - International and Other activities | 69,086 | - | 9,715 | 78,801 |
| SALES | 116,173 | 17,077 | 10,226 | 143,476 |

| (in millions of euros) | Generation - Supply | Distribution | Other ⁽¹⁾ | Total |
|--------------------------------------|---------------------|---------------|----------------------|---------------|
| 2021 : | | | | |
| External sales: | | | | |
| - France ⁽²⁾ | 31,678 | 16,960 | 377 | 49 015 |
| - International and Other activities | 27,292 | - | 8,154 | 35 446 |
| SALES | 58,970 | 16,960 | 8,531 | 84 461 |

⁽¹⁾ "Other" groups of services include Framatome and Dalkia.

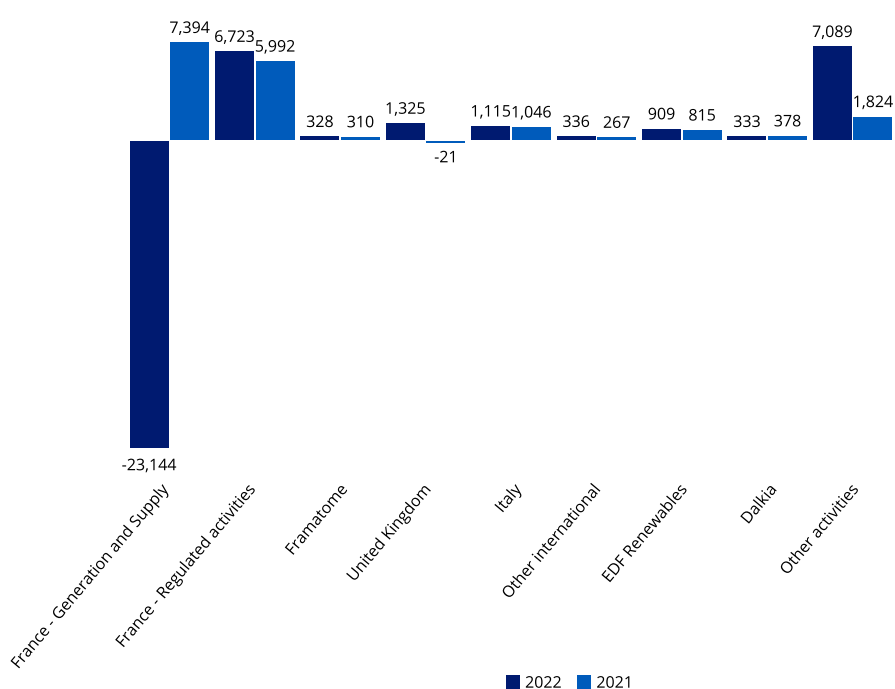
⁽²⁾ France comprises the two operating segments France – Generation and Supply and France – Regulated activities (see note 4.1).

Note 5 Operating profit before depreciation and amortisation

| (in millions of euros) | Notes | 2022 | 2021 |
|--|-------|------------------|-----------------|
| Sales | 5.1 | 143,476 | 84 461 |
| Fuel and energy purchases | 5.2 | (121,010) | (44 299) |
| External services | | (15,353) | (14 145) |
| Other purchases (excluding external services, fuel and energy) | | (4,284) | (3 698) |
| Change in inventories and capitalised production | | 9,949 | 8 987 |
| (Increase)/decrease in provisions on other external expenses | | 268 | 261 |
| Other external expenses⁽¹⁾ | | (9,420) | (8 595) |
| Personnel expenses | 5.3 | (15,236) | (14 494) |
| Taxes other than income taxes | 5.4 | (3,163) | (3 330) |
| Other operating income and expenses | 5.5 | 367 | 4 262 |
| OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION | | (4,986) | 18 005 |

⁽¹⁾ Other external expenses increased by 9.6% compared to 2021. After elimination of foreign exchange effects and changes in the scope of consolidation, the increase was 8.4%.

The breakdown of the Group's Operating profit before depreciation and amortisation by operating segment in 2022 and 2021 is as follows, in millions of euros (see note 4.1):



After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's operating profit before depreciation and amortisation saw a substantial organic decline of -128% or €(23,082) million. This is principally explained by the contributions of the France – Generation and Supply segment (€(30,534) million), Other activities (+€5,215 million), the United Kingdom (+€1,428 million) and the France – Regulated activities segment (+€731 million).

The negative operating profit before depreciation and amortisation of €(23,144) million for the **France – Generation and supply** segment (down by €30,534 million) is explained by the electricity purchases at high prices made necessary by the decline in nuclear power output (-81,7TWh), essentially due to the stress corrosion phenomenon, with an estimated impact of €(29) billion. Operating profit before depreciation and amortisation was also affected by the decline in hydropower output of around €(2.5) billion. Finally, only a limited portion of the rise in market prices could be passed on to customers, because of the exceptional measures introduced by the French government to limit the increase in sales prices to customers (the *bouclier tarifaire* tariff cap and ARENH system adaptations – see note 5.1).

In the **Other activities** segment, the +€5,215 million increase in operating profit before depreciation and amortisation is mainly explained by the significant rise in this item at EDF Trading, where it was up by €5,168 million, driven by the high business performance in an environment of high volatility across all the commodity markets and different geographical areas.

In the **United Kingdom** segment, the €1,428 million improvement in operating profit before depreciation and amortisation is principally attributable to the increase in nuclear power output (+5%). The sales and supply activity was negatively affected by price rises being only partly passed on to residential customers, despite significant raises of the tariff cap. Finally, operating expenses were lower, largely as a result of the shutdowns of the Dungeness B, Hinkley Point B and Hunterston B plants.

In the **France – Regulated activities** segment, the operating profit before depreciation and amortisation was up by €731 million, mainly due to transfers of interconnection income amounting to an estimated €1,723 million from RTE (following the CRE's decision 2022-296 of 17 November 2022, confirmed by decision 2023-50 of 31 January 2023) and an unfavourable price effect of an estimated €1 billion on purchases to compensate for network losses, reflecting changes in market prices.

5.1 Sales

Accounting principles and methods

Sales essentially comprise income from energy sales (to final customers and as part of trading activities), delivery services related to use of the transmission and distribution network, and connection services. They also comprise income from other services and deliveries of goods, mainly engineering, operating and maintenance services, services related to energy sales, design, delivery and commissioning services for power plants or their major components.

Income on energy sales is recognised as deliveries are made to customers.

The quantities of energy supplied but not yet measured and billed are calculated using consumption statistics and selling price estimates, and are recognised in sales on that basis.

Some Group entities conduct optimisation operations on the wholesale gas and electricity markets, to balance supply and demand in compliance with the Group's risk management policy. The sales concerned are recorded net of purchases. When an entity has a net short position in euros, it is included in "energy sales". A net long position in euros is included in "fuel and energy purchases".

In accordance of IFRS 15 on the principal/agent distinction, energy delivery services are recognised in sales upon delivery to the customer in the following two cases:

- when these services are not distinct from the energy supply service;
- when they are distinct from the energy supply service and the entity concerned is acting as a principal, notably because it bears the risk of execution of the service or is able to set the tariff for delivery to the final customer.

Income from connections to the French electricity network is recognised in sales at the date when the connection becomes operational.

The sales revenue from other services or deliveries of goods is recognised over time in the three following cases, based on a contractual analysis:

- when the customer simultaneously receives and consumes all the benefits generated as the service is performed by the Group (this is notably the case of operations and maintenance services);
- when the good or service to be supplied cannot be reallocated to another customer, and the Group is entitled to payment for the work done so far (this is notably the case of certain design, delivery and commissioning activities for power plants or major components designed specifically for a customer);
- when the service creates or enhances an asset (good or service) for which the customer acquires control as performance of the service progresses.

Trading activities

Sales revenues include the margin realised, essentially by EDF Trading, on energy market trading operations that fall within the scope of IFRS 9, which are recognised at fair value.

EDF Trading is the Group's trading entity. It operates on the markets on behalf of other Group entities and through trading activity for its own purposes or for non-Group entities, backed by the Group's industrial assets and within its assigned risk mandate.

EDF Trading trades on organised or OTC markets in derivatives such as futures, forwards, swaps and options.

EDF Trading undertakes purchase and sale operations on the wholesale markets in Europe and North America for:

- electricity and fuel (principally gas);
- CO₂ emission permits, weather derivatives and other environmental instruments;
- capacity guarantees for electricity production.

EDF Trading also operates in the unregulated North American markets as part of its energy supply activities.

For LNG, optimisation activities (recognised as a joint operation) and trading activities (recognised as a joint venture) are carried out through JERA Global Markets, which is jointly owned with JERA.

Capacity mechanism

Capacity mechanisms have been set up in France, the UK and Italy to ensure secure power supplies during peak periods.

French system: French law 2010-1488 of 7 December 2010 on the new organisation of the electricity market introduced an obligation in France to contribute to guaranteeing a secure power supply from January 2017.

Operators of electricity generation plants and load-shedding operators must have their capacities certified by RTE, and commit to a forecast level of availability for a given year of delivery. In return, they are awarded capacity certificates.

Meanwhile, electricity suppliers and purchasers of power to compensate for network losses (obligated actors) must have capacity certificates equivalent to consumption by their customers in peak periods. Suppliers pass on the cost of the capacity mechanism to final customers through their sale prices.

The system is completed by registers for capacity trading between actors. Capacity auctions are held several times a year.

The Group is concerned by both aspects of this system, as an operator of electricity plants (EDF SA, Dalkia, EDF Renewables), as an electricity supplier (EDF SA, Électricité de Strasbourg) and as a purchaser of power to compensate for network losses (Enedis and Électricité de Strasbourg).

As a result of the capacity mechanism review clause, in 2021 RTE published a report on the mechanism's first few years of operation and performance. On the basis of this report, on 29 November 2021 RTE submitted rule change proposals to the CRE for its opinion. In decision 2021-370 of 16 December 2021, the CRE issued a favourable opinion of these proposals and of changes to certain parameters for delivery years 2023 and 2024 (the contribution by interconnections, the extreme temperature vector and the safety coefficient). The CRE considered that the proposed changes will simplify the capacity mechanism for all actors, and improve visibility for capacity market participants. The new rules were approved by decision of the Ministry for the Ecological Transition on 21 December 2021. They set the opening date for trading of capacity guarantees for delivery years 2023 and 2024 at 1 March 2022.

Another consultation phase concerning structural changes to the French capacity mechanism has been in progress since April 2022. The future mechanism could be introduced from delivery year 2026, subject to approval by the European Commission after the necessary examination period.

For the delivery years shown below the mean market prices resulting from capacity auctions ahead of the delivery year were as follows:

| Delivery year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------|------|------|------|------|------|------|
| Price (€/kW) | 10.0 | 9.3 | 17.4 | 19.5 | 31.2 | 26.2 |

The delivery year 2023 was opened to auction in 2022, and six auctions have been held since then. These capacity auctions resulted in the following prices : €42.4/kW in March; €42.5/kW in April; €41.9/kW in June; €41.9/kW in September and €45.0/kW in October and €60.0/kW in December.

Four auctions were also held in 2022 for the delivery year 2024, with the following results: €20/kW in April and June, €34.1/kW in October, and €23.1/kW in December.

The operations are recorded as follows:

- Sales of certificates are recognised in income when the auctions or over-the-counter sales take place;
- The cost of the capacity mechanism passed on to final customers through regulated sales tariffs and market-price offers is recognised in sales revenues as and when the electricity is delivered. In addition, the ARENH price is considered to have included a capacity value since January 2017 when the capacity mechanism took effect, as the terms of transfer for the capacity guarantees associated with the ARENH scheme were defined by the CRE;
- Stocks of certificates are stated either at their certification value (*i.e.* cost of certification by RTE) or at their purchase value on the markets;
- Decreases in the stock of certificates are valued at the weighted average unit cost. The timing of recognition depends on the actor:
 - › operators of installations: when the auction sales take place;
 - › obligated actors: over the 5-month peak period;
- For operators of installations, if the effective capacity is lower than the certified capacity, a liability (accrued expenses or provision) is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation (rebalancing or settlement mechanism);

- For obligated actors, if there is a shortfall in the stocks of capacity certificates, a provision is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation;
- At the closing date, if the realisable value of the stock of capacity certificates is lower than its net book value, impairment is recognised.

British system:

The British capacity mechanism was introduced in 2014 to ensure security of electricity supply by providing a payment for reliable sources of capacity, alongside their electricity revenues, to ensure they deliver energy when needed. It is based on a system of auctions for operators, organised by the electricity system operator "National Grid" to procure capacity 4 years ahead of delivery with "top-up" actions one year ahead of delivery. Delivery years run from 1 October to 30 September. Capacity providers, which have been successful at the auctions are remunerated in the year of delivery out of a fund consisting of contributions from electricity suppliers but may be liable for penalties for failure to meet their obligations.

The electricity suppliers' contribution to this mechanism is proportional to their sales to customers in the peak period and the cost of capacity is passed on to final customers through their sale price.

EDF Energy is concerned by both aspects of this system, as an operator of electricity plants and a supplier.

For accounting purposes, the remuneration received in its capacity as an operator is recognised in sales revenues in the year of delivery, and the contribution paid to the mechanism in its capacity as an electricity supplier is recognised in energy purchases over the peak period. The cost of the capacity mechanism passed on to final customers is recognised in sales revenues as and when the electricity is delivered.

The government has implemented several changes to the detailed operation of the Capacity Market with the objective of ensuring that it continues to meet its objective in an efficient way. However, the main principles of the mechanism have remained unchanged.

The government is currently exploring options for reform of the Capacity Market to improve delivery assurance and to support alignment with net zero and its commitment to deliver a decarbonised electricity system by 2035, subject to security of supply. It may also consider further changes as part of the Review of Electricity Market Arrangements (REMA). The key measures currently under consideration include: strengthening security of supply through changes to the requirements for demonstrating satisfactory performance and increasing penalties for non-delivery at times of system stress; and aligning the Capacity Market with net zero by introducing much tighter emission limits from October 2034 for new plants.

As with previous changes to the Capacity Market, changes to the rules should apply to any new capacity agreements awarded but would not materially change the rights and obligations of capacity providers in respect of existing capacity agreements.

Italian system: A capacity mechanism was set up in 2019 using rules approved in a decree of 28 June 2019 issued by the Economic Development Ministry.

This mechanism is based on an auction process organised by TERNA, the Italian transmission grid operator, for each delivery year. Operators of existing and future production or storage units can participate in the auctions. The operators of the capacities selected are paid through a fixed premium during one year for existing capacities and 15 years for future capacities. The fixed premium is paid during the delivery year.

The selected operator must offer its capacity on the day-ahead market (Mercato del Giorno Prima) and the balancing market (Mercato per il Servizio di Dispacciamento). If the selling price on these markets reaches a level exceeding a strike price defined by the Italian Regulatory Authority for Energy, Networks and Environment (ARERA), the operator must repay the surplus to TERNA.

Two auctions were held during 2019 for delivery dates set in 2022 and 2023, and Edison won 3.8GW for 2022 and 3.3GW for 2023 for an annual price of €75,000/MW for new capacities and €33,000/MW for existing capacities. In February 2022 a new auction for 2024 was held: the capacity offered by Edison was entirely assigned for an annual price of 33k€/MW for existing plants, for a total capacity of 2.3GW.

The fixed premium is recorded in income during the corresponding delivery year, and reduced if appropriate by any repayments made to TERNA, or if the power plant is unavailable.

5.1.1 Regulatory changes in France

Regulated electricity sales tariffs in France - "Blue" tariffs

In accordance with article L. 337-4 of the French Energy Code, regulated electricity sales tariffs are set by the Ministers for Energy and the Economy following proposals by the French Energy Regulatory Commission (Commission de Régulation de l'Énergie or CRE).

France's Council of State ruled in decisions of 18 May and 3 October 2018 that the principle of regulated electricity sales tariffs is compatible with European Union law when such tariffs serve the general economic interest objective of guaranteeing consumers an electricity price that is more stable than market prices.

In accordance with European Directive 2019/944 of 5 June 2019 on common rules for the internal market for electricity, the French Energy and Climate law of 8 November 2019 authorises continuation of regulated sales tariffs, but they are reserved for residential or business consumers with a subscribed power level of up to 36kVA, provided they have fewer than 10 employees and their annual sales, income or balance sheet total is below €2 million.

Tariff changes

In accordance with article L. 337-4 of the French Energy Code, the French Energy Regulatory Commission "CRE" (*Commission de Régulation de l'Énergie*) is responsible for sending the Ministers for the Economy and Energy its reasoned proposals for regulated sales tariffs for electricity. If no objections are made within three months, the proposals are deemed to have been approved.

In a decision of 8 July 2021, in view of changes in the TURPE tariff from 1 August 2021 and in application of the Energy Code, the CRE proposed an increase of 0.48% including taxes (1.08% excluding taxes) in the "blue" tariffs for residential customers and 0.38% including taxes (0.84% excluding taxes) in the "blue" tariffs for non-residential customers. The CRE has proposed that this change should apply from 1 August 2021.

In 2022, in view of the high increases in electricity market prices, France introduced a "tariff cap" limiting the raise in regulated sales tariffs to a maximum 4% (including taxes) at 1 February 2022 for residential customers compared to the tariffs in force at 1 August 2021. This tariff cap is founded on 2 articles of the Finance Law for 2022 adopted on 30 December 2021:

- under article 29, a reduction in the TICFE tax (or CSPE) has applied since 1 February 2022 for all customers (residential and business customers, on regulated-tariff or market-price contracts), although a legal minimum level must be maintained (€1/MWh for residential and small business customers). This reduction applies to quantities of energy delivered until 31 January 2023. The new TICFE tariffs have been set by decree;
- under article 181, if the CRE, despite the reduction in the TICFE, proposes an increase in regulated sales tariffs for residential customers that exceeds 4% (including taxes) compared to the tariffs in force at 31 December 2021, as a dispensation from the Energy Code the French government may object to the proposal and through a joint decision by the Ministers for the Economy and Energy set the regulated sales tariffs, and tariffs for sales to the local distribution companies, at a lower level. If this happens, the law provides for a subsequent catch-up adjustment of regulated sales tariffs in 2023, to be smoothed over twelve months, to cover the loss of income for EDF in 2022. The same article also introduces a mechanism to compensate for losses borne by local electricity distribution companies on regulated-tariff offers and electricity suppliers on market-price offers.

On 13 January 2022 the French government announced further exceptional measures to limit the rise in electricity tariffs for consumers in 2022. The principal measures were extension of the regulated tariff increase cap of 4% (including taxes) to non-residential customers who are still eligible for the regulated tariff in mainland France and non-interconnected zones.

In a decision of 18 January 2022, the CRE proposed an increase of 35.4% including taxes (44.5% excluding taxes) in the "blue" tariffs for residential customers and 35.9% including taxes (44.7% excluding taxes) in the "blue" tariffs for non-residential customers from 1 February 2022. This proposal, which did not take account of the decree of 11 March 2022 defining the terms for EDF making 20TWh of electricity available to ARENH-eligible suppliers between 1 April 2022 and 31 December 2022 (as detailed below), was driven primarily by the significant rise in prices on the energy market. If it had taken account of the maximum decrease in the TICFE confirmed by decree 2022 - 84 of 28 January 2022, this proposal would have been for a 20% increase (including taxes) in the "blue" tariffs for residential customers and a 20.9% increase (including taxes) in the "blue" tariffs for non-residential customers. In accordance with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential customers at 4% including taxes (24.3% excluding taxes) and the increase in the "blue" tariffs for non-residential customers at 4% including taxes (23.6% excluding taxes) through tariff orders of 28 January 2022, published in the *Journal officiel* of 30 January 2022 and implemented from 1 February 2022.

In a decision of 7 July 2022, the CRE proposed an increase of 3.92% including taxes (4.10% excluding taxes) in the "blue" tariffs for residential customers and 3.56% including taxes (3.73% excluding taxes) in the "blue" tariffs for non-residential customers, to apply from 1 August 2022, principally reflecting the increase in the TURPE distribution tariff from 1 August 2022. In application of article 181 of the Finance Law for 2022 and France's tariff cap, the Ministers' decision of 28 July 2022, published in the *Journal officiel* of 31 July 2022, rejected the changes proposed by the CRE, and the regulated tariffs consequently remained unchanged at 1 August 2022.

The Finance Law for 2023, adopted on 30 December 2022, modified the Finance Law for 2022 to extend the tariff cap to all customers eligible for regulated sales tariffs in 2022, and to compensate local distribution companies for their regulated-tariff offerings and suppliers for their market-rate offerings for residential and non-residential customers eligible for regulated tariffs, *via* the compensation for public service charges (CSPE).

The comparability of sales between periods is thus affected by the tariff changes introduced since 1 January 2021, presented in the table below:

| Date of the CRE proposal | Increase in "blue" residential customer tariffs (incl. taxes / excl. taxes) | Increase in "blue" non-residential customer tariffs (incl. taxes/excl. taxes) | Date of the tariff decision | Date of application |
|--------------------------|---|---|-----------------------------|---------------------|
| 14/01/2021 | 1.61% / 1.93% | 2.61% / 3.23% | 28/01/2021 | 01/02/2021 |
| 08/07/2021 | 0.48% / 1.08% | 0.38% / 0.84% | 29/07/2021 | 01/08/2021 |
| 18/01/2022 | 4.00% / 24.3% | 4.00% / 23.6% | 28/01/2022 | 01/02/2022 |
| 07/07/2022 | No change | No change | 28/07/2022 | 01/08/2022 |
| 19/01/2023 | 15.00% / 20.00% | 15.00% / 19.9% | 31/01/2023 | 01/02/2023 |

For 2023, the French government decided to prolong the tariff cap, limiting the increase in regulated electricity sales tariffs to 15% (including taxes) above prices at 31 December 2022, for all categories of eligible consumers.

Article 181 of the Finance Law for 2023, adopted on 30 December 2022, thus stipulates that if the reasoned proposals for regulated sales tariffs presented by the CRE lead to tariffs defined under article R.337-18 of the same code that are more than 15% higher than the tariffs applicable at 31 December 2022, the Ministers for the Economy, Energy and the Budget may object to the CRE's proposals and by joint decision set a lower level accounting for 95% of the tariff applied for customers' consumption, in order to serve the objective of price stability.

In such an event, the law defines a mechanism to compensate EDF and the local distribution companies for the loss of income on their regulated-tariff offerings, and to compensate all suppliers for the loss of income on market-price offerings for residential and non-residential customers eligible for regulated sales tariffs, *via* the compensation for public service charges (CSPE). EDF therefore recognised a receivable of €1,571 million in 2022 (see notes 5.5.1 and 13.5.4).

In a decision of 19 January 2023, the CRE proposed an increase of 99.36% including taxes (108.91% excluding taxes) in the "blue" tariffs for residential customers and 97.94% including taxes (106.88% excluding taxes) in the "blue" tariffs for non-residential customers from 1 February 2023. This proposed increase was primarily justified by:

- the exceptionally high prices on the wholesale markets for delivery in 2023, which have been at record levels for more than a year;
- the outstanding consequences of the tariff cap applied in 2022, to reflect the ultimate reality of the costs involved in the "cost stacking" including the effects of the additional 20TWh of ARENH supplies.

In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential and non-residential customers at 15% including taxes (20% and 19.9% respectively excluding taxes) through tariff orders of 30 January 2023, published in the *Journal officiel* of 31 January 2023 and implemented from 1 February 2023.

"TURPE" Network access tariffs

The costs borne by the network operators Enedis and RTE for management of the public electricity distribution and transmission networks are covered, provided they are in line with the costs of an efficient network operator, by the "TURPE" tariffs for using the networks, as stipulated in Articles L. 341 - 2 and following of the French Energy Code.

These tariffs apply to users connected to the distribution and transmission networks.

TURPE 6 Distribution and Transmission tariffs

The CRE issued two decisions of 21 January 2021 (published in France's *Journal Officiel* 0096 of 23 April 2021) on the TURPE 6 Transmission (high voltage) and TURPE 6 Distribution (medium voltage – low voltage), after the Higher Energy Council (*Conseil supérieur de l'énergie*) gave its approval. These tariffs apply from 1 August 2021 for a period of approximately 4 years.

For distribution expenses, in its tariff decision n°2021 - 13 of 21 January 2021, the CRE set the margin on assets at 2.5% and the additional return on regulated equity at 2.3%. The average tariff increase was +0.91% at 1 August 2021. In decision n°2022-158 of 9 June 2022, the CRE set the increase in the average TURPE Distribution tariff from 1 August 2022 at +2.26%.

For transmission expenses, in its tariff decision n°2021 - 12 of 21 January 2021, the CRE set a nominal pre-tax weighted average cost of capital (WACC) of 4.6% for the return on RTE's regulated asset base. The average tariff increase was +1.09% at 1 August 2021. In decision n°2022-157 of 9 June 2022, the CRE set the change in the average TURPE Transmission tariff from 1 August 2022 at -0.01%.

In its decision 2022 - 317 of 1 December 2022, the CRE adapted the price regulation framework to make the TURPE 6 (high voltage) and TURPE 6 (medium voltage – low voltage) tariffs incorporate the impact of wholesale electricity prices on the business of RTE and Enedis, particularly by refocusing certain incentives on purchase volumes and losses, rather than on prices.

In another decision, 2022 - 323 of 8 December 2022, the CRE decided to put in place an exceptional advance payment of part of the balance of RTE's income and expense adjustment account (CRCP). In a context of significant growth and volatility in wholesale electricity prices at European level, this surplus paid into the CRCP for 2022 essentially results from particularly high interconnection income. This payment will have a direct effect for users connected to the public transmission network operated by RTE, who will receive a one-off payment from RTE by 15 March 2023. Enedis, as the principal user of RTE's network, will be a beneficiary of this advance payment. The Group has therefore recognised a sales credit receivable from RTE amounting to €1,723 million (see note 13.3.4).

Supplier commissioning

In application of the CRE's decision of 18 January 2018, energy suppliers receive remuneration from distribution network operators for the service of managing single-contract customers on their behalf.

The commissioning principle is identical for all suppliers selling single-contract market-price offers. Only regulated electricity tariffs have given rise to slightly lower commissions (€4.50 instead of €6.80 per point of delivery until 1 August 2019), with progressive reduction of this difference to zero by 1 August 2022.

For remuneration of past customer management charges (prior to 1 January 2018), the CRE's decision set an amount it considered as a cap that can be passed on through the TURPE tariff.

However, Law 2017 - 1839 of 30 December 2017 introduced a measure intended to rule out the possibility of suppliers receiving remuneration from network managers for past customer management services. On 23 December 2016, ENGIE brought an action against Enedis before the Paris Commercial Court claiming such remuneration. In the course of this litigation, ENGIE filed an application for a preliminary ruling on constitutionality in a challenge to the arrangements introduced by the French "Hydrocarbons" law ending the possibility of obtaining supplier commissioning for past services. These arrangements were validated by the Constitutional Council in its decision 2019 - 776 of 19 April 2019. The proceedings before the Paris Commercial Court ended on 11 April 2022, the Court having

formally declared the action extinguished as the time limit was exceeded.

Electricity Equalisation Fund

The TURPE tariff for the medium and low-voltage network is identical for every electricity network operator. It is determined on the basis of forecast expenses to be borne by Enedis, provided they correspond to an efficient network operator, and forecasts of the number of consumers connected to Enedis' networks, their consumption, and the power level subscribed.

As this tariff cannot always cover the specific needs of certain service zones, the Electricity Equalisation Fund (FPE) exists to compensate for disparities in network operating conditions. The Energy Code requires electricity distribution costs resulting from public network operation to be shared between public distribution network operators. There are two equalisation mechanisms: one based on fixed amounts, the other set by the CRE based on analysis of the network operators' accounts. The calculation method for the fixed-rate allocation mechanism is defined by decree and ministerial order. The EDF entities concerned by the Electricity Equalisation Fund are Enedis, Electricité de Strasbourg and SEI.

On 13 July 2022, the CRE published its decision setting the final amount of the allocation from the Electricity Equalisation Fund (Fonds de Péréquation de l'Electricité) to SEI, following analysis of the network operators' accounts. SEI's allocation is set at €158.1 million for 2022.

For the fixed-amount mechanism, the ministerial order of 30 November 2022 set the 2022 contributions payable and allocations receivable from the Electricity Equalisation Fund for distribution network operators. The fixed contribution due by Strasbourg Electricité Réseaux and Enedis amount to €1.6 million and €27.41 million respectively. Enedis is also the CRE's designated operator for collection and payment of Electricity Equalisation Fund contributions from all the Local Distribution Companies.

ARENH

The ARENH (*Accès régulé à l'énergie nucléaire historique*) scheme for regulated access to historic nuclear power, set up in 2011 and due to end on 31 December 2025, allows alternative suppliers to purchase electricity from EDF to supply their final customers, after signing a framework agreement, at a regulated price for set quantities determined under the provisions of the French Energy Code. This scheme is also open to network operators to cover their energy losses.

The ARENH price, determined by the Ministers for Energy and the Economy following a proposal by the CRE, has been fixed at €42/MWh since January 2012. This includes delivery of the electricity and has incorporated the associated capacity guarantees since 2017.

The maximum total ARENH volume that can be sold by law to suppliers who apply to the scheme to cover the needs of their final customers is set by ministerial order and cannot exceed a legal ceiling. Until 31 December 2019, the ceiling was 100TWh per year. It was then raised to 150TWh by the energy and climate law of 8 November 2019.

The "MUPPA⁽¹⁾" law of 16 August 2022 law introducing urgent measures to protect purchasing power reduced this legal ceiling to 120TWh. The MUPPA law also set a minimum ARENH price of €49.50/MWh, although its application is conditional on prior approval by the European Commission.

On 13 January 2022 the French government announced further exceptional measures to limit the rise in electricity tariffs for consumers in 2022. These measures included EDF making an additional ARENH volume of 20TWh available to eligible suppliers over the period 1 April to 31 December 2022, at the price of €46.20/MWh.

The terms for application of this measure were laid down in a Decree of 11 March 2022 and four ministerial orders. Eligible suppliers wishing to benefit from these additional volumes at the price of €46.20/MWh during the period 1 April to 31 December 2022 were required by the decree to sell EDF an equivalent volume to the volume sold to them by EDF under the ARENH scheme, at the price of €256.98/MWh (the average wholesale market price between 2 and 23 December 2021 for baseload electricity supplies in mainland France in 2022). To allocate the additional volumes between suppliers, the CRE applied the same method as for the delivery period that began on 1 January 2022. In practice, the CRE gave notice of 19.5TWh of additional ARENH volumes allocated.

Applying the procedure set out in its decision 2022-98 of 31 March 2022, the CRE set up a mechanism to monitor and control the methods used by eligible suppliers to pass on the effect of the reduced sourcing cost (resulting from allocation of additional volumes at the price of €46.20/MWh) through their customer invoicing. In accordance with the above CRE decision, EDF was obliged to replicate the terms imposed on alternative suppliers in its own market-price contracts.

This measure thus had two main effects for the Group:

- it was obliged to purchase the additional 19.5TWh of electricity from eligible suppliers at the price of €256.98/MWh (€5.011 billion), and concurrently sell them equivalent volumes of electricity at the price of €46.20/MWh (€900 million), giving a net cost (including the cost of capacity guarantees) of €4.1 billion for the period 1 April 2022 to 31 December 2022; and
- the sale prices to customers on both regulated-tariff and market-price contracts were lower, due to the increased ARENH portion in relation to the market-price portion in the cost stacking system used to calculate regulated tariffs and market-price offers. This measure had a limited incremental impact in 2022 on regulated-tariff contracts because of application of the tariff cap described above, which already limited increases in the regulated electricity tariffs, but it also limits the difference between the frozen tariff and the tariff that would have applied in the absence of the tariff cap in 2022.

In its press release of 13 January 2022, EDF announced that it would take all appropriate measures to protect its interests in view of the decree of 11 March 2022 and the four orders making up the rest of this measure.

(1) Loi portant Mesures d'Urgence pour la Protection du Pouvoir d'Achat

As the overall measure generated significant prejudice for the company, EDF made a request to the State in May 2022 for withdrawal of the Decree of 11 March 2022 and the associated orders. The State did not reply within 2 months, indicating an implicit rejection, and on 9 August 2022 EDF filed an appeal against the decree and orders before the Council of State, on the grounds that the State had exceeded its powers.

In parallel, EDF sent the Prime Minister a prior claim for compensation for the prejudice resulting from introduction of this government measure, estimated at €8.34 billion. The State did not reply within 2 months, indicating an implicit rejection, and on 27 October 2022 EDF filed a claim before the Paris Administrative court for full reparation by the State for the prejudices borne as a result of the government measure.

The purpose of this claim before the Paris Administrative Court is to obtain compensation from the State for the prejudices borne by EDF as a direct result of introduction of the Measure. The total amount of these prejudices is estimated at €8.34 billion, the principal causes being:

- the cost of the operation through which EDF purchased volumes of electricity (at the price of €256.98/MWh) which it then sold on to alternative suppliers (at the price of €46.2/MWh), and the associated capacity guarantees in application of the Measure;
- the direct and certain effects of the Measure on the level of regulated electricity sales tariffs (EDF being France's principal supplier of regulated-tariff electricity) due to the calculation methods for these tariffs defined in the French Energy Code;
- the direct and certain effects of the Measure's repercussions on the prices of EDF's market-price contracts in application of the CRE's decision of 31 March 2022 setting out the terms for passing on the effects of the Measure to customers through power supply contracts.

On 3 February 2023, the Council of State rejected EDF's appeal filed on 9 August 2022 (see note 2). The proceedings relating to EDF's claim before the Paris Administrative court for full reparation from the State for the prejudices borne by EDF as a result of the Measure are continuing.

Regarding ARENH allocations for 2022, in decision 2022 - 287 of 10 November 2022, as required by the Energy Code (article R.336 - 14 of the Energy Code modified by decree 2022 - 1380 of 29 October 2022), the CRE set out the method for allocating ARENH volumes if applications exceed the maximum total volume defined for 2023. In view of the current exceptional crisis in the electricity market, it also introduced reinforced checks and special rules for accepting the ARENH volumes applied for by suppliers.

The CRE stated that EDF-controlled subsidiaries' applications taking the total volume above limit would be fully curtailed (this does not apply to network operators) and they could enter into contracts with the parent company that replicate the ARENH scheme and terms of supply, particularly the curtailment rate for alternative suppliers.

During 2022, the CRE notified EDF that ARENH deliveries to three alternative suppliers had ceased due to their court-ordered liquidation or suspension of their governmental licence to purchase electricity. 21.9MWh of volumes in the May 2022 ARENH session were not delivered by EDF due to (i) defaulting suppliers being placed in liquidation and (ii) non-implementation of the procedure to transfer their ARENH entitlements to the suppliers of last resort, and the CRE reallocated all these volumes to the November session.

ARENH applications during the November 2022 session for delivery in 2023 totalled 148.87TWh (excluding applications from EDF subsidiaries and network operators). The CRE scaled down certain applications (- 0.56TWh in total), bringing the total application volumes validated by the CRE to 148.30TWh, and curtailed each supplier's application, within a total limit of 100TWh. Further volumes were also sold by EDF to its subsidiaries through contracts that replicate the ARENH scheme, and to compensate for network electricity losses (26.6TWh).

Regarding the possibility of a transition to new regulations governing EDF's nuclear power plants, as announced in the draft multi-year energy programme (PPE) published on 25 January 2019, in January 2020 the French government launched a call for contributions regarding the fundamental findings driving the plan to reform the economic regulations for existing nuclear facilities, and its construction and operating principles. The proposed new regulations would replace the ARENH scheme. Like many other actors in the sector, the EDF group participated in this consultation, which ended on 17 March 2020. France's Minister for the Ecological and Inclusive Transition and Minister of the Economy and Finance then commissioned the CRE to carry out an assessment of the costs borne by the nuclear operator, and to determine fair remuneration for its nuclear activities under the government's potential future regulations for existing nuclear facilities. There have been no significant developments in the terms and conditions of these potential new regulations since 2021 (see note 10.8).

5.1.2 Sales

Sales are comprised of:

| (in millions of euros) | 2022 | 2021 |
|--|----------------|---------------|
| Sales of energy and energy-related services | 129,831 | 77,432 |
| – energy ⁽¹⁾ | 109,281 | 56,866 |
| – energy-related services (including delivery ⁽²⁾) | 20,550 | 20,566 |
| Other sales of goods and services | 6,607 | 5,511 |
| Trading | 7,038 | 1,518 |
| SALES | 143,476 | 84,461 |

⁽¹⁾Sales of energy include €12,229 million of sales related to optimisation operations on the wholesale gas and electricity markets in 2022 (€1,623 million in 2021). These operations are carried out by certain Group entities to balance supply and demand, in compliance with the group's risk management policy. In 2022, the principal operating segments with a net short position in euros on the markets are France – Generation and supply (gas), Italy (electricity) and Dalkia (electricity). In 2021, the segments were France – Generation and supply (gas) and Italy (electricity).

⁽²⁾Delivery services included in this item concern the distribution network operators Enedis, Electricité de Strasbourg and EDF SA for non-interconnected zones. However, delivery services concerning EDF Energy and Edison are included in Sales of energy, because those entities are classified as the principal under IFRS 15 for both supply and delivery. The delivery services by EDF Energy and Edison have no impact on net income because they are included in "Transmission and delivery expenses" in note 5.2.

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's sales for 2022 were up by 69.4% or €58.6 billion. Most operating segments were concerned by this increase, which reflects the rise in energy prices and generally had neutral or moderate, if not negative, effects on EBITDA. It was particularly marked in the France – Generation and Supply segment (+€15.2 billion), Italy (+€18 billion), Other activities (+€15.5 billion), the United Kingdom (+€6.2 billion), the Other international segment (+€1.9 billion), and Dalkia (+1.3 billion). Sales by the segments with less or little exposure to energy market price effects (EDF Renewables, Framatome) were higher than in 2021.

Sales by the **France – Generation and supply** segment showed organic growth of +€15.2 billion. This increase is mainly explained by price effects estimated at +€7.2 billion, although they were limited by the government's tariff cap measures and the passing on to customers of the effects of the additional ARENH allocation. Volume effects (associated with the weather, portfolio effects, and a downturn in consumption, especially in the final quarter of 2022) are estimated at around €(1.2) billion. Sales also benefited from the impact of resales of electricity covered by purchase obligations (+€4,956 million), principally attributable to higher market prices (the effect on operating income before depreciation and amortisation was neutral due to the CSPE compensation mechanism covering expenses related to purchase obligations). Sales by this segment also include +€895 million increase in revenues from additional ARENH sales to alternative suppliers (with a negative effect on operating income before depreciation and amortisation – see notes 5 and 5.1.1). Finally, the segment's sales growth was also accentuated by the good performance of energy aggregation subsidiaries, which achieved +€2,404 million (with no significant impact on operating income before depreciation and amortisation).

The +€18 billion organic increase in the **Italy** segment's sales comprises €13.4 billion contributed by the Gas activities, mainly due to favourable price effects, and secondarily a rise in volumes sold in the Electricity activities, which contributed €4.6 billion, mainly due to price effects.

The +€15.5 billion organic increase in sales by the **Other activities** segment compared to 2021 essentially concerned the gas activities (+€10 billion), supported by the rise in wholesale gas prices and volumes sold, and EDF Trading's trading margin (+€5.5 billion) which increased due to the trading performance in Europe and the United States in a high-volatility environment on all commodity markets.

The +€6.2 billion organic increase in the **United Kingdom** segment's sales is principally attributable to the impact of rising energy prices and higher nuclear power output, which was up by +1.9TWh as a result of good plant availability and a lighter maintenance programme, despite the shutdowns of Hunterston B in January 2022 and Hinkley Point B in August 2022. Support measures for BtoB and BtoC activities introduced by the UK government from September 2022 are paid directly by the State to final customers, and thus have no impact on the level of sales recognised under IFRS 15.

The +€1.9 billion organic increase in sales by the **Other international** segment principally reflects the rise in sales in Belgium (€1.8 billion, essentially by Luminus). This development resulted from price effects relating to both electricity and gas.

Sales by **Dalkia** showed an organic increase of €1.3 billion, mainly driven by the increase in gas prices. Sales also benefited from dynamic business activity in the United Kingdom and France.

5.2 Fuel and energy purchases

Fuel and energy purchases comprise:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|---|------------------|-----------------|
| Fuel purchases used – power generation ⁽¹⁾ | (34,509) | (14,973) |
| Energy purchases ⁽¹⁾ | (81,943) | (21,417) |
| Transmission and delivery expenses | (6,142) | (8,088) |
| Gain/loss on hedge accounting | (6) | (10) |
| (Increase)/decrease in provisions related to nuclear fuels and energy purchases | 1,590 | 189 |
| FUEL AND ENERGY PURCHASES | (121,010) | (44,299) |

⁽¹⁾Fuel purchases used and Energy purchases include respectively €2,927 million and €41,458 million for optimisation operations on the wholesale gas and electricity markets in 2022 (€864 million and €4,167 million in 2021). In 2022 the principal operating segments with net long positions in euros on the markets are France – Generation and supply (electricity), United Kingdom (gas and electricity), Other international (Luminus – gas and electricity) and Dalkia (gas). In 2021, the same segments were concerned.

Fuel purchases used include costs relating to raw materials for energy generation (principally nuclear fuels and fissile materials, gas, and a non-significant proportion of coal and oil), purchases of services related to the nuclear fuel cycle, and costs associated with environmental schemes (mainly greenhouse gas emission rights and renewable energy certificates).

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's fuel and energy purchases were up by €76.6 billion from 2021, principally in the France-Generation and Supply segment (€42.2 billion, essentially electricity purchases), Italy (€17.7 billion, essentially gas purchases included in "Fuel purchases used - power generation"), the Other activities segment (€9.8 billion, mainly in the gas activities), and the United Kingdom (€5 billion, essentially electricity purchases). In France, this increase is principally explained by high-price market, purchases, a variation of around €30 billion made necessary by the lower level of nuclear power output (- 81.7TWh, particularly due to the stress corrosion phenomenon); it also includes purchases made for the purpose of the specific additional ARENH scheme (€5 billion in 2022, see note 5.1.1).

The value of energy purchases made under the purchase obligation system in France (included in the "Energy purchases" line) was down slightly, due to a volume effect of -8%.

5.3 Personnel expenses

Personnel expenses comprise:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|-----------------|-----------------|
| Wages and salaries | (10,254) | (9,351) |
| Social contributions | (2,208) | (2,059) |
| Employee profit sharing | (333) | (319) |
| Other contributions related to personnel | (352) | (350) |
| Other expenses linked to short-term benefits | (226) | (219) |
| Short-term benefits | (13,373) | (12,298) |
| Expenses under defined-contribution plans | (1,096) | (1,029) |
| Expenses under defined-benefit plans | (855) | (1,003) |
| Post-employment benefits | (1,951) | (2,032) |
| Other long-term benefits | 121 | (132) |
| Termination payments | (33) | (32) |
| Other personnel expenses | 88 | (164) |
| PERSONNEL EXPENSES | (15,236) | (14,494) |

Excluding foreign exchange effects and changes in the scope of consolidation, personnel expenses increased by +4.2% from 2021.

The increase in wages and salaries relates to the effects of inflation-related pay measures introduced in the Group's various entities in 2022.

Personnel expenses under defined-benefit pension plans decreased following the pension plan reform at EDF Energy (see note 16).

Personnel expenses for other long-term benefits include the favourable effect of the higher discount rate applied in France (see note 16.1.3).

Average workforce comprise:

| | 2022 | 2021 |
|--------------------------|----------------|----------------|
| IEG status | 94,232 | 94,775 |
| Other | 70,796 | 68,648 |
| AVERAGE WORKFORCE | 165,028 | 163,423 |

Average workforce numbers for the controlled entities and joint operations are reported on a full-time equivalent basis.

A more detailed presentation of workforce categories can be found in section 3.3.3.9, "Detail of Group's workforce" of the 2022 Universal Registration Document.

5.4 Taxes other than income taxes

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--------------------------------------|----------------|----------------|
| Payroll taxes | (310) | (301) |
| Energy taxes | (1,623) | (1,672) |
| Other non-income taxes | (1,230) | (1,357) |
| TAXES OTHER THAN INCOME TAXES | (3,163) | (3,330) |

After elimination of changes in foreign exchange rates and scope of consolidation, taxes other than income taxes decreased by 6.2% compared to 2021, principally due to lower generation taxes introduced in France's economic recovery plan.

Taxes other than income taxes mainly concern France and essentially comprise land tax and the French business taxes on land and value added.

Inframarginal price cap on electricity production (CRI)

On 6 October 2022 the European Union adopted a regulation for harmonised action to address the energy price crisis. Among other measures, this regulation sets targets for reducing energy consumption during the winter of 2023, and introduces state aid for businesses and households, funded by a windfall tax on the fossil fuel sectors, and an inframarginal price cap on electricity production.

This inframarginal price cap is a compulsory tax measure requiring electricity producers to pay to the State all revenues above a threshold expressed in €/MWh. Under the EU regulation, this cap is applicable from 1 December 2022 to 30 June 2023 with a threshold of €180/MWh, but many EU member states have decided to lengthen the application period and set different thresholds, well below the EU level, for different generation technologies.

In the EDF group, this regulation mainly concerns activities in France, Belgium and Italy.

In France, a 90% tax applies to inframarginal rents during three periods: July - November 2022, December 2022-June 2023, and July - December 2023. Any deficit in one period may be carried over to the next.

Separate inframarginal rent thresholds (in €/MWh) are set for each electricity generation technology (8 different categories), principally €90/MWh for nuclear power, €100/MWh for wind and solar power, €80-€140/MWh for hydropower (depending on the power of each plant). France has also opted to tax gas-fired electricity generation plants (including cogeneration plants), which are subject to caps of €40-€110/MWh, plus fuel costs.

Consequently, in the EDF group in France, the inframarginal price cap concerns EDF SA and the French entities of the Dalkia group (€14 million), and the EDF Renewables group (€37million), respectively for their cogeneration and renewable energy output in 2022.

EDF SA's inframarginal rent was substantially negative for the first cap period in 2022, and in December 2022 in the second period, in line with the purchases made on high-price markets due to the significant decrease in nuclear power output (-€81.7TWh). Consequently, no tax on inframarginal rents is payable for electricity production in 2022.

Finally, the EDF group is also subject to this EU regulation outside France, mainly in Belgium, where it paid tax of €49 million on nuclear and renewable power generation in 2022 in application of a 100% tax above a cap of €130/MWh. In Italy, the Edison group was principally concerned by additional income tax measures (see note 9).

5.5 Other operating income and expenses

Other operating income and expenses comprise:

| <i>(in millions of euros)</i> | Notes | 2022 | 2021 |
|--|--------------|-------------|--------------|
| Operating subsidies | 5.5.1 | 1,055 | 5,685 |
| Net income on deconsolidation | 5.5.2 | 168 | 302 |
| Gains on disposal of fixed assets | 5.5.2 | (167) | (29) |
| Net increase/decrease in provisions on current assets | 5.5.3 | (307) | 124 |
| Net increase in provisions for operating contingencies and losses ⁽¹⁾ | | (1,059) | (381) |
| Other items | 5.5.4 | 677 | (1,439) |
| OTHER OPERATING INCOME AND EXPENSES | | 367 | 4,262 |

⁽¹⁾ see notes 15.1.1.1 and 17.2.

5.5.1 Operating subsidies

This item mainly comprises the subsidy received or receivable by EDF in respect of the compensation for public energy service charges, reflected in the financial statements through recognition of income of €808 million for 2022 (€5,472 million in 2021). The public service charges to be covered for purchase obligations decreased substantially, and were negative in 2022 because market prices were very high, generally much higher than the price of EDF's purchase obligations. However, the public service charges to be covered in 2022 include an amount of €1,571 million in compensation for the lower sales revenues resulting from limits on the sale prices to final customers introduced by the authorities through tariff caps for electricity and gas (see note 5.1.1).

Compensation for public energy charges (CSPE) (France)

Mechanism

The compensation mechanism for public energy service charges (*compensation des Charges de Service Public de l'Energie*) resulted from a reform introduced by France's amended finance law for 2015, published in the *Journal officiel* on 30 December 2015. Under the legislative and regulatory framework, since 2016, public energy service charges (electricity and gas) were to be compensated. Compensation initially came from two State budget items, a special "energy transition" item and a "public energy service" item, but since 1 January 2021 public energy service charges have been compensated entirely through the general budget.

In compensation for the 2022 charges, France's initial finance law for 2022 introduced a €8.4 billion "public energy service" item in the general budget, to cover additional costs incurred on support contracts (purchase obligations and additional remuneration) for renewable energies and biogas, expenses associated with the electricity and gas tariff caps (see note 5.1.1) solidarity charges borne by gas and electricity suppliers, costs associated with support for non-renewable energy production (essentially cogeneration), and the cost of applying the standard national tariffs to zones that are not connected to France's mainland network.

Income generated by the domestic tax on the final consumption of electricity (TICFE), also named the Compensation for Public Electricity Charges (CSPE) on customer invoices, the Compensation for Public Electricity Charges (CSPE) goes directly into the general budget. The TICFE/CSPE tax is collected directly from final consumers of electricity in the form of an additional levy on the electricity sale price (collected by the suppliers), or directly from electricity producers that produce electricity for their own uses.

The level of this tax was set in 2016 at a full rate of €22.5/MWh, and eight reduced rates ranging from €12/MWh to €0.5/MWh depending on criteria of electro-intensiveness, business category and the risk of carbon leakage from installations (the risk of industries relocating to countries where greenhouse gas emissions are higher due to their electricity mix). It remained at that level until the end of 2021. France's electricity tariff cap then effectively reduced the tax to its minimum level of €1/MWh for residential customers and €0.5/MWh for business customers.

In accordance with decree 2016 - 158 of 18 February 2016 concerning compensation for public service energy charges, unusually, the CRE published two decisions in 2022: the first (2022 - 202) on 13 July and the second (2022 - 272) on 3 November, both setting out a forecast of EDF's public service charges for 2023, a revised forecast of charges for 2022, and the actual charges recorded for 2021. The CRE was obliged to update its July 2022 forecasts in November due to significant changes in key parameters.

5.5.2 Net income on deconsolidation and gains on disposal of fixed assets

In 2022, net income on deconsolidation and gains on disposal of property, plant and equipment mainly includes gains on sales of EDF Renewables' generation assets as part of the Development and Sale of Structured Assets (DSSA) activities, amounting to €192 million (€245 million in 2021).

In 2021, it also included gains on sales of real estate assets in France and the gain on disposal of IDG (a gas distribution network in Italy) (see note 3.1.2).

5.5.3 Net increase and decrease in provisions on current assets

In 2022, impairment and net reversals of impairment on current assets principally concern trade receivables in the United Kingdom and Belgium (see note 13.3).

5.5.4 Other items

Other items mainly include costs relating to energy savings certificates used or consumed during the year, losses on non-recoverable operating receivables, French hydropower concession fees and additional remuneration paid to producers of electricity from renewable sources in France. The favourable change in other income and expenses in 2022 is principally explained by abolition of the cap on credit notes related to producers' additional remuneration, corresponding to the impact of the amended Finance Law (article 38 of the Amended Finance Law for 2022 and the order of 28 December 2022, published in the *Journal officiel* of 31 December 2022) and the rise in spot prices, which generated negative subsidies for producers which they must now repay.

The additional remuneration paid to electricity producers using renewable energies was introduced by France's law on the Energy Transition for green growth. It is a support mechanism intended to guarantee reasonable remuneration for producers who sell their energy directly on the markets, by compensating for the differential between the revenues from those sales and a reference amount. Conversely, when these revenues are higher than the reference amount, the producer must repay the differential received. This mechanism complements the purchase obligation system in France.

From the first half of 2020, other items also include income and expenses related to closure of the Fessenheim plant.

Closure of Fessenheim nuclear power plant

In accordance with the application for termination of operations and the declaration of the permanent shutdown of both reactors at Fessenheim nuclear power plant sent by EDF to the Minister for the Ecological and Inclusive Transition and to the ASN on 30 September 2019, EDF shut down reactor 1 on 22 February 2020 and reactor 2 on 30 June 2020.

On 27 September 2019, due to the cap on nuclear power output set by the "energy transition for green growth" law of 17 August 2015, the French State and EDF signed a protocol agreement whereby the State will compensate EDF for the early closure of Fessenheim.

The compensation paid under the terms of this protocol comprises:

- Initial instalments to compensate for expenses incurred after the closure of the plant (end-of-operations expenditure, BNI taxes, dismantling costs and staff redeployment costs), which will be paid over a 4-year period following the closure. An amount of €370 million was received on 14 December 2020 (see note 13.5);

This compensation is recognised as income in profit and loss as and when the associated costs are incurred;

- Subsequent payments corresponding to the lost income that would have been generated by future power generation up until 2041, based on Fessenheim's previous output figures and calculated "ex post" on the basis of nuclear power sale prices, particularly observed market prices. There is no reason to recognise such income in the financial statements at this stage.

Since its decoupling from the network, the Fessenheim plant has entered a post-operating phase that will last approximately five years. During that period, units 1 and 2 will continue to be operated and maintained as "defueled core" and "evacuated fuel" reactors. This will require a series of technical and administrative operations. A significant milestone was reached on 18 October 2021 when the last two packages of spent fuel were dispatched from Fessenheim unit 1 to the Orano site at La Hague. The dismantling decree for Fessenheim is expected to be issued in 2026.

The post-operating expenses and income for these two reactors mainly comprise:

- expenses of €98 million (salaries and social security charges for labour at the site amounting to €48 million, purchases of goods and services amounting to €47 million, taxes other than income taxes, mainly payroll taxes, energy taxes and local taxes);
- the compensation defined in the protocol for expenses that will be incurred after the closure, amounting to €46 million, recognised as an operating subsidy in the income statement under the methods explained above.

Energy savings certificates

Accounting principles and methods

In France, the Law of 13 July 2005 introduced a system of energy savings certificates. Suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level became subject to energy savings obligations, initially for a three-year period.

To meet this obligation, three sources are available to the EDF group: supporting consumers in their energy efficiency operations, funding State-approved energy savings certificate schemes, and purchasing certificates on the secondary market.

Expenses incurred for this purpose are recorded in expenses of the year concerned, in "Other operating income and expenses". Expenses in excess of the accumulated obligation at year-end are included in inventories and may be used to cover the obligation in later years.

A provision is recognised if the volume of energy savings certificates obtained is lower than the cumulative energy savings obligation at the year-end. The amount of the provision is equal to the cost of actions still to be taken to extinguish the obligations related to the energy sales made.

Energy saving regulations in France

The fourth period of France's energy savings certificates scheme (2018 - 2021) ended on 31 December 2021. Despite the substantially higher energy savings targets, the EDF group met its obligation and had a stock for the start of the fifth period.

Decree 2021 - 712 on the fifth period of the energy savings certificates scheme (2022-2025) was published in the *Journal officiel* of 5 June 2021. The decree made the scheme more effective (for example by significantly reducing special measures and bringing calculations close to the real savings), increased funding for very vulnerable households (higher obligations intended to benefit households in situations of energy poverty, restriction of the scope to very vulnerable households, an increase in the penalties in this category to €20/MWhc) and encouraged development of carbon-free energies:

- the overall obligation was increased by 17.2% to 2,500TWhc for this period (obligations intended to benefit households in situations of energy poverty: +37% to 730TWhc, "standard" obligations: +11% to 1,770TWhc);
- the Energy Savings Certificate coefficient (MWhc to be produced per MWh of energy sold) was reduced by 10.2% for electricity and increased by 51.8% for gas;
- for electricity and gas, the threshold below which no energy savings certificates are required is being progressively reduced from the current 400GWh/year to 300GWh/year in 2022, 200GWh/year in 2023 and 100GWh/year in 2024 and subsequent years.

However, given the low level of market prices observed in the first few months of the fifth period of the energy savings certificate scheme (the first half of 2022), the number of new energy savings projects decreased significantly. To launch a new dynamic, the DGEC decided to revise the scheme obligations upwards for the fifth period, through decree 2022 - 1368 of 27 October 2022.

This new decree officially raised the obligations for the fifth period (2022-2025) as follows:

- "Standard" obligation: 1970TWhc vs 1770TWhc initially, and +200TWhc for the period 2023 - 2025;
- "Energy poverty" obligation: 1130TWhc vs 730TWhc initially, and +400TWhc for the period 2023 - 2025.

The obligation for the fifth period of the energy savings certificate scheme (2022 - 2025) is thus significantly higher than in the fourth period (2018-2021) (from 3100TWh versus 2133TWh).

Note 6 Net changes in fair value on energy and commodity derivatives, excluding trading activities

Accounting principles and methods

This item essentially consists of changes over the period in the fair value of derivatives used for economic hedging of commodity purchases or sales that are not eligible for hedge accounting as defined in IFRS 9, and are therefore included directly in profit and loss. The Group report these changes in a specific line of the income statement, "Net changes in fair value on Energy and Commodity derivatives, excluding trading activities" below the operating profit before depreciation and amortisation.

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|--------------|--------------|
| NET CHANGES IN FAIR VALUE ON ENERGY AND COMMODITY DERIVATIVES, EXCLUDING TRADING ACTIVITIES | (849) | (215) |

Net changes in fair value on Energy and Commodity derivatives, excluding trading activities, stood at €(849) million at 31 December 2022 after €(215) million at 31 December 2021, principally reflecting the high price volatility on the commodity (electricity and gas) markets.

Note 7 Other income and expenses

Other income and expenses amount to €(687) million for 2022. They principally comprise:

- exceptional additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR, totalling €(638) million (these are defined by IAS 16.22 as abnormal costs and cannot be included in the cost of assets in progress);
- the gain on sale of EDF Energy Services LLC (the energy sales activity of EDF Trading North America, see note 3.1) and Dalkia Russia (see the Dalkia press release of 23 May 2022 in note 1.4.3), and the compensation paid to partners amounting to a net €68 million;
- the expense of the Employee Reserved Offer (ERO) during the period, amounting to €(64) million (see note 14.1);
- provisions relating to proceedings before the civil, administrative and criminal courts concerning the sale by Montedison of Ausimont (the Bussi site) in Italy to Solvay in 2002 (see note 17.3.5).

Concerning the ERO, the Board of Directors of EDF decided on 11 May 2022 on the principle of an employee shareholding operation. This operation led to an increase in the Group's share capital, through issuance of 18,100,741 new EDF shares on 25 July 2022.

The subscription price for these shares was fixed on 28 June 2022. It included a discount of 30% on the reference price based on the volume-weighted average price of EDF shares traded on Euronext Paris for the twenty trading days preceding the day when the price was

determined. The expense corresponding to this discount is recognised in "Other changes" via an adjustment to Group reserves.

Other income and expenses amounted to €(1,123) million in 2021. They principally comprise:

- an amount of €505 million received in application of the agreement signed by Areva and EDF on 29 June 2021 (see note 2) for a settlement payment of €563 million, less certain amounts, principally payments collected for third parties and assets previously included in the balance sheet;
- exceptional additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR, totalling €(573) million at 31 December 2021 (these are defined by IAS 16.22 as abnormal costs and cannot be included in the cost of assets in progress);
- the net loss on the sales of Dalkia Wastenergy and the investment in CENG, amounting to a total €(286) million (see note 3.1);
- costs relating to the early closure of Dungeness B, amounting to €(164) million including impairment of fuel inventories and spare parts, and provisions for penalties due under the capacity mechanism (see notes 2 and 10.8);
- provisions relating to proceedings before the civil, administrative and criminal courts concerning the sale by Montedison of Ausimont (the Bussi site) in Italy to Solvay in 2002 (see note 17.3.5);
- a provision relating to litigation proceedings in process with France's Competition Authority (ADLC) see(note 17.3.6).

Other income and expenses includes restructuring expenses in certain Group entities, and other items which are operating income and expenses by nature but of non-significant amounts individually.

Note 8 Financial result

8.1 Cost of gross financial indebtedness

Details of the components of the cost of gross financial indebtedness are as follows:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|---|----------------|----------------|
| Interest expenses on financing operations ⁽¹⁾ | (1,940) | (1,494) |
| Change in the fair value of derivatives and hedges of liabilities | (31) | 15 |
| Transfer to income of changes in the fair value of cash flow hedges | 89 | 32 |
| Net foreign exchange gain on indebtedness | 152 | (12) |
| COST OF GROSS FINANCIAL INDEBTEDNESS | (1,730) | (1,459) |

⁽¹⁾Interest expenses on financing operations includes interest on the IFRS 16 lease liability amounting to €(77) million in 2022 and €(75) million in 2021.

Interest expenses on financing operations increased by €446 million; this is explained in equal proportions by an interest rate effect as rates were rising, and a volume effect due to the Group's higher net indebtedness.

8.2 Discount effect

The effect of winding the discount primarily concerns provisions for the back-end of the nuclear cycle, decommissioning and last cores, and long-term and post-employment employee benefits.

Details of the final discount effect are as follows:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|---|------------|----------------|
| Provisions for long-term and post-employment employee benefits ⁽¹⁾ | (663) | (498) |
| Provisions for the back-end of the nuclear cycle, decommissioning and last cores ⁽²⁾ | 770 | (2,109) |
| Other provisions and advances | 67 | (63) |
| DISCOUNT EFFECT | 174 | (2,670) |

⁽¹⁾See note 16.1.3.

⁽²⁾Including the effect of discounting the receivable corresponding to amounts reimbursable by the NLF (see note 18.1.3).

The increase in 2022 in the discount effect on provisions for long-term and post-employment employee benefits of 2022 is explained by the higher discount rate applicable at 1 January 2023 (in France: +1.6%, against -0.4% at 1 January 2022).

The positive discount effect on nuclear provisions at 31 December 2022 is explained by a 50 base point increase in the real discount rate in France in 2022, after a 10 base point decrease in 2021. In France, the discount effect was a positive net €813 million, principally comprising the €1,830 million cost of unwinding the discount, and the positive €2,548 million effects of the change in the real discount rate in 2022, which were recorded in the income statement for provisions not backed by assets (see note 15.1).

8.3 Other financial income and expenses

Other financial income and expenses comprise:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|----------------|--------------|
| Financial income on cash and cash equivalents | 95 | 38 |
| Gains/(losses) on other financial assets (including loans and financial receivables) | 311 | 312 |
| Gains/(losses) on debt and equity securities | 345 | 673 |
| Changes in financial instruments carried at fair value through profit and loss | (3,272) | 2,683 |
| Other financial expenses | (433) | (217) |
| Foreign exchange gain/loss on financial items other than debts | 75 | 120 |
| Return on fund assets | 419 | 319 |
| Capitalised borrowing costs | 463 | 561 |
| OTHER FINANCIAL INCOME AND EXPENSES | (1,997) | 4,489 |

“Gains/(losses) on debt and equity securities” in 2022 principally include:

- €467 million of dividends and interest income on debt securities (€605 million in 2021);
- €(122) million of net gains and losses on sales of debt securities carried at fair value through OCI with recycling (including €(68) million on dedicated assets), compared to €68 million in 2021 (including €41 million on dedicated assets).

In 2022, other financial income and expenses include changes in fair value on financial instruments, amounting to €(3,272) million in a context of falling markets, including €(3,096) million on dedicated assets.

In 2021, other financial income and expenses include changes in fair value on financial instruments, amounting to €2,683 million in a context of bullish markets, including €2,739 million on dedicated assets.

Note 9 Income taxes

Accounting principles and methods

Income taxes include the current tax expense (income) and the deferred tax expense (income), calculated under the tax legislation in force in the countries where earnings are taxable.

In compliance with IAS 12, current and deferred taxes are generally recorded in the income statement or in equity symmetrically to the underlying operation.

Under IAS 32, income taxes on distributions to holders of equity instruments (notably dividends and the remuneration paid to holders of perpetual subordinated bonds) must be recognised in accordance with IAS 12. The Group considers that these distributions are paid out of previous years' accumulated profits and as a result the associated tax effects are included in the net income for the period.

In application of IFRIC 23, a tax asset or liability is recognised when there is uncertainty over income tax treatments. If the Group considers it likely that the tax authorities will not accept its chosen treatment, it recognises a tax liability, and if it considers it likely that the tax authorities will reimburse a tax that has already been paid, it recognises a tax asset. The tax assets and liabilities relating to these uncertainties are estimated on a case-by-case basis and stated at the most likely amount, or the weighted average of the various outcomes considered. These tax assets and liabilities are included in deferred taxes.

The current tax expense (income) is the estimated amount of tax due on the taxable income for the period, calculated using the tax rates adopted at the year-end.

Deferred taxes result from temporary differences between the book value of assets and liabilities and their tax basis. No deferred taxes are recognised for temporary differences generated by:

- goodwill which is not tax deductible;
- the initial recognition of an asset or liability in a transaction which is not a business combination and does not affect the accounting profit or taxable profit (tax loss) at the transaction date;
- investments in subsidiaries and associates, investments in branches and interests in joint arrangements, when the Group controls the timing of reversal of the temporary differences, and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred tax assets and liabilities are valued at the expected tax rate for the period in which the asset will be realised or the liability extinguished, based on tax rates adopted at the year-end. If the tax rate changes, deferred taxes are adjusted to the new rate and the adjustment is recorded in the income statement, unless it relates to an underlying for which changes in value are recorded in equity, for example in accounting for actuarial gains and losses or fair value on hedging instruments and debt or equity securities.

Deferred taxes are reviewed at each closing date, to take into account changes in tax legislation and the prospects for recovery of deductible temporary differences. Deferred tax assets are only recognised when it is probable that the Group will have sufficient taxable profit to utilise the benefit of the asset in the foreseeable future, or beyond that horizon, if there are deferred tax liabilities with the same

maturity.

Deferred tax assets and liabilities are reported on a net basis, determined at the level of a tax entity or tax group.

Pillar two rules

To address concerns about declining tax bases and the shifting of taxable profits between States by large multinational companies, a worldwide agreement to introduce a minimum corporate tax rate has been reached by more than 135 countries. In December 2021, the Organisation for Economic Co-operation and Development (OECD) published a proposed reform of international tax rules, notably including the introduction of a minimum 15% tax rate on profits of multinational groups (the "Pillar Two Rules"). At the date of publication of these financial statements, no country where the Group does business had transposed these rules into its national laws. The Group is closely monitoring legislative progress in each country where it does business, in order to be ready to implement the rules once they are enacted.

Based on the current agreement and the tax rates currently in force in the countries where the Group has operations, subject to the Group developing future businesses or the law changing in the relevant countries before the Pillar Two Rules come into force, the Group does not expect this corporate income tax reform to have any significant impacts.

9.1 Breakdown of tax expense

The tax expense breaks down as follows:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|-------------------------------|--------------|----------------|
| Current tax expense | (1,894) | (2,016) |
| Deferred taxes | 5,820 | 616 |
| TOTAL | 3,926 | (1,400) |

In 2022, €(562) million of the current tax expenses relates to French companies, and €(1,332) million relates to other subsidiaries (€(1,679) million and €(337) million respectively in 2021).

Deferred tax income, amounting to €5,280 million in 2022 compared to €616 million in 2021, is mainly explained by the losses reported for the year.

9.2 Reconciliation of the theoretical and effective tax expense (tax proof)

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|-----------------|----------------|
| Income of consolidated companies before tax | (22,916) | 5,585 |
| Income tax rate applicable to the parent company | 25.82 % | 28.41 % |
| Theoretical tax expense | 5,917 | (1,587) |
| Differences in tax rate ⁽¹⁾ | 145 | (349) |
| Permanent differences ⁽²⁾ | (336) | (160) |
| Taxes without basis ⁽³⁾ | (478) | 727 |
| Unrecognised deferred tax assets ⁽⁴⁾ | (1,320) | (36) |
| Other | (2) | 5 |
| ACTUAL TAX EXPENSE | 3,926 | (1,400) |
| EFFECTIVE TAX RATE | 17.13% | 25.09% |

The tax income amounts to €3,926 million in 2022, corresponding to an effective tax rate of 17.13% (compared to a tax expense of €(1,400) million in 2021, corresponding to an effective tax rate of 25.09%).

The €5,326 million change between the tax expense for 2021 and the tax income in 2022 essentially reflects the €28,051 million decrease in the Group's pre-tax income, generating additional tax income of €7,359 million.

The tax income also reflects the unfavourable effect of certain rulings in tax disputes in 2022 (see note 17.3.1), the introduction in Italy of "windfall taxes" on electricity-producing companies, impairment recognised during the year and the absence of any favourable effect equivalent to the impact of asset revaluations for tax purposes in Italy in 2021.

In addition, it includes the unfavourable effect of non-recognition of deferred tax assets in France, partly offset by the favourable effect of deferred tax assets recognised in the United States.

Contrary to 2021, the Group was not affected by any rise in the normative tax rate in the countries where it does business.

After elimination of these non-recurring items (principally impairment, unrealised gains and losses on financial assets and commodities, and tax disputes), the effective current tax rate for 2022 is 18.0%, compared to 21.3% in 2021.

The main factors explaining the difference between the theoretical tax rate and this effective rate are:

- 2022:
 - › ⁽¹⁾ the favourable impact of tax rate differences amounting to €145 million, mainly relating to the United Kingdom where the normative tax rate applicable in 2022 is 19%,
 - › ⁽²⁾ provisions and impairment amounting to €(279) million,
 - › ⁽³⁾ the unfavourable impact of “windfall” taxes in Italy (€(317) million), and tax litigation (€(346) million), partly offset by the favourable impact of deduction of the payments made to bearers of perpetual subordinated bonds, amounting to €156 million,
 - › ⁽⁴⁾ the effect of non-recognition of deferred tax assets, amounting to €(1,320) million including €(1,551) million relating to the French tax group (see note 9.4), partly offset by the favourable effect of deferred tax assets recognised in the United States, amounting to €296 million;
- 2021:
 - › ⁽¹⁾ the unfavourable impact of tax rate differences amounting to €359 million, due to the forthcoming increase in the UK’s normative rate from 19% to 25% from 2023,
 - › ⁽³⁾ the favourable impact of asset restatements for tax purposes in Italy (amounting to €422 million) and deduction of payments made to bearers of perpetual subordinated bonds (amounting to €157 million),
 - › ⁽⁴⁾ the effect of non-recognition of deferred tax assets, amounting to €(36) million, including €(309) million of deferred taxes recognised during the year following restatements of the tax value of assets in Italy, partly offset by the favourable effect of deferred tax assets recognised in the United States (€191 million).

9.3 Change in deferred tax assets and liabilities

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|--------------|----------------|
| Deferred tax assets | 1,667 | 1,150 |
| Deferred tax liabilities | (2,401) | (3,115) |
| Net deferred taxes at 1 January | (734) | (1,965) |
| Change in net income | 5,820 | 616 |
| Change in equity | 2,323 | 694 |
| Translation adjustments | 79 | (93) |
| Changes in scope of consolidation | 13 | 28 |
| Other movements | (338) | (14) |
| NET DEFERRED TAXES AT 31 DECEMBER | 7,163 | (734) |
| Deferred tax assets | 8,696 | 1,667 |
| Deferred tax liabilities | (1,533) | (2,401) |

In 2022, the change in deferred taxes in equity includes €558 million of actuarial gains and losses on post-employment benefits (€(510) million in 2021) and €1,181 million of changes in the fair value of hedges (€(1,223) million in 2021).

9.4 Breakdown of deferred tax assets and liabilities by nature

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|-------------------|-------------------|
| Deferred taxes: | | |
| Fixed assets | (6,074) | (6,201) |
| Provisions for employee benefits | 3,927 | 4,706 |
| Other provisions and impairment | 741 | 346 |
| Financial instruments | 2,401 | 1,408 |
| Tax loss carryforwards and unused tax credits | 9,555 | 2,004 |
| Other | 507 | 1,080 |
| Total deferred tax assets and liabilities | 11,057 | 3,343 |
| Unrecognised deferred tax assets | (3,894) | (4,077) |
| NET DEFERRED TAXES | 7,163 | (734) |

At 31 December 2022, unrecognised deferred tax assets represent a potential tax saving of €3,894 million (€4,077 million at 31 December 2021), mainly relating to France, Italy and the United States.

The potential tax saving in France, amounting to €2,952 million (€2,913 million in 2021) essentially relates to the stock of deferred tax assets on employee benefits and the losses generated in 2022. These deferred tax assets have no time limit.

The potential tax saving in Italy, amounting to €309 million, relates to the tax value of goodwill, which was revised in 2021 and is amortisable over 50 years for tax purposes. Some of the corresponding deferred tax assets are unrecognised due to the Group's prudent policy concerning recognition of deferred taxes beyond a 10 - year horizon.

The potential tax saving in the United States, amounting to €490 million (€730 million in 2021) relates mainly to tax losses that can be carried forward until dates between 2026 and 2037 (this concerns losses generated before 31 December 2017, and long-term capital losses), or for an unlimited period (for losses generated after 2017).

Recognised deferred tax assets on tax loss carryforwards and unused tax credits amount to €7,898 million (€1,140 million in 2021) and principally concern France (€6,890 million in 2022, €51 million in 2021), the United States (€430 million in 2022, €286 million in 2021), and the United Kingdom (€306 million in 2022, €548 million in 2021).

In France, they include a deferred tax asset of €6,812 million (gross value of €7,872 million and provisions of €1,060 million) recognised on the €30,426 billion reported at 31 December 2022 by the French tax group (EDF SA, Enedis, PEI and other French subsidiaries owned more than 95%). This tax loss carried by EDF SA is principally due to the exceptionally low nuclear power output (-81.7TWh or -23% compared to 2021) as a result of the stress corrosion phenomenon, which obliged EDF to purchase very significant volumes of electricity on the markets at very high prices throughout the year, with an adverse effect of around €29.1 billion on taxable income.

Based on projected future tax results of the French tax group and the rules allowing tax losses to be carried forward and set against a maximum 50% of future taxable profits, the gross deferred tax asset of €7,872 million is expected to be recovered over a period of more than 10 years, and this led to recognition of a provision of €1,060 million. These projections take account of the Group's 2023 Budget as approved by the Board of Directors and the Group's internal financial trajectory, taking a conservative approach to its more distant years. The French tax group's future tax results for the next ten years are primarily sensitive to the assumptions used concerning the volume of nuclear power output, market prices, and regulations. Regulated tariffs and prices are constructed based on the assumption of full market exposure after 2025, the date of the end of the ARENH scheme, as there is currently no clarity over potential future market regulations. Ultimately, the recoverability period of deferred tax assets will notably depend on the level of any future regulation existing nuclear installations.

In the United States and United Kingdom, deferred tax assets on tax loss carryforwards and tax credits were recognised due to the existence of deferred tax liabilities in the same entities that will reverse over the same time horizons, or because taxable profits are expected.

Note 10 Property, plant and equipment and intangible assets (excluding French public electricity distribution concession assets)

Details of property, plant and equipment and intangible assets (excluding French electricity distribution concession assets) are as follows:

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | Assets in progress ⁽¹⁾ | 31/12/2021 | Assets in progress ⁽¹⁾ |
|--|--------------|-------------------|--|-------------------|--|
| Goodwill | 10.1 | 9,513 | n.a. | 10,945 | n.a. |
| Other intangible assets | 10.2 | 10,619 | 2,110 | 10,221 | 1,793 |
| Property, plant and equipment used in generation and other tangible assets owned by the group, including right-of-use assets | 10.3 | 101,126 | 49,700 | 98,237 | 45,220 |
| - Right-of-use assets | 10.4 | 4,051 | n.a. | 4,146 | n.a. |
| Property, plant and equipment operated under concessions other than French electricity distribution concessions | 10.5 | 6,816 | 668 | 6,881 | 621 |
| TOTAL PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS (EXCLUDING FRENCH ELECTRICITY DISTRIBUTION CONCESSION ASSETS) | | 128,074 | 52,478 | 126,284 | 47,634 |

⁽¹⁾Assets in progress are presented in note 10.6.

n.a.: not applicable.

10.1 Goodwill

Accounting principles and methods

Determination of goodwill

In application of IFRS 3, "Business combinations" (see note 3), goodwill is the difference between:

- the sum of the following items:
 - › the acquisition-date fair value of the price paid to acquire control;
 - › the value of non-controlling interests in the entity acquired; and

- › for acquisitions achieved in stages, the acquisition-date fair value of the Group's share in the acquired entity before it acquired control; and
- the net value of the assets acquired and liabilities assumed, measured at fair value at the acquisition date.

When this difference is negative it is immediately included in net income.

The fair values of assets and liabilities and the resulting goodwill are finalised within twelve months of the acquisition.

Measurement and presentation of goodwill

Goodwill on acquisition of subsidiaries is disclosed separately in the balance sheet. Impairment on this goodwill is reported under the heading "Impairment" in the income statement. After initial recognition, goodwill is carried at cost less any impairment recognised.

Goodwill on acquisition of associates and joint ventures is included in the investment's net book value. Impairment on this goodwill is included under the heading "Share in income of associates and joint ventures".

Goodwill is not amortised, but impairment tests are carried out as soon as there is an indication of possible loss of value, and at least annually, as described in note 10.8.

In 2022, goodwill primarily related to EDF Energy (€6,541 million, net of impairment booked in 2022) and Framatome (1,448 million). The breakdown by operating segment is presented in note 4.1.

Changes in goodwill in 2022 and 2021 were as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|-------------------|-------------------|
| Net book value at opening date | 10,945 | 10,265 |
| Acquisitions | 154 | 143 |
| Disposals | (2) | (1) |
| Impairment (note 10.8) | (1,178) | - |
| Translation adjustments | (379) | 537 |
| Other changes | (27) | 1 |
| NET BOOK VALUE AT CLOSING DATE | 9,513 | 10,945 |
| Gross value at closing date | 11,650 | 11,715 |
| Accumulated impairment at closing date | (2,137) | (770) |

The changes in goodwill in 2022 primarily related to:

- impairment of €(1,176) million on the goodwill of EDF Energy;
- translation adjustments (€(379) million), mainly resulting from the decline of the pound sterling against the Euro.

The changes in goodwill in 2021 primarily related to:

- the acquisition of Rolls Royce Civil Nuclear I&C from Framatome for €92 million (see note 3.1);
- translation adjustments (€537 million) resulting chiefly from the rise of the pound sterling against the Euro.

10.2 Other intangible assets

Accounting principles and methods

General principles

Other intangible assets mainly comprise:

- software, which is amortised on a straight-line basis over its useful life, including SaaS (Software as a Service) contracts which are not treated as service contracts and included in expenses. To qualify for treatment as fixed assets, SaaS contracts must confer a right of control to the user in addition to access to the software for a fixed period;
- development costs that qualify for capitalisation under IAS 38 amortised on a straight-line basis over their foreseeable useful life;
- purchased brands with an indefinite useful life, or amortised on a straight-line basis over their useful life;
- operating or usage rights for power plants, which are amortised on a straight-line basis over the useful life of the underlying asset;
- the positive value of energy purchase/sale contracts stated at fair value as part of a business combination governed by IFRS 3: this value is amortised as the contractual deliveries take place;
- assets related to concession contracts governed by IFRIC 12, under the "intangible model" (see note 10.5);
- technology related to activities as designer and supplier of nuclear steam supply systems and manufacturer of control rod clusters and nuclear fuel (Framatome) including codes and methods, EPR technology, patents and manufacturing processes, all amortised over their useful life;
- purchased customer contracts and relations, amortised over their useful life;

- incremental costs of winning or renewing customer contracts, which are amortised over the average duration of customer contracts;
- intangible assets related to environmental regulations.

Intangible assets relating to environmental regulations

These include greenhouse gas emission rights and renewable energy certificates purchased (see notes 20.1.1 and 20.1.2).

Greenhouse gas emission rights

EU Directive 2003/87/EC set up a greenhouse gas emission quota system for the European Union. Although the United Kingdom is no longer a member of the European Union, it is still concerned by this system.

This quota system was incorporated into national laws. Among other things it requires obligated actors, which is the case of EDF, to surrender to the State a number of greenhouse gas emission credits each year, corresponding to their emissions for the year.

In the EDF group, the entities subject to this Directive are EDF, EDF Energy, Edison, Dalkia, and Luminus.

The accounting treatment of emission rights depends on the holding intention. Two economic models coexist in the Group:

- Rights held under the "Trading" model are included in "Other inventories" at fair value. The change in fair value observed over the year is recorded in the income statement;
- Rights held to comply with regulatory requirements on greenhouse gas emissions (the "Generation" model) are recorded in intangible assets as "Greenhouse gas emission rights – green certificates":
 - › at acquisition cost when purchased on the market,
 - › at nil value when allocated free of charge (in countries that still have a free allocation system).

A provision corresponding to emissions for the year is established at the year-end (see note 17.2).

This provision is equal to the acquisition cost up to the amount of rights acquired on forward markets, and to market prices for the balance. It is cancelled when the rights are surrendered to the State.

At the closing date, the portfolio of emission rights and the obligation to surrender rights for the emissions of the year are presented gross, without netting.

If the number of emission rights at the end of the year and not subject to forward sale is higher than the number of rights to be surrendered to the State for the year's emissions, an impairment test must be applied to the excess. If the realisable value is lower than the net book value, impairment is booked.

Renewable energy certificates (green certificates)

In application of EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources, every EU member state has set national targets for consumption of electricity from renewable sources. Although the United Kingdom is no longer a member of the European Union, it is still concerned by this system.

States can use two possible mechanisms to meet these targets:

- introducing a specific sales tariff for energy from renewable sources (this system is used in France and Italy);
- introducing a system of renewable energy certificates to be surrendered by energy suppliers (this system is used in the United Kingdom (Renewable Obligation Certificates) and Belgium (Certificats verts)).

For renewable energy certificate systems, the Group applies the following accounting treatment:

- certificates earned through energy generation are not recognised, since their cost is nil;
- certificates purchased are recognised as intangible assets in the line "Greenhouse gas emission rights - green certificates";
- a provision is established to reflect the obligation to surrender certificates. It is based on the cost of certificates earned (with nil value) and purchased (on the spot or forward market), the market price of the certificates still be purchased, and where relevant the market penalty price for the balance. The provision is cancelled when the certificates are surrendered to the State (see note 17.2).

The net value of other intangible assets breaks down as follows:

| <i>(in millions of euros)</i> | 31/12/2021 | Acquisitions | Disposals | Translation adjustments | Changes in scope | Other movements | 31/12/2022 |
|---|----------------|----------------|----------------|-------------------------|------------------|-----------------|----------------|
| Software | 6,787 | 965 | (96) | (54) | (14) | 17 | 7,605 |
| Positive fair value of commodity contracts acquired in a business combination | 504 | - | - | - | - | - | 504 |
| Greenhouse gas emission rights – green certificates | 900 | 2,457 | (2,350) | (20) | - | (8) | 979 |
| Other intangible assets | 8,152 | 436 | (110) | (24) | (25) | (35) | 8,394 |
| Intangible assets in development ⁽¹⁾ | 1,793 | 319 | (8) | (1) | - | 7 | 2,110 |
| Gross value | 18,136 | 4,177 | (2,564) | (99) | (39) | (19) | 19,592 |
| Software | (4,282) | (839) | 96 | 47 | 9 | 1 | (4,968) |
| Positive fair value of commodity contracts acquired in a business combination | (241) | (25) | - | - | - | - | (266) |
| Other intangible assets | (3,392) | (555) | 105 | 19 | 52 | 32 | (3,739) |
| Accumulated amortisation and impairment | (7,915) | (1,419) | 201 | 66 | 61 | 33 | (8,973) |
| NET VALUE | 10,221 | 2,758 | (2,363) | (33) | 22 | 14 | 10,619 |

⁽¹⁾Increases in intangible assets in development are stated net of the effects of newly-commissioned assets. Intangible assets in development are detailed in note 10.6.

The gross value of other intangible assets at 31 December 2022 includes:

- the Edison brand and intangible assets related to Edison's hydropower concessions, amounting to €945 million and €489 million respectively;
- the Dalkia brand and intangible assets related to Dalkia's concession agreements in France, amounting to €130 million and €1,433 million respectively;
- the Framatome brand, Framatome's nuclear technology-related intangible assets and Framatome's customer contracts, amounting to €151 million, €777 million and €344 million respectively.

Net impairment of €(65) million was recorded in respect of other intangible assets in 2022 (compared to a net reversal of impairment €59 million in 2021).

EDF's research and development expenses recorded in the income statement total €473 million for 2022 (€487 million in 2021).

10.3 Property, plant and equipment used in generation and other tangible assets by the Group

Accounting principles and methods

Property, plant and equipment is recorded at acquisition or production cost :

- the cost of facilities developed in-house includes all labour and materials costs, and all other production costs that can be included in the construction of the asset;
- borrowing costs attributable to the financing of an asset incurred during the construction period are included in the value of the asset provided it is a qualifying asset as defined by IAS 23 "Borrowing costs";
- the cost of property, plant and equipment also includes the initial estimate of decommissioning costs. These costs are recognised in assets against the provision recognised to cover these obligations. At the date of commissioning, these assets are measured and recorded in the same way as the corresponding provision (see note 15);
- decommissioning costs for nuclear generation installations also include last core costs (see note 15).

When some of the decommissioning costs for a plant are to be borne by a partner, the expected reimbursement is recognised as accrued income in the assets. The difference between the provision and the accrued income is recorded in "Property, plant and equipment", and subsequent payments by the partner are deducted from the accrued income.

The Group capitalises safety expenses incurred as a result of legal and regulatory obligations sanctioning non-compliance by an administrative ban from operation.

Strategic safety spare parts for generation facilities are treated as property, plant and equipment, and depreciated over the residual useful life of the installations.

The costs of operations that are necessary for generation assets to remain in service, and are undertaken at the time of scheduled shutdowns, particularly during major inspections, are capitalised and amortised over a period corresponding to the time elapsing between two inspections.

When a part of an asset has a different useful life from the overall asset's useful life, it is identified as an asset component and depreciated over a specific period.

Depreciation

Items of property, plant and equipment are depreciated on a straight-line basis over their useful life, defined as the period during which the Group expects to draw future economic benefits from their use.

Depending on each country's specific regulations and contractual arrangements, the expected useful lives for the main facilities are as follows:

- nuclear generation facilities 40 to 50 years
- wind farm and photovoltaic facilities 20 to 25 years
- fossil-fired power plants (mainly CCGT-Combined Cycle Gas Turbine plants) 25 to 45 years
- transmission and distribution installations (lines, substations) 20 to 60 years
- other general plant and machinery 10 to 20 years

The net values of property, plant and equipment used in generation and other tangible assets owned by the group are as follows:

| (in millions of euros) | 31/12/2021 | Increases | Decreases | Translation adjustments | Changes in the scope of consolidation ⁽¹⁾ | Other movements ⁽²⁾ | 31/12/2022 |
|--|-----------------|----------------|----------------|-------------------------|--|--------------------------------|-----------------|
| Land and buildings | 14,217 | 397 | (97) | (38) | - | (25) | 14,454 |
| Nuclear power plants | 79,536 | 3,309 | (2,805) | (546) | - | 65 | 79,559 |
| Fossil-fired & hydropower plants | 17,365 | 542 | (133) | (102) | 28 | 5 | 17,705 |
| Other installations, plant, machinery, equipment & other | 22,637 | 2,798 | (422) | 58 | (562) | 36 | 24,545 |
| Right-of-use assets ⁽³⁾ | 6,204 | 353 | - | (13) | (32) | 98 | 6,610 |
| Assets in progress ⁽⁴⁾ | 45,368 | 5,761 | (40) | (1,141) | (13) | (48) | 49,887 |
| Gross value | 185,327 | 13,160 | (3,497) | (1,782) | (579) | 131 | 192,760 |
| Land and buildings | (8,330) | (483) | 84 | 23 | 1 | 23 | (8,682) |
| Nuclear power plants | (53,655) | (3,056) | 2,707 | 352 | - | (1,729) | (55,381) |
| Fossil-fired & hydropower plants | (12,540) | (639) | 131 | 105 | 36 | (15) | (12,922) |
| Other installations, plant, machinery, equipment & other | (10,358) | (2,011) | 426 | 19 | 38 | (17) | (11,903) |
| Right-of-use assets ⁽³⁾ | (2,059) | (724) | - | 4 | 16 | 204 | (2,559) |
| Assets in progress ⁽⁴⁾ | (148) | (93) | - | (3) | 1 | 56 | (187) |
| Depreciation and impairment | (87,090) | (7,006) | 3,348 | 500 | 92 | (1,478) | (91,634) |
| NET VALUE | 98,237 | 6,154 | (149) | (1,282) | (487) | (1,347) | 101,126 |

⁽¹⁾ Changes in the scope of consolidation essentially relate to EDF Renewables (€574 million) and Edison (€70 million).

⁽²⁾ Other movements include the effect on assets associated with provisions and underlying assets of the €(1,956) million change in the real discount rate used to calculate provisions related to EDF's nuclear generation (see note 15.1) and EDF Energy (€188 million) (see note 15.2).

⁽³⁾ Right-of-use assets are detailed in note 10.4.

⁽⁴⁾ Increases in assets in progress are stated net of the effects of newly-commissioned assets. Assets in progress are detailed in note 10.6.

The changes observed in property, plant and equipment used in generation owned by the Group include a €(1,282) million impact of translation adjustments, principally due to the depreciation of the pound sterling against the euro (€(1,427) million).

Depreciation periods of nuclear plants in France

As stated in note 1.3.4.1, the depreciation period of nuclear power plants currently in operation in France, *i.e.* thirty-two 900MW reactors, twenty 1300MW reactors and four 1450MW reactors, is 50 years for 900MW-series plants (since 1 January 2016) and 1300MW-series plants (since 1 January 2021), and 40 years for N4-series plants which do not yet fulfil the conditions for a longer depreciation period.

Under France's multi-year energy programme (PPE, standing for *Programmation Pluriannuelle de l'Énergie*) for the period 2019-2028, adopted in April 2020, twelve French nuclear reactors are to be shut down by 2035. As this includes the shutdowns of two 900MW reactors in 2027 and 2028 ahead of their fifth 10-year inspection, an early shutdown scenario for two 900MW reactors has been adopted. Its effects on nuclear provisions and depreciation in the Group's financial statements are not significant.

Depreciation period of coal-fired plants in France

In view of France's Energy and Climate law of 8 November 2019, the end of the depreciation period for the Cordemais coal-fired plant was brought forward to 2026, with a view to the plant continuing to operate as part of the Ecocombust project, after conversion to biomass. On 8 July 2021, EDF announced that it had decided to terminate the Ecocombust project, since the conditions for its continuation were not fulfilled. The Cordemais plant will remain in operation until 2024, perhaps even 2026, to meet the requirements of the electricity system as defined by RTE, in compliance with the Energy and Climate law which allows the plant to be used at full capacity for a maximum 750 hours a year. Decrees 2022 - 123 of February 2022 and 2022 - 1233 of September 2022 took the exceptional step of raising the limit for

greenhouse gas emissions by fossil-fired electricity generating installations, removing the cap on operation hours for 2022 and 2023 due to risks of pressure on the electricity system. The end of the depreciation period is currently unchanged at 2026, and the depreciation schedule takes account of the new operating rules.

10.4 Right-of-use assets

Accounting principles and methods

Under IFRS 16, a contract is, or contains, a lease if it confers the right to control the use of an identified asset for a period of time in exchange for a consideration.

Identified arrangements that do not have the legal form of a lease contract but nonetheless convey the right to control the use of an asset or group of specific assets to the purchaser are classified as leases by reference to IFRS 16.

Recognition of a lease contract as lessee under IFRS 16

The Group's lease contracts as lessee essentially concern real estate assets (office and residential properties), industrial installations (land, wind farms) and to a lesser extent vehicles, IT and industrial equipment.

IFRS 16 requires leases to be recognised in the lessee's balance sheet when the leased asset is made available, in the form of a "right-of-use" asset, presented in "Property, plant and equipment used in generation and other tangible assets owned by the Group, including right-of-use assets" with a corresponding financial liability associated with the lease commitment, presented in "Current and non-current financial liabilities".

Upon initial recognition of a lease, the right of use and the lease liability are valued by discounting the future lease payments over the term of the lease, taking into consideration assumptions regarding the renewal or termination of leases if the relevant options are reasonably certain to be exercised.

As a rule, since the implicit interest rate in a lease is difficult to determine, the lessee's incremental borrowing rate is used to discount the lease liability. This rate is based on zero-coupon EDF bond rates, adjusted for the currency risk, a country risk premium, the term of the lease contracts and the subsidiary's credit risk at the date of initial recognition of the contract. In certain cases, it is based on a subsidiary's specific incremental borrowing rate.

Subsequently, the right of use is amortised over the expected term of the lease, while the lease liability is stated at amortised cost, *i.e.* adding the interest recognised in the financial result, and deducting the amount of the lease payments made.

The Group applies the two exemptions allowed by IFRS 16, and as a result leases with a term of 12 months or less and leases of assets with individual value when new of less than USD 5,000 are not recognised in the balance sheet. Consequently, the payments on these leases are recognised on a straight-line basis over the lease term in the income statement.

If the Group performs a sale and leaseback operation – consisting of selling an asset to a third party and then renting it back as lessee – which is classified as a sale under IFRS 15, it measures the right-of-use asset resulting from the lease as the proportion of the asset's previous book value that corresponds to the right of use retained by the Group. Also, the gain on the sale of the asset by the Group only corresponds to the proportion of the right of use actually transferred to the third party. The lease liability is not adjusted, unless the conditions of the sale or lease do not reflect market values.

Off-balance sheet commitments presented in note 21.1.1 concern:

- short-term leases (12 months or less);
- leases of assets with low value (less than USD 5,000 when new);
- leases signed for which the leased assets have not yet been made available (for example, assets under construction).

Recognition of a lease contract as lessor

The accounting treatment of a lease contract in which the Group is lessor depends on the classification of the contract. For a finance lease which transfers substantially all risks and rewards inherent to ownership of the underlying asset to the lessee, the Group recognises a financial asset in its balance sheet instead of the initial fixed asset; in this case, the receivable is equal to the discounted value of future lease payments.

10.4.1 Change in right-of-use assets

| (in millions of euros) | 31/12/2021 | Increases ⁽¹⁾ | Decreases | Changes in the scope of consolidation | Other movements ⁽²⁾ | 31/12/2022 |
|--|----------------|--------------------------|-----------|---------------------------------------|--------------------------------|----------------|
| Land and buildings | 5,152 | 250 | - | (33) | 133 | 5,502 |
| Other installations, plant, machinery, equipment & other | 1,052 | 103 | - | 1 | (48) | 1,108 |
| Gross value | 6,204 | 353 | - | (32) | 85 | 6,610 |
| Land and buildings | (1,529) | (562) | - | 14 | 135 | (1,942) |
| Other installations, plant, machinery, equipment & other | (529) | (163) | - | 1 | 74 | (617) |
| Depreciation and impairment | (2,058) | (725) | - | 15 | 209 | (2,559) |
| NET VALUE | 4,146 | (372) | - | (17) | 294 | 4,051 |

⁽¹⁾Increases concern right-of-use assets recognised in respect of new leases.

⁽²⁾Other movements include the effect of contract revisions on right-of-use assets and translation differences.

10.4.2 Impacts in the income statement

The main impacts of recognition in the income statement of lease contracts as lessee, in accordance with IFRS 16, are as follows:

| (in millions of euros) | 2022 | 2021 |
|--|--------------|--------------|
| Income from subleases | 7 | 56 |
| Variable lease expenses | (53) | (53) |
| Expenses on short-term leases or leases of low-value assets | (108) | (70) |
| Income from sale and leaseback operations | - | - |
| Operating profit before depreciation and amortisation | (154) | (67) |
| Depreciation on right-of-use assets | (725) | (723) |
| Operating profit | (879) | (790) |
| Interest expense on the lease liability | (77) | (75) |
| INCOME BEFORE TAXES OF CONSOLIDATED COMPANIES | (956) | (865) |

10.4.3 Payments relating to leases

| (in millions of euros) | 2022 | 2021 |
|---|--------------|--------------|
| TOTAL PAYMENTS RELATING TO THE LEASE LIABILITY | (776) | (801) |

Payments relating to the lease liability mainly concern principal repayments, and amount to €702 million in 2022 (€729 million in 2021).

10.5 Property, plant and equipment operated under concessions other than French public electricity distribution concessions

Accounting principles and methods

The accounting treatment of concession agreements depends on the nature of the agreements and their specific contractual features.

Concessions in France

In France, the Group is the operator for three types of concessions:

- public electricity distribution concessions granted by local authorities (municipalities or syndicated municipalities) (see note 11);
- hydropower concessions granted by the State;
- heat generation and distribution concessions from public authorities.

Hydropower concessions

Hydropower concessions follow standard rules approved by decree. For concessions granted before 1999, hydropower concession assets consist solely of hydropower generation equipment (dams, pipes, turbines, etc.), while for more recent concessions, they also include hydropower generation equipment and switching facilities (alternators, etc.).

Most concessions that expired before 2012 were initially for 75 years and were renewed for terms of 30 to 50 years. However, the French government has not yet renewed 28 concessions that have expired. Since their expiry these concessions have thus been in the "rolling extension" situation defined by the law, which stipulates that at the expiry date of a concession, if no new concession has been

established "the concession is extended on the existing terms until such time as a new concession is granted", so as to ensure continuity of operations in the meantime (Article L. 521 - 16 par. 3 of the French Energy Code).

As these concession agreements are not concerned by IFRIC 12 "Service concession agreements", the assets used, whether directly owned or part of the concession, are recorded under "Property, plant and equipment operated under concessions other than French public electricity distribution concessions" at acquisition cost.

The main useful lives are the following; for concession assets, the depreciation periods also take account of the duration of the concession agreement:

- Hydroelectric dams 75 years
- Electromechanical equipment used in hydropower plants 50 years

Heat generation and distribution concessions from public authorities

Heat generation and distribution concession agreements signed by Dalkia with public authorities confer the right to operate facilities remitted by or constructed at the request of those authorities for a limited period, under the concession-granting authority's supervision.

These agreements set the terms for remuneration and transfer of the facilities to the concession-granting authority or another operator taking over at the end of the agreement.

The assets are recorded as "Other intangible assets", in accordance with IFRIC 12 "Service concession agreements".

Concession assets generally comprise:

- boiler houses;
- networks;
- network extensions;
- network connections;
- and sometimes cogeneration assets.

Intangible assets are depreciated on a straight-line basis over the term of the concession, which is generally between 15 and 25 years.

Almost all of these assets are located in France.

Foreign concessions

Foreign concessions are governed by a range of contracts and national laws. Most assets operated under foreign concessions are recorded under "Property, plant and equipment operated under concessions other than French public electricity distribution concessions". Foreign concessions essentially concern Edison in Italy, which operates local gas distribution networks, hydropower generating plants and energy services under concessions. Edison owns all the assets except for some items of property, plant and equipment on the hydropower generation sites, which will be returned to the concession-granting authority for nil consideration or with an indemnity when the concession ends. In compliance with IFRIC 12, certain concession agreements are recorded as intangible assets.

Hydropower generation assets which will be returned for nil consideration at the end of the concession are depreciated over the duration of the concession.

The net values of property, plant and equipment operated under concessions other than French public electricity distribution concessions are as follows:

| <i>(in millions of euros)</i> | 31/12/2021 | Increases | Decreases | Changes in the scope of consolidation | Other movements | 31/12/2022 |
|------------------------------------|-------------------|------------------|------------------|--|------------------------|-------------------|
| Land and buildings | 1,641 | 11 | (4) | 1 | - | 1,649 |
| Fossil-fired & hydropower plants | 11,934 | 295 | (32) | (70) | 26 | 12,153 |
| Other | 680 | 34 | (23) | (7) | 2 | 686 |
| Assets in progress ⁽¹⁾ | 639 | 45 | (8) | (1) | 10 | 685 |
| Gross value | 14,894 | 385 | (67) | (77) | 38 | 15,173 |
| Land and buildings | (997) | (34) | 4 | - | 1 | (1,026) |
| Fossil-fired & hydropower plants | (6,505) | (343) | 29 | 27 | (24) | (6,816) |
| Other | (492) | (31) | 21 | - | 4 | (498) |
| Assets in progress ⁽¹⁾ | (19) | - | - | - | 2 | (17) |
| Depreciation and impairment | (8,013) | (408) | 54 | 27 | (17) | (8,357) |
| NET VALUE | 6,881 | (23) | (13) | (50) | 21 | 6,816 |

⁽¹⁾ Increases in assets in progress are stated net of the effects of newly-commissioned assets. Assets in progress are detailed in note 10.6.

At 31 December 2022, property, plant and equipment operated under concessions other than French public electricity distribution concessions comprise concession facilities mainly located in France and in Italy (hydropower, excluding public electricity distribution).

10.6 Assets in progress

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|---------------|---------------|
| Intangible assets | 2,110 | 1,793 |
| Property, plant and equipment used in generation and other tangible assets owned by the Group | 49,700 | 45,220 |
| Property, plant and equipment operated under concessions other than French public electricity distribution concessions | 668 | 621 |
| TOTAL ASSETS IN PROGRESS | 52,478 | 47,634 |

Intangible assets

At 31 December 2022, intangible assets in progress include notably studies for the EPR 2 and SMR projects, amounting respectively to €1,055 million (€761 million at 31 December 2021), and €142 million.

New nuclear reactors in France: the EPR 2 project

The EPR 2 project concerns a new pressurised water nuclear reactor that meets the objectives for third-generation reactor safety, aiming to incorporate design, construction and commissioning experience acquired from EPR reactors and the nuclear reactors currently in operation.

On 16 July 2019, the ASN issued an opinion that the safety levels of EDF's key design options for its EPR 2 were satisfactory. It stated that "the general safety objectives, the safety baseline requirements and the main design options are on the whole satisfactory".

The EPR 2 will also offer superior operating performance in terms of power (1650MW compared to 1450MW for the most powerful current reactor), output, availability and manoeuvrability.

The draft PPE published on 25 January 2019 by the Ministry for the Ecological and Inclusive Transition stated that the Government, together with the nuclear industry, would conduct a programme of work by mid-2021 to examine the questions of the cost of new nuclear energy production and its advantages and disadvantages in relation to other low-carbon generation methods, the possible financing models, the project management modalities for new reactor projects and public consultation, and matters relating to the management of waste generated by the potential new nuclear fleet, and that based on this information and depending on developments in the energy situation, the Government would make a decision regarding the suitability of launching a renewal programme for nuclear installations.

While awaiting a decision about the EPR 2, EDF was authorised by its Board of Directors on 16 December 2020 to continue the project until the end of 2022, with a cost budget of around €1 billion.

In 2021, EDF, working with the French authorities, finalised its contribution to the government-supervised work programme: formal provision of feedback from construction of the first EPRs, and demonstration of the French nuclear sector's ability to handle an industrial programme to build 3 pairs of reactors (using an adjusted EPR model incorporating experience from the earliest EPR projects in France and internationally).

The analysis conducted covered justification of the need, an action plan to mobilise actors in the nuclear sector, estimation of anticipated costs, analysis of the possible options for the programme's leadership and funding (and their consequences as regards regulation and changes in the legal framework), pre-identification of certain potential sites, consideration of questions relating to management of the waste produced by a new nuclear fleet and action to be taken, including interaction with the European Commission and public consultation.

In the summer of 2021, the DGEC audited the parts of this analysis relating to the programme and validated the methods used to estimate the schedule and costs.

The French President declared in a speech in November 2021 that France would restart a nuclear programme and build new reactors on French soil. On 10 February 2022 during a visit to Belfort in eastern France, he announced the launch of a programme to construct 6 EPR 2 reactors by 2035, and begin studies for an additional 8 EPR 2 reactors by 2050. He also observed that it was necessary to aim to have the first new reactor commissioned by 2035, and said that these new EPR2 units will be built and operated by EDF.

No investment decision yet has been made. An appropriate funding and regulation plan for this programme is currently in preparation, and an updated completion cost for the project is expected in the summer of 2023.

Until a decision is made on the EPR2, EDF was authorised by its Board of Directors on 31 March 2022 to continue development work until the end of 2023, and given a budget extension of approximately €0.6 billion.

NUWARD, France's Small Modular Reactor (SMR) project

Regarding Small Modular Reactors (SMRs), development of the NUWARD™ continued in 2022. NUWARD™ is a third-generation model pressurised water plant consisting of two 170MW units, designed for to be built in large numbers and widely exported. Its main target is as a replacement for fossil-fired plants in the next few decades. Sales will be backed up by a model plant in France, due to start construction by 2030.

The design of the NUWARD™ SMR is being preassessed by the ASN in collaboration with the Czech and Finnish safety authorities SUJB and STUK. The aim of this assessment is to accelerate the granting of international licences for SMRs while also giving a new impetus to regulatory harmonisation.

In December 2022, EDF and Fortum signed a cooperation agreement for joint exploration of development opportunities for SMRs and large nuclear reactors in Finland and Sweden.

In late 2022 the Group set up a dedicated subsidiary to lead the next part of the NUWARD™ project, the basic design phase, which will start in early 2023 and should be completed by the end of 2026. This subsidiary, named Nuward, is fully-owned by the Group. It will continue to receive engineering support from EDF, the CEA, TechnicAtome, Naval Group, Framatome and Tractebel.

A €50 million subsidy granted under the “France 2030” plan was received from the French State in December 2022 (see note 13.5.4), after due notification and authorisation from the European Commission. In his speech at Belfort on 10 February 2022, the French President had announced additional State support of €500 million for the NUWARD™ project.

Property, plant and equipment used in generation and other tangible assets owned by the Group

At 31 December 2022, property, plant and equipment in progress used in generation and owned by the Group mainly comprise:

- investments for the Flamanville 3 EPR amounting to €15,245 million, including capitalised interim interest of €3,471 million at 31 December 2022 (€15,014 million at 31 December 2021, including capitalised interim interest of €3,471 million). The amount capitalised for the Flamanville 3 project in the financial statements at 31 December 2022 is €15,472 million, which also includes €221 million⁽¹⁾ for assets that have been commissioned, including €24 million of interim interest.

This capitalised amount of €15,472 million including capitalised interim interest, includes, in addition to the construction cost:

- › an inventory of spare parts and capitalised amounts totalling €629 million for related projects (notably the initial comprehensive inspection and North Area development),
- › €854 million of pre-operating expenses and other property, plant and equipment related to the Flamanville project,
- › and the elimination of internal balances on balance sheet items and margins between Framatome and EDF SA in connection with the Flamanville 3 EPR project (€381 million, essentially consisting of advances and progress payments),
- › giving a construction cost at historical value of €10,495 million in the consolidated financial statements at 31 December 2022, and a construction cost at completion (excluding interim interest) of €13.2 billion (in 2015 euros).

On 16 December 2022, EDF announced an adjustment to the schedule for the Flamanville 3 project, and the estimated cost to completion was raised from €12.7 billion to €13.2 billion in 2015 euros, excluding interim interest.

The non-recurring additional costs resulting from the necessary repairs to the main secondary circuit welds (see the Group press release of 9 October 2019) are recorded in other income and expenses at the amount of €638 million in 2022 (€573 million in 2021) (see note 7).

The non-recurring additional costs resulting from the adjustment announced on 16 December 2022 principally concern stress-relieving heat treatment for repaired welds, and will also be recorded in other income and expenses;

- investments relating to Hinkley Point C, amounting to €21,647 million including capitalised interim interest of €1,110 million (€18,542 million at 31 December 2021 including capitalised interim interest of €835 million), less impairment of €551 million (see note 10.8). In 2022, investments in this project amounted to €3,890 million (€3,635 million in 2021);
- studies concerning Sizewell C amounting to €808 million (€533 million in 2021).

The balance of property, plant and equipment in progress (excluding assets operated under concessions), i.e. €12,050 million, principally concerns EDF SA's existing nuclear plants (75%) in line with the *Grand Carénage* programme (replacement of major components, particularly steam generators; work in connection with periodic reviews and 10 - year inspections), and to a lesser extent (around 13%) EDF Renewables (power plants in development in Europe, North America and emerging countries).

Property, plant and equipment in progress increased by €4,480 million as the level of investment in 2022 is significantly higher than the amount of assets brought into service during the year (see note 10.3).

Principal projects in progress and investments during the year

Grand Carénage programme

Since 2014 EDF has been implementing its *Grand Carénage* industrial refurbishment programme for the French nuclear fleet, designed to enhance reactor safety and extend their operating lifetimes significantly beyond 40 years. The most recent estimate of the programme's cost for the period 2014-2025, established in late 2021, is €50.2 billion in current euros. This cost factors in the third 10 - year inspections for the Group's 1300MW reactors, a significant portion of the safety improvements undertaken following lessons learned from the Fukushima incident, including construction and operation of 56 emergency diesel generators, creation of auxiliary feedwater pumps at each nuclear plant in operation, and performance of the fourth 10 - year inspections of the Group's 900MW reactors.

To continue the investments necessary to operate the Group's nuclear fleet in complete safety significantly beyond 40 years, on 31 March 2022 EDF's Board of Directors validated a new roadmap for the *Grand Carénage* programme running from 2022 to 2028. The cost estimate for this new period is €33 billion in current euros, or an annual expenditure of €4.7 billion. The extended programme will enable the Group to conduct studies and the fourth 10 - year inspections of the 1300MW series, conduct preliminary studies for operation of the 900MW reactors beyond 50 years, in accordance with the multi-year energy programme adopted by France in April 2020, and complete the still substantial maintenance and renovation work on major components, so that power plants can remain in operation for more than 50 years. The broader scope of the programme also covers new safety requirements resulting from the generic opinion of France's Nuclear Safety Authority (ASN) on the fourth 10-year inspections of the 900MW reactors, building on experience from the review with the ASN of the fourth 10-year inspections for 900MW and 1300MW reactors.

The third 10-year inspections of 1300MW reactors are entering their final phase (the last 5 are scheduled for 2023 and 2024). In the 900MW series, ten fourth 10-year inspections have been successfully completed and one is in progress (at Blayais 1). For the 1450MW series, the final second 10-year inspection has been launched at Civaux 2.

(1) €341 million in gross value, less €120 million of depreciation.

Examination with the ASN of the generic phase of the fourth 10-year inspections of the 1300MW series began in 2021 and is continuing. Examination with the ASN of procedures for the 30-year milestone of the 1450MW series, and inspection of the first reactor is expected for 2029.

Additionally, major investments have been made following the lessons of Fukushima: 56 emergency diesel generators have been constructed and put into operation, and every power plant has a permanent or provisional auxiliary feedwater system. Major components (including steam generators and main unit transformers) have also been replaced at many production units.

Stress corrosion

In late 2021, during preventive maintenance checks on reactor 1 at the Civaux nuclear power plant, scheduled as part of its ten-year inspection, defects were detected close to welds on the pipes of the safety injection system (SIS) circuit. Preventive checks were then carried out on the Civaux 2, Chooz 1 and Chooz 2 reactors, which also belong to the N4 series, and similar defects were identified. Preventive maintenance checks conducted during the ten-year inspection of reactor 1 at the Penly nuclear power plant also found similar defects on the SIS circuit.

Through expert assessments and analyses conducted during 2022, EDF identified the reactors where the SIS circuit pipes are the most susceptible to stress corrosion. They are the 16 most recent reactors: the four N4- reactors, and twelve P'4 1300MW reactors.

In its press release of 27 July 2022, the ASN declared its position reached on 26 July 2022 regarding EDF's proposed inspection strategy for the stress corrosion affecting its reactors. The ASN considered EDF's strategy appropriate given the knowledge learned about this phenomenon, and the related safety issues.

Of the 16 reactors identified as the most susceptible to stress corrosion, 10 were treated in 2022 or are currently being treated. All these reactors will have been treated by the end of 2023:

- for the N4 reactors, operations have been completed at Civaux 1, Civaux 2, and Chooz 2, and are being finalised at Chooz 1;
- for the P'4 1300MW reactors currently offline: repairs of two SIS circuit welds are in progress at Cattenom 1, and repairs of four SIS pipes began in 2022 and are continuing at Cattenom 3. EDF has decided to proceed with preventive replacement of all the pipes on the SIS and shutdown reactor cooling circuits at all P'4 1300MW reactors by the end of 2023. This strategy means that repairs can be carried out under an industrial approach, which leads to more efficient scheduling.

Discussions continued with the ASN about the treatment programme for stress corrosion.

Given the outages for inspections and repairs, in 2022 EDF regularly released information about adjustments to nuclear output estimates (see the press releases of 13 January, 7 February, and 19 May mentioned in note 2). As stated in the press release of 3 November 2022, all this information finally led EDF to revise its nuclear power output for 2022 downwards, to a range of 275 - 285 TWh. The final volume was 279TWh, down by 81.7TWh or 23% from 2021.

Flamanville 3 EPR project

Developments in 2021

The fuel assemblies required for the first fuel load continued to arrive during the first half of the year, and the entire first core is now stored in the Flamanville 3 reactor building pool.

The process of repairing the penetration welds on the main secondary circuit using remote-controlled robots was approved by the ASN on 19 March 2021, several weeks behind the expected date, and work began on the eight welds that were not compliant with the break preclusion principle. All eight were repaired in 2021, then subjected to stress-relieving heat treatment. Demonstration of the qualification of the stress-relieving heat treatment for repairs of VVP (steam discharge pipework circuit) penetration welds was validated by the ASN, which issued authorisation for its use in late 2021. Furthermore, four ARE (steam generator water supply circuit) penetration welds also require repair, and qualification of the repair process is under way at the ASN. This process is an adaptation of the process used for VVP penetration weld repairs.

For the non-penetration welds located on the main secondary circuit that had quality deviations (this concerns 45 VVP welds and 32 ARE welds), the ASN issued approval in April 2021 for the repair of a third batch of 6 welds. In the 3 batches authorised to date, 12 weld upgrades have been completed. In April the ASN gave approval for the related regulatory checks, which are currently in process.

In total, a hundred welds (penetration and non-penetration) on the main secondary circuit were concerned by repairs to the VVP and ARE pipework. The final stage of repair for most of these welds will be an optimised stress-relieving heat treatment, prior to the final verification. Repairing these welds remains one of the key challenges on the Flamanville 3 critical pathway.

On 2 March 2021 EDF declared a significant event to the ASN, concerning incomplete application of the 2006 design standards when installing three nozzles on the main primary circuit (these nozzles connect auxiliary circuits to the primary circuit). At the request of the ASN, three scenarios were examined by the Group's engineering teams. A file was sent to the ASN on 21 June 2021, stating that EDF's chosen solution is to install a "containment collar", and asking the ASN for its position on this solution, so that all the design and procurement activities could be launched by the end of 2021. In a letter of 8 October 2021 the ASN indicated that it had no objections to this solution in principle. Nonetheless the design file for the containment collar will be examined by the French Radiation Protection and Nuclear Safety Institute IRSN (*Institut de radioprotection et de sûreté nucléaire*).

After corrosion was observed on pressuriser valves at the EPR at Olkiluto (Finland), the Group carried out equipment checks and also detected traces of corrosion on the Flamanville EPR's valves. The material used for certain components of the pilots control valves was changed accordingly. Several corrosion stress tests were conducted to select the best material. The ASN was regularly informed of the technical choices, and made no objection to this strategy. The ASN and the IRSN also continued their examination of the operation and

reliability of the pressuriser valves. EDF is due to respond to the IRSN's most recent questions so that it can finalise examination of the valve design.

As the work advanced, new technical matters emerged that could increase the completion cost and the risk of deferred timelines. In view of the progress made on operations and preparations for start-up, on 12 January 2022 EDF adjusted the schedule for the Flamanville 3 project. The fuel loading date was deferred from late 2022 to the second quarter of 2023, and the estimated completion cost revised from €12.4 billion to €12.7 billion (in 2015 euros, excluding interim interest). The project has no remaining margin in its schedule or completion cost.

Before loading the fuel into the reactor vessel and carrying out the overall start-up tests, several operations remained to be carried out, mainly:

- completion of the weld repairs on the main secondary circuit;
- a new series of qualification tests of the installation before loading the fuel into the reactor;
- incorporation of experience gained from the technical issue handled at Taishan reactor 1;
- finishing work on the installation, and remittal of all the documents required for operation.

Developments in 2022

The main progress on the Flamanville 3 project in 2022 were:

- continuation of weld repairs on the main secondary circuit (see below);
- completion of full pool testing;
- completion of the last functional tests of the open reactor vessel;
- closure of the vessel head after the reactor vessel has been drained and cleaned, and testing the control rod drives.

As announced in January 2022, inspections of the Taishan 1 reactor's fuel assemblies following the technical issue encountered during its second operating cycle showed mechanical wear on certain assembly components. This kind of wear has already been observed in several reactors of the French nuclear fleet. For the future commissioning of Flamanville 3, a solution has been examined with the ASN. EDF's proposed strategy for the Flamanville EPR (supply of around sixty reinforced fuel assemblies) was presented to the High Committee for Transparency and Information on Nuclear Safety (*Haut comité pour la transparence et l'information sur la sécurité nucléaire*, HCTISN) on 7 June 2022. In January 2023, the IRSN issued a favourable opinion of EDF's proposed strategy, and the ASN will finalise its examination by the end of the first quarter of 2023.

Repair work to the main secondary circuit welds continued at a good pace during the first half of the year. 122 welds are concerned (36 penetration welds and 86 non-penetration welds). At 31 December 2022, 56% had been repaired, 65% had been approved for stress-relieving heat treatment, and 32% were completed and valid after stress-relieving heat treatment. Work is totally finished on the welds on the reactor containment building, which were the most complex cases, and they have been declared valid.

Concerning the SIS (Safety injection system)/CHR (Containment Heat Removal) filtration sumps, EDF proposed a new filtration system which has been trialled and produced results considered satisfactory by the IRSN. Following these trials, in September 2022 EDF replaced the existing filters with finer filters. EDF also decided to reduce the quantities of potential debris that is known to clog up filters. The work to reduce potential debris is practically complete, and should be finished by the end of the first quarter of 2023.

After corrosion was observed on pressuriser valves at the Olkiluoto EPR (Finland), EDF and Framatome carried out equipment checks and also detected traces of corrosion on the Flamanville EPR's valves. EDF and Framatome decided to respond to this finding by changing the material used for certain components of the pilot control valves. Several corrosion stress tests were conducted to select the best material. The components have been made and will be installed in the reactor building in early 2023. Apart from this difficulty, the ASN is continuing its examination of the operation and reliability of the pressuriser valves.

On 16 December 2022, EDF adjusted the schedule for the Flamanville 3 project: the nuclear fuel loading is now scheduled for the 1st quarter of 2024⁽¹⁾. The estimated cost at completion has been raised from €12.7 billion to €13.2 billion⁽²⁾.

This schedule update is mainly due to supplementary studies that were needed to establish a new process for the stress-relieving heat treatment (SRHT)⁽³⁾ of some welds that have been upgraded in the last two years, which are located close to sensitive equipment for the nuclear plant's operation.

After the nuclear fuel loading, the start-up operations will continue, including notably inspections of all the reactor safety systems, equipment testing and qualification all the way through the temperature and pressure increases of the nuclear steam supply system, and then during the reactor ramping up. At 25% of nominal power, the reactor will be connected to the national electricity grid.

The last few months have seen further achievements in the pre-operation phase of the Flamanville EPR:

- the complex work of upgrading the main secondary circuit penetration welds is complete, and all the welds have been deemed compliant with the break preclusion concept. These first of their kind operations were achieved using remotely operated equipment and required more than twelve months of analyses and qualification prior to implementation at Flamanville;
- system performance testing of electrical equipment and fuel loading operations have been completed and deemed compliant with requirements.

(1) See EDF's press release of 16 December 2022.

(2) In 2015 euros and excluding interim interest.

(3) Stress-relieving heat treatment (SRHT) is a process carried out after welding to relieve residual welding stresses and achieve the right mechanical characteristics for the welded part.

Hinkley Point C

Following the final investment decision (FID) made by EDF's Board of Directors on 28 July 2016, EDF and China General Nuclear Power Corporation (CGN) signed contracts with the UK government for the construction and operation of two EPR reactors at the Hinkley Point site in Somerset (the "Hinkley Point C" or "HPC" project). EDF's share in HPC is 66.5% and CGN's share is 33.5%.

The Contract for Difference signed on 29 September 2016 aims to provide security in the revenues generated from electricity produced and sold by HPC by paying remuneration based on the difference between the contractual strike price and the market price, over a period of 35 years from commissioning of Unit 2. From the plant's start date, if the reference price at which the producer sells electricity on the market is lower than the strike price defined in the contract, i.e. £92.50/MWh (in 2012 sterling), index-linked to UK inflation through the Consumer Price Index, the producer will receive an additional payment. If the reference price is higher than the strike price, the producer must pay the difference.

A review of the schedule and cost for the two Hinkley Point C reactors was finalised in May 2022⁽¹⁾ and concluded (see also note 10.8):

- the start of electricity generation for Unit 1 is targeted for June 2027. The risk of further delay of the two units is assessed at 15 months, assuming the absence of a new pandemic wave and no additional effects of the war in Ukraine⁽²⁾;
- the project completion costs are now estimated in the range of £25-26 billion (in 2015 sterling)⁽³⁾.

In 2022, as well as the physical progress made on the various sections of the project, an important milestone was reached in the final quarter of 2022 when the Office for Nuclear Regulation (ONR) approved completion of the reactor vessel for HPC Unit 1, and its transport from Framatome's Saint-Marcel site. ONR authorisation will be needed later to install the vessel. Another significant milestone expected in 2023 is the installation of the Unit 1 reactor dome.

Regarding funding of the project:

- the agreements signed by EDF Energy and CGN include a mechanism for compensation by EDF of certain additional costs in the event of initial budget overruns or delays. This mechanism was activated in January 2023. The exact terms were agreed in a contract between the two companies in September 2016 and are confidential;
- since the project's total funding requirements are higher than the shareholders' contractual commitments (committed equity), the shareholders will be asked to contribute additional funding (voluntary equity) by a date expected in the second half-year of 2023. CGN has not yet announced whether it will provide voluntary equity above its maximum committed equity. If CGN does not provide any voluntary equity, the EDF group will be obliged to do so instead of CGN, on condition that CGN has contributed its full share of committed equity based on the current estimate of the project's cost to completion.

Sizewell C

Sizewell C is a project to build a nuclear power plant with two EPRs at Sizewell in Suffolk, England. The Sizewell C plant will have total capacity of 3.26GW, to supply electricity for 6 million households for around 60 years. The project is founded on a strategy of replication of HPC, as far as possible copying the design and logistics chain of the HPC project.

The main developments in the project in 2022 were the following:

A new law, the Nuclear Energy (Financing) Act, came into force in March 2022 and introduced a Regulated Asset Base (RAB) funding model for future nuclear projects. Discussions are continuing between the Group and the British government to finalise the terms of the Government Support Package for Sizewell C.

In July 2022, the UK government granted the Development Consent Order (DCO) for Sizewell C, giving the green light to start construction of the plant. A legal challenge to this SCO is in process, with a court hearing set for March 2023.

In July 2022 the ONR concluded that the application for Sizewell C's nuclear site licence met almost all the regulatory requirements, with only a few outstanding matters to be resolved. The Nuclear Site licence should be formally granted at the date of the Final Investment Decision (FID).

Regarding funding of the project:

- in January 2022, the UK government indirectly invested £100 million of public funds in development of the Sizewell C project, through of a payment to EDF in return for an option to purchase the site land or EDF's investment in the project company;
- on 29 November 2022, the UK government announced its decision to make a direct investment of about £700 million in Sizewell C, to support the project's development. At 31 December 2022, the UK government held 32% of the project and EDF held the other 68%. The UK government will inject further capital during 2023, until the project is held in equal 50% shares with EDF by the time the FID is made;
- this investment by the UK government led to the withdrawal of China General Nuclear (CGN) from the Sizewell C project. CGN held a 16% share in the project at 28 November 2022.

EDF intends to become a minority shareholder on the date of the FID, by reducing its stake to a maximum 19.99% with correspondingly limited rights, and to deconsolidate the project in the Group's financial statements. EDF's ability to participate along with other investors in a FID and contribute to funding for the construction phase still depends on the fulfilment of conditions which are not guaranteed at this date.

(1) The review took into account the main aspects of the project. The schedule and cost of electromechanical works and of final testing have not been reviewed.

(2) Since the beginning of construction, the project has been delayed by 18 months in total, mainly due to the Covid-19 pandemic.

(3) Costs net of operational action plans, in 2015 sterling, excluding interim interest and at a reference exchange rate for the project of £1 = €1.23.

10.7 Investments in intangible assets and property, plant and equipment

The table below provides a breakdown of the investments in intangible assets and property, plant and equipment presented in the cash flow statement:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|---|-----------------|-----------------|
| Acquisitions of intangible assets | (1,720) | (1,645) |
| Acquisitions of property, plant and equipment | (16,923) | (16,102) |
| Change in payables to suppliers of fixed assets | 319 | 141 |
| INVESTMENTS IN INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT | (18,324) | (17,606) |

Investments in intangible assets and property, plant and equipment during 2022 mainly concern:

- the France – Generation and Supply segment: €5,745 million, primarily (75%) investments made in the nuclear fleet currently in operation, essentially made under the “Grand Carénage” programme and including €376 million for work to address the stress corrosion phenomenon, investments for Flamanville 3, and investments in hydropower generation;
- the France – Regulated activities segment: €4,739 million, essentially investments related to connections for customers and producers, but also investments for network renewal, quality of service and network modernisation;
- the United Kingdom segment: €4,541 million, mainly concerning investments made for the Hinkley Point C project where the mechanical, electrical and heating (MEH) work on the dome and construction of the reactor vessel for unit 1 are now finished, and civil engineering work is 50% complete;
- the EDF Renewables segment: €1,806 million, with a slight decrease in wind and solar capacities under construction, principally in North America.

10.8 Impairment/reversals

Accounting principles and methods

At the year-end and at each interim reporting date, in application of IAS 36, the Group assesses whether there is an indication that an asset could have been significantly impaired. An impairment test is also carried out at least once a year on cash-generating units (CGUs) or groups of CGUs including an intangible asset with an indefinite useful life, or to which goodwill has been partly or totally allocated.

Impairment tests are carried out as follows:

- the Group measures any long-term asset impairment by comparing the carrying value of these assets and goodwill, grouped into CGUs where necessary, and their recoverable amount;
- CGUs are groups of homogeneous assets that generate identifiable independent cash flows. They reflect the way activities are managed in the Group: they may be subgroups when the activity is optimised across the whole subgroup, or CGUs formed by parts of subgroups corresponding to different types of activity that are managed separately (thermal generation, renewable energy production, services), or single assets;
- the recoverable value of these CGUs is the higher of fair value net of disposal costs, and value in use. When this recoverable value is lower than the carrying amount in the balance sheet, an amount equal to the difference is booked under the heading “Impairment”. The loss is allocated first to goodwill, and any surplus to the other assets of the CGU concerned; impairment booked on goodwill is irreversible;
- fair value is the asset’s potential sale price in a normal transaction between economic actors;
- value in use is calculated based on projected future cash flows:
 - › over a horizon that is coherent with the asset’s useful life and/or operating life,
 - › for certain intangible assets with an indefinite useful life (such as brands), beyond the horizon that can be observed or modelled, a terminal value is determined by discounting to infinity a normative cash flow,
 - › excluding development projects other than those that have been decided at the valuation date,
 - › and discounted at a rate that reflects the risk profile of the asset or CGU;
- the discount rates used are based on the weighted average cost of capital (WACC) for each asset or group of assets concerned, determined by geographical area and by business segment under the CAPM. WACC is calculated after taxes;
- future cash flows are calculated on the basis of the best available information at the closing date:
 - › for the first few years, the flows correspond to the budget, then the Medium-Term Plan (MTP). Over this horizon, energy and commodity prices are determined based on available forward prices, taking hedges into consideration,
 - › beyond the MTP horizon, cash flows are estimated based on long-term assumptions prepared for each country where the Group controls industrial assets, using a financial trajectory and scenario-building process that is updated annually. Long-term electricity prices are constructed analytically based on a set of assumptions concerning factors such as economic growth, commodity (oil, gas, coal) and CO₂ prices, demand for electricity, interconnections, changes in the energy mix (rise of renewable energies, installed

nuclear capacity, etc.) and fundamental models of supply-demand balance. The Group compares each principal component of assumptions with analyses by external bodies (for example, for commodities and CO₂, which are primary influences on electricity prices, the Group compares its own scenarios with scenarios developed by organisations such as the IEA, IHS, Wood Mackenzie or Aurora, bearing in mind that each of these analysts itself proposes a cone of scenarios). Additionally, in constructing these long-term prices, the impact of climate contingencies is incorporated into assumptions concerning demand (particularly energy requirements for heating, and summer comfort), generation of renewable energies (onshore and offshore wind power, solar power) for all European countries, the contribution of hydropower, and environmental cuts for nuclear power generation in France. Climate time series analyses are based on the European EUROCORDEX model and include the impact of climate change. A deliberately prudent approach is adopted to avoid any bias towards underestimation of the practical effects of climate change on the relevant physical quantities (temperatures, cloud coverage, wind speeds) and ultimately on the European electricity system between 2027 and 2050. The scenarios used also take account of the objectives of public energy and climate policies such as Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie Nationale Bas Carbone*) in France;

- income from capacity market mechanisms is also taken into consideration in valuing generation assets, provided the countries concerned have introduced or announced the future introduction of a capacity revenue mechanism.

These calculations may be influenced by several variables:

- changes in discount rates;
- changes in market prices for energy and commodities and tariff regulations;
- changes in demand and the Group's market shares, and the attrition rate on customer portfolios;
- the useful life of facilities, or the duration of concession agreements where relevant;
- the growth rates used beyond the medium-term plans and where relevant the terminal values taken into consideration.

10.8.1 Impairment by category of asset

Details of impairment recognised and reversed are as follows:

| <i>(in millions of euros)</i> | <i>Notes</i> | 2022 | 2021 |
|---------------------------------------|--------------|----------------|--------------|
| Impairment of goodwill | 10.1 | (1,178) | - |
| Impairment of other intangible assets | 10.2 | (65) | 59 |
| Impairment of tangible assets | 10.3-10.5 | (519) | (712) |
| IMPAIRMENT NET OF REVERSALS | | (1,762) | (653) |

In 2021, impairment recognised amounted to €(653) million and concerned:

- nuclear assets due to the shutdown of Dungeness (€(445) million) and impairment of land in the United Kingdom (€(260) million);
- various CGUs of EDF Renewables, principally in France (€(54) million);
- reversals of impairment related to hydropower assets (€60 million) and wind power assets (€90 million) owned by Edison in Italy;
- and other assets (total €(44) million).

Impairment recognised in 2022 amounts to €(1,762) million. Details are given below.

10.8.2 Impairment tests on goodwill, intangible assets and property, plant and equipment

The following tables present the results of impairment tests carried out on the main goodwill, intangible assets with indefinite useful lives and other Group assets at 31 December 2022, and some of the key assumptions used.

Impairment of goodwill and intangible assets with indefinite useful lives

€(1,178) million of new impairment was recorded on the Group's goodwill at 31 December 2022.

| Operating segment | Cash-Generating Unit or asset | Net book value (in millions of euros) | WACC after tax | Growth rate to infinity | Impairment 2022 (in millions of euros) |
|--|-------------------------------|--|----------------|-------------------------|---|
| United Kingdom (EDF Energy) ⁽¹⁾ | Goodwill | 6,541 | 6.7 % | - | (1,176) |
| | | 148 | 7.1 % | 1.5 % | (2) |
| Italy (Edison) | Goodwill (energy services) | 945 | | | |
| | | Edison brand | 945 | | |
| Framatome | Goodwill | 1,448 | 7 % | 1.5 % | - |
| | | Framatome brand | 151 | | 1.5 % |
| Dalkia | Goodwill | 643 | 5.2 % | 1.9 % | - |
| | | Dalkia brand | 130 | | 1.9 % |
| Other impairment | | - | - | - | - |
| IMPAIRMENT OF GOODWILL AND INTANGIBLE ASSETS WITH INDEFINITE USEFUL LIVES | | | | | (1,178) |

⁽¹⁾The impairment test of EDF Energy goodwill covers the useful life of industrial assets, currently in operation or under construction, with no projection to infinity. The WACC determined for goodwill takes account of the WACC applicable to each of EDF Energy's CGUs, including the WACC applicable to the HPC CGU, which benefits from a 35 - year regulated model.

Impairment of other intangible assets and property, plant and equipment

| Operating segment | Cash-Generating Unit or concerned asset | Impairment indicators | WACC after tax | Impairment 2022 (in millions of euros) |
|--|---|---|----------------|---|
| United Kingdom (EDF Energy) | Nuclear assets currently in operation | Higher price scenarios | 6.7% to 6.9% | 400 |
| | | Lower prospects for appreciation of land value | | (120) |
| | Nuclear assets under construction | Adjustment of project schedule and costs: significant rise in discount rate | | (551) |
| Italy (Edison) | Various energy services assets | Higher investment expenditure or fewer sales outlets for certain contracts | 7.1% | (66) |
| EDF Renewables | Wind power assets | USA, Texas: Congestion on the transmission networks. | 6.2% | (101) |
| | | Mexico: Cancellation of a PPA | | (28) |
| Other international - China | Biomass asset | Difficulties with production and obtaining operating subsidies | 7.4% | (57) |
| Other impairment | | | | (61) |
| IMPAIRMENT OF OTHER INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT | | | | (584) |

General assumptions

At 31 December 2022, the Group applied its usual method for impairment testing, updating the annual tests for goodwill and intangible assets.

Particular attention was paid to the determination of WACC in an environment of rising and volatile interest rates (see the section on the Discount rates). When performing impairment and sensitivity tests, close attention was also paid to the effects of scenarios concerning prices and measures announced or introduced by the authorities in countries where the Group does business.

Electricity prices

Over the market horizon (generally three years), the forward prices used in the impairment tests are the market prices observed at 31 December, including hedged positions, which (to an even greater extent than at 30 June) were significantly higher than observed forward prices at 31 December 2021, in all geographical zones.

Over the long-term horizon, these tests use price curves constructed analytically founded on assumptions and fundamental models of the supply-demand balance, in an annually updated scenario-building process that is subject to specific internal governance.

The long-term scenarios established for electricity prices in the various countries where the Group has operations take account of the objectives of public energy and climate policies such as the Paris Agreement at worldwide level, Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie Nationale Bas Carbone*) in France. The scenarios used mainly include high CO₂ prices supporting carbon-free electricity production in Europe, and a lower-carbon economy more generally through electrification

of uses.

The long-term price curves in the 2022 scenario follow an upward trend early in the horizon due to the effects of the current energy crisis, but in the longer term these effects dissipate and electricity prices are closer to those in the 2021 scenario.

Compared to the 2021 scenario, price levels are substantially higher at the start of the horizon, with an average increase in the baseload power price of around +€10 to +€25/MWh in the four core countries (France, the United Kingdom, Italy and Belgium). From 2030 and over a long-term horizon, electricity prices remain stable compared to the 2021 scenario.

There are several explanatory factors for this pattern:

- The Russian invasion of Ukraine had a major impact on gas supply levels and put great pressure on the gas markets, leading to an upward adjustment to gas prices early in the horizon. In the longer term, Europe is expected to significantly reduce its dependence on Russian gas (and compensate with LNG), and long-term gas price trajectories are relatively similar to 2021;
- To reflect European ambitions for decarbonisation and cutting greenhouse gas emissions, CO₂ quota prices have a rising trajectory and are higher than in 2021 over the horizon 2027 - 2035. At the start of the horizon, the impact of CO₂ prices on electricity price levels is of secondary importance given the significant upward influence of gas prices;
- At the end of the horizon, the increase in CO₂ prices combines with accelerated development of low-carbon generation facilities (nuclear power and renewable energy) to result in relatively stable electricity prices compared to the projections in the 2021 scenarios.

Demand for electricity is rising across all timescales at European level. Electrification of uses, particularly in transport and industry, is reinforced by a greater need for electrolytic hydrogen. These developments, in addition to RePowerEU plan should accelerate energy independence in Europe, have led to an increased need for electricity.

As these assumptions are structuring for the determination of the recoverable value of Group's assets, sensitivity analyses are carried out on long-term price curves as part of the impairment tests.

Furthermore, for the assumptions concerning capacity mechanisms generally in European countries, the necessary additional remuneration is expected to be lower than in the 2021 scenario. In the early stages of the 2022 scenario horizon, due to the current energy crisis, the upward revision of electricity prices on the Energy-Only Markets increases returns on peakload generation assets on the open market and automatically decreases the need for additional remuneration on those assets. In the long term, capacity mechanism revenues are also lower overall than in the 2021 scenario. In the case of France, this trend is explained by the increase in generation capacities, in keeping with the strategic orientations presented in the French President's speech at Belfort (construction of new EPRs, extension of the existing fleet's operating lifetime, and accelerated expansion in renewable energies while reducing end-user demand for energy), which give France a greater margin in the medium and long term.

Discount rates

The discount rates used in impairment testing are substantially higher than at 31 December 2021 for all countries where the Group has operations, with increases of 100 - 130 base points in its four principal countries (France, the United Kingdom, Italy, Belgium). This increase was driven by the rise in risk-free rates.

The impairment test results are also analysed for sensitivity to the discount rate.

The higher WACC was the primary factor driving recognition of impairment of €(1,176 million) on the goodwill of EDF Energy at 31 December 2022.

United Kingdom - EDF Energy (Goodwill and tangible and intangible assets: €33,217 million - see note 4.1.1)

Thermal assets

Significant amounts of impairment have been booked in recent years in respect of the Group's thermal assets in the United Kingdom, reducing the net book value of the remaining assets practically to zero.

At 31 December 2022, the Group has practically no remaining coal-fired or gas-fired operations in the United Kingdom.

Sales and Supply segment

In 2022, the Sales and Supply segment was affected by the United Kingdom's energy market crisis, as it was unable to pass on the total increase in its sourcing costs to consumers, even though the cap on the Standard Variable Tariff (SVT) for domestic customers was raised successively by 54% in April, then 80% in October. In the end, the energy price crisis led the Department for Business, Energy & Industrial Strategy (BEIS) to launch an Energy Price Guarantee to protect consumers from the full impact of the rise in unit tariffs: the government will bear that cost above a threshold (currently set at £2,500 a year, but due to rise to £3,000 for the period 1 April 2023 – 1 April 2024). A similar mechanism, the Energy Bill Relief Scheme, exists for BtoB consumers, but it covers more complex tariffs associated with that market and is scheduled to end on 31 March 2023. Domestic consumers in the United Kingdom have also benefited from other financial support from the government, including the Energy Bills Support Scheme providing a £400 discount to help consumers with their energy bills. The support measures introduced, principally funded by the State budget, thus had limited effects on the profitability of the Sales and Supply segment. Market shares were stable, with a lower churn rate in 2022.

The recoverable value of the Sales and Supply segment is higher than in 2021 due to an improvement in EBITDA over the MTP horizon for BtoC activities in particular, driven by a catch-up effect resulting from the energy crisis, because the SVTs used to set contract prices have been updated. This effect is mitigated by the increase in the WACC. In the long term, profit margin prospects are confirmed for the BtoB and BtoC activities and this segment remains relatively insensitive to price scenarios as wholesale energy costs are generally passed on to consumers over time.

Sensitivity analyses were conducted with major reductions in long-term margin rates and losses of market share. These analyses showed that this CGU is sensitive to these parameters, especially as it has few fixed assets (mainly information systems).

Nuclear assets (plants in operation)

The recoverable value of EDF Energy's nuclear assets in operation is determined by discounting future cash flows over the assets' useful life. This year saw the end of generation at Hunterston on 7 January 2022 and Hinkley Point B on 6 July 2022 (R4) and 1 August 2022 (R3), in accordance with the announcements made by the Group on 27 August 2020 and 19 November 2020 respectively. At 31 December 2022, the Nuclear assets CGU includes the Sizewell B PWR plant, assuming that it will remain in operation until 2055, the Torness and Heysham 2 AGR plants following the decision made in December 2021 to bring their estimated end of operations forward to March 2028, and the two AGR plants at Hartlepool and Heysham 1, which are scheduled to cease operations in 2024.

The prospects of a significant rise in forward market prices, even beyond the medium-term horizon, are partly mitigated by the new Electricity Generator Levy on low-carbon electricity producers introduced by the British Government (45% on revenues above £75/MWh between January 2023 and March 2028), and the increase in the WACC. The test results confirm the durable rise in headroom, which is higher than in 2021. Consequently €400 million was recovered from the impairment previously booked in June 2020 following generation difficulties and a significant drop in market prices. New impairment of €120 million was also recognised in respect of individual assets (non-operating land close to nuclear plants).

The recoverable value of nuclear assets in operation is sensitive to price assumptions: all other things being equal, a +/-5% difference over the entire horizon of the scenario used for the impairment test would have an impact of +/-€500 million on the test result. The nuclear output assumptions used also have a substantial influence on the calculation: all other things being equal, a +/-5% revision to forecasts over the entire horizon would result in a variation of +/-€700 million in the recoverable value. In addition, a 50bp increase in the discount rate would lead to a decrease of around £200 million in the recoverable value. Taken individually, none of these sensitivities is likely to generate a risk of impairment, all other things being equal.

Goodwill and the HPC Project

EDF Energy's gross goodwill amounted to €7.7 billion (or £6.8 billion including Podpoint) at 31 December 2022 and mainly results from the takeover of British Energy in 2009.

The recoverable value of EDF Energy is determined by discounting future cash flows over the assets' useful life, taking into consideration the two EPRs with a 60-year useful life currently under construction at the Hinkley Point site. Future cash flows from these plants are determined by reference to the Contract for Difference (CfD) between the Group and the UK government. The CfD sets stable, predictable prices for EDF Energy for a period of 35 years from the date the two EPRs are first commissioned: if market prices fall below the CfD exercise price, EDF Energy will receive an additional payment. The CfD exercise price for HPC is set at £92.50/MWh (in 2012 sterling) and is indexed on UK inflation *via* the consumer price index (CPI). Thus, for the operation period under the CfD, future cash flows include a long-term inflation assumption. For the 25 years of operation after the CfD period, for which no forecasts exist for long-term UK electricity market prices, future cash flows include a very long-term inflation assumption and a price assumption based on the CfD exercise price of £92.50/MWh (in 2012 sterling), which is the best estimate of market price levels over this horizon.

The WACC determined for HPC is a hybrid rate that reflects the specificity of the cash flows being regulated by the CfD for 35 years, then exposed to market prices for the 25 subsequent years. The rate applicable to the project is 6.7% at 31 December 2022, 100bp higher than the 5.7% used in 2021. The WACC used to test EDF Energy goodwill takes account of the WACC applicable to each of the company's CGUs (HPC, Nuclear assets (plants in operation), Sales and Supply). Given the respective importance of cash flows from each CGU, the overall WACC for EDF Energy is also 6.7% at 31 December 2022, after 5.7% at 31 December 2021.

On 19 May 2022 the Group released a review of the schedule and cost for construction of the two nuclear reactors at Hinkley Point C. This review was conducted to update the project assumptions, notably due to the impact of Covid-19 restrictions and Brexit on the supply chain, and the challenges facing both operators and personnel as regards resources (see the Group press release of 19 May 2022, and note 10.6).

The start of electricity generation by Unit 1 is now expected in June 2027 instead of June 2026 as previously (and June 2028 instead of June 2027 for Unit 2). The project completion costs are now estimated in the range of £25-£26 billion (in 2015 sterling), as opposed to the previous estimate of £22 - £23 billion (in 2015 sterling).

This announcement also reported the risk of a further 15-month deferral of the commissioning date, resulting in a lower recoverable value estimated at £2.5 billion that was integrated into the project model.

In the financial statements at 30 June 2022, based on the WACC of 6% at that date (versus 5.7% at 31 December 2021), the Group stated that after taking this risk into consideration, the threshold of the goodwill impairment test would be reached if the discount rate was increased by 15bp, and the threshold of the impairment test of the HPC CGU would be reached if the discount rate was increased by 50bp, all other things being equal.

The impairment test of the HPC project at 31 December 2022, based on an updated project model incorporating the information announced in May 2022 and the 100bp increase in WACC, identified a loss of value of €(551) million at 31 December 2022. This impairment is reversible.

Despite the greater headroom observed at the end of December 2022 in EDF Energy's other CGUs (Nuclear assets plants in operation, Sales and Supply), consideration of the revised value of the HPC project which was seriously affected by the higher discount rate led to recognition of partial impairment of €(1,176) million on EDF Energy goodwill at 31 December 2022.

The book value of the HPC project, and of EDF Energy goodwill, are both now sensitive to any unfavourable variation in assumptions.

Other assets in the new nuclear category

Capitalised costs for the Sizewell C project (note 10.6) amount to €808 million and are included at net book value in the impairment test of EDF Energy's goodwill, without considering prospects for their appreciation in value.

Land and securities accounted for by the equity method in the project company Bradwell (gross value of around €330 million) owned 80% by CGN are totally covered by provisions, partly in 2021 and the rest in 2022 as it no longer certain that the project will go ahead.

Italy - Edison (Goodwill and tangible and intangible assets: €6,024 million - see note 4.1.1)

As an intangible asset with an indefinite useful life, the impairment test of the Edison brand, first recognised at the value of €945 million when Edison was taken over in 2012, is updated annually using the royalty relief method and a 100bp risk premium in determining the discount rate. The test was updated at 31 December 2022, based on the adjusted model of 31 December 2021 which incorporated the recommendations of the most recent external assessment carried out in 2020 (reducing the long-term growth rate from 2% to 1.5% based on GDP forecasts; increasing the royalty rate for the Business customer segment following a survey of business customers). The result shows a rise in the brand's recoverable value, reflecting higher medium and long-term price scenarios, mitigated by the effect of an increase of over 100bp in the WACC. Sensitivity analyses including an additional 50bp increase in the WACC, and a -0.2% decrease in royalties, do not indicate any risk of impairment.

At 31 December 2022, the recoverable value of Edison's generation CGUs (Thermal assets, Hydropower, Wind power, Solar power, Gas) is higher overall due to more favourable medium and long-term price scenarios, although this effect was mitigated by the windfall tax introduced for electricity producing companies by the Italian government in late 2022, and the increase of around 100bp in the WACC. The recoverable value of the Hydropower CGU is down slightly, as future cash flows include an increase in investments in preparation for concession renewals. No risk of impairment was thus identified for these CGUs.

The following sensitivity tests were performed and did not indicate any risk of impairment:

- for the Hydropower, Wind power and Solar power CGUs: a 50bp increase in the WACC then a 5% decrease in prices over the whole horizon;
- for the Thermal assets CGU, on which accumulated impairment of some €600 million had been recorded in the past, the impairment test at 31 December 2022 shows a significantly positive headroom. However, as this result essentially relates to the two new-generation CCGT plants at Marghera and Presenzano (carbon emissions 40% below the national average, NOx emissions reduced by 70%) which will benefit from capacity revenue and are due to be commissioned in 2023, there was no reversal of impairment in 2022. Sensitivity analyses were conducted on these assets, and the results show that a 10% decrease in clean spark spreads or a 50bp increase in WACC would not entail any risk of impairment.

Conversely, impairment of €68 million was recognised on certain specific Energy Services assets (contracts, customer relations, goodwill).

Framatome (Goodwill and tangible and intangible assets: €4,342 million - see note 4.1.1)

The recoverable value of Framatome is determined on the basis of a 10 - year business plan and a terminal value. This business plan is sensitive to assumptions concerning the completion of major construction projects that are incorporated into the reactor scenario, and market share assumptions concerning services to the installed base and fuel deliveries to customers' reactors. The reference scenario includes expansion of the EPR2 programme in France and realisation of the Sizewell C project in the United Kingdom, and also other EPR project opportunities in India or elsewhere. The WACC used to discount future cash flows is weighted according to Framatome's different businesses and their risk profiles. The headroom indicated by the impairment test on goodwill remains very significant (€1,448 million) although lower than at 31 December 2021, principally due to the increase of over 100bp in the WACC (from 5.9% to 7%), partly mitigated by the rise in the long-term growth rate (to 1.5%) in line with inflation.

Sensitivity analyses were conducted using a 50bp increase in WACC, or with a 0% growth rate to infinity. The test conclusions were not affected.

Framatome's intangible assets recognised after its acquisition (technologies, including the EPR, which are depreciated over an average 15 to 20 years; customer relations amortised over an average period of 11 years; and the brand) were tested, and no risk of impairment was identified.

EDF Renewables (Goodwill and tangible and intangible assets: €11,782 million - see note 4.1.1)

EDF Renewables' assets mainly consist of CGUs that benefit from Power Purchase Agreements (PPAs) providing contractually defined revenues over most of the assets' useful lives, and consequently have low market risk exposure.

In 2021, impairment of €(54) million was recognised in respect of various CGUs of EDF Renewables.

Following impairment tests performed at 30 June 2022, impairment was booked in respect of wind farms in Texas (€(60) million on 1 fully consolidated plant, and €(134) million on 3 plants accounted for by the equity method) due to congestion on the transmission networks following recent expansion in renewable energies, with a significant and durable impact on projected sales. This impairment was updated at 31 December 2022 (notably for exchange rate adjustment) and amounts to €(62) million, and €(139) million on investments accounted for by the equity method (see note 12.3).

Furthermore, after the Federal Electricity Commission decided to cancel a PPA, impairment of €(37) million was previously booked on a wind farm under construction in Mexico (€(39) million at 31 December 2022).

Other impairment totalling €(28) million was recognised on specific assets in France and the United States, notably concerning a wind farm in the United States that is likely to be sold for a price below the value of the assets.

Dalkia (Goodwill and tangible and intangible assets: €2,990 million - see note 4.1.1)

At 31 December 2022, Dalkia's goodwill amounts to €643 million, principally resulting from acquisition of the Dalkia group in France under the agreement of 25 March 2014 with Veolia Environnement.

The recoverable value of the Dalkia group is based on future cash flows projected over a medium-term horizon, and a terminal value that represents cash flow projections to infinity. The test update at 31 December 2022 found that the recoverable value had decreased, principally due to the 100bp increase in the WACC (from 4.2% to 5.2%), which was partly mitigated by an increase in the long-term growth rate (to 1.9%) in line with inflation. Sensitivity analyses of these two key parameters, increasing the WACC by 50bp and reducing the growth rate by 30bp, did not identify any risk of impairment.

The Dalkia brand, which was recognised as an asset when the Group took control of Dalkia in 2014 at the value of €130 million, is estimated by the royalty relief method. The updated impairment test at 31 December 2022 supports its current book value.

Finally, the test of the service subsidiary Imtech in the United Kingdom did not indicate any risk of impairment.

France - Generation and Supply (Goodwill and tangible and intangible assets: €61,442 million - see note 4.1.1)

In terms of asset value, this segment consists almost entirely of the generation fleet in mainland France. Due to the integrated management and interdependence of the different generation facilities that make up the French fleet (nuclear, thermal and hydropower plants), independently of their maximum technical capacities, the Group considers the entire fleet as a single CGU. It includes the Flamanville 3 plant, with net book value of €15,472 million (see note 10.6). It does not include any goodwill.

The recoverable value of the generation fleet is estimated by discounting future cash flows by the Group's usual methodology, described in the accounting policies, over the assets' useful life, using an after-tax WACC of 6.3% at 31 December 2022 (120bp higher than the 5.1% at 31 December 2021). For nuclear assets, the Group's benchmark model assumes an operating lifetime of 50 years for 900MW and 1300MW-series plants and 40 years for N4-series plants, based on the depreciation period applicable at 31 December 2022, although it is the Group's strategy to keep plants in operation well beyond 50 years. The impairment test also incorporates the latest forecasts for Flamanville 3 (which has a planned operating lifetime of 60 years), with an adjusted schedule and cost revised (see note 10.6).

For the period 2023 - 2025, the key assumptions concerning price and regulation take account of forward prices (significantly higher over this horizon than at the 2021 year-end) and hedges already contractualised, an ARENH volume of 100TWh and price of €42/MWh, a tariff cap for final consumers that will be funded by the French State budget in accordance with the current Finance Law (and therefore no loss of cash flow for EDF) and the best estimate of the inframarginal rent cap, considering the negative rents for 2022 (see note 5.4). These assumptions are consistent with the 2023 budget approved by the Board of Directors.

From 2026, when the ARENH scheme ends, since to date there is no regulation of the existing nuclear power fleet, the reference impairment test framework apply an assumption of full market exposure in constructing tariffs and prices (see the section on Electricity prices).

As a result of medium and long-term price analyses, in the context of a gradual recovery in nuclear power generation starting from a range of 300 - 330TWh for 2023, the impairment test indicates substantially higher headroom than in 2021 (even before the effect of measures associated with the exceptional additional ARENH allocation and the impacts of the drop in nuclear power output in 2022), although the increase is mitigated by the higher WACC. The test shows that the recoverable value is well above the net book value.

The key assumptions in the test still concern:

- the useful life of nuclear assets;
- the long-term market price scenario (after the end of the ARENH scheme) and to a lesser degree the changes in forward prices over the medium-term horizon;
- the volume of nuclear power output;
- the discount rate;
- and to a lesser extent, changes in costs and investments, and the assumed capacity revenue.

These key assumptions were subjected to individual and combined sensitivity analyses (a 50bp increase in the WACC; a 10TWh per year decrease in nuclear power output across the whole period; a 5% increase in investments or operating expenses across the whole period; a decline in capacity prices; and post-2026 market prices 10% below the reference scenario price for a sustained period) and the results did not call into question the existence of a positive difference between the book value and the recoverable value. An additional sensitivity test was also conducted using a less favourable income scenario over the 2024 - 2025 horizon, particularly considering potential unfavourable regulatory measures which could lead to a significant decrease in the test headroom, all other things being equal.

Other International - Belgium (Goodwill and tangible and intangible assets of the whole Other International segment: €2,325 million - see note 4.1.1)

The impairment test update for Luminus showed that the difference between the recoverable value and the book value was stable overall compared to 2021, due to the combined effects of more favourable medium and long-term price scenarios - although that effect will be largely offset by the inframarginal rent cap introduced (see note 5.4), a 130bp increase in the WACC (from 5.1% to 6.4%), and the contrasting effect of inclusion of the new CCGT plant under construction at the Seraing site, scheduled for commissioning in 2025, which will benefit from capacity revenue.

For tests of the nuclear plants operated by the ENGIE Group in which Luminus owns a 10.2% share (419MW), it has historically been assumed that operations will continue until 2025 at the latest depending on the plants. This test did not take into consideration the possible 10 - year extension for the Doel 4 and Tihange 3 reactors following the agreement in principle between the Belgian government

and ENGIE announced in January 2023, since the conditions for the extension and its consequences in terms of future cash flows are not yet known.

Sensitivity analyses were conducted to incorporate the risk that the hydropower concessions may be shortened, and no associated risk of impairment was identified.

Net impairment of €(141) million was recorded on associates at 31 December 2022, principally in respect of assets owned by EDF Renewables (see note 12.3). Impairment of €(219) million was also booked at 31 December 2021 in respect of associates.

Note 11 French public electricity distribution concessions

Accounting principles and methods

The accounting treatment of public distribution electricity concessions in France is determined by the concession agreements, with particular reference to their special clauses. It takes into consideration the possibility that the EDF group, particularly Enedis, may one day lose its status as the sole authorised State concession operator.

In application of the concession agreements, the concession operator manages the facilities at its own risk for the entire term of the concession, and bears substantially all the risks and benefits (both technical and economic) over the useful life of the network infrastructure. Under IAS 16, the assets are controlled by the operator and the grantors have no decisive characteristics of control over the infrastructures as defined by IFRIC 12.

All concession assets are consequently carried in the balance sheet, regardless of their origin (facilities constructed or purchased by the concession operators, and facilities provided by the concession grantors) and the source of financing, while the contractual obligations to the grantor are recognised in the liabilities.

Public electricity distribution facilities that are constructed or purchased by the concession operator are carried at production or acquisition cost:

- purchased facilities are initially recognised at acquisition cost including directly attributable expenses incurred to make the asset ready for use;
- the production cost of facilities developed in-house includes all labour and materials costs, and all other production costs attributable to the construction of the asset, whether incurred directly by the company or invoiced by third parties.

New facilities provided by the concession grantors are carried at the value of the cost the Group would have borne if it had constructed them itself.

In the specific case of rising mains transferred for no consideration to the public distribution network in application of article 176 of French law 2018 - 1021 of 2 November 2018 on housing, development and digital affairs (the "ELAN" law), these assets are carried at their market value under article 213 of France's national chart of accounts.

Balance sheet liabilities are recognised in respect of new facilities provided for no consideration by the concession grantors and the rising mains transferred under the ELAN law are included in "Special French public electricity distribution concession liabilities" in the balance sheet liabilities.

Distribution assets (pipes, substations, connections) are depreciated over periods of 30 to 60 years, meters and metering equipment over periods of 20 to 30 years. The Group regularly checks the relevance of the main accounting parameters for concession assets (depreciation periods, replacement values, management levels).

Regulations governing distribution concessions in France

Since the enactment of the French Law of 8 April 1946, EDF, and subsequently Enedis, has been the concession operator of most of the public distribution networks in France.

SEI is the concession operator for distribution network zones that are not interconnected with the network in mainland France, under identical concession regulations to Enedis.

Electricité de Strasbourg is the concession operator for public distribution networks in a limited zone depending on a non-nationalised distributor, in application of the Law of 8 April 1946.

In accordance with France's Energy Code and Local Authorities Code, the public distribution of electricity is principally operated under the public service concessions system. The authorities granting the concessions (local authorities or public establishments for cooperation acting as an Energy Distribution Organisation Authority (Autorité Organisatrice de la Distribution d'Énergie - AODE) organise the public electricity distribution service through concession agreements with specifications that define the respective rights and obligations of the parties. Enedis distributes electricity to 95% of the population of mainland France under such concessions, with 386 concession agreements at 31 December 2022. The other 5% are served by Local Distribution Companies (including Electricité de Strasbourg).

2017 concession agreement model

On 21 December 2017, the FNCCR, France Urbaine, EDF and Enedis signed a framework agreement for a new concession agreement model. This new model modernises the relationship between Enedis and concession-granting authorities in the long term and reflects the parties' attachment to the principles of French concessions for electricity distribution: public service, regional solidarity and national

optimisation. The FNCCR and France Urbaine represent the concession-granting authorities, particularly towns, syndicated municipalities, boroughs and major cities when they are the authorities with competence to grant public electricity distribution concessions.

Concession agreements signed since 2018 apply the concession agreement model validated on 21 December 2017. At the effective date of a new agreement, the existing special concession liabilities recorded in application of the previous concession agreement (corresponding to the 1992 model) to represent the concession-granting authority's rights in the concession assets remain in the accounts. Like earlier concession agreements signed since 2011, the contractual obligation to establish provisions for replacement no longer exists, and the governance of investments is different.

To provide an effective public service, the distribution network operator and the concession-granting authority now agree to jointly set up a governance system to oversee investments in the public electricity distribution network over the area covered by the concession, including replacement of infrastructures. This system mainly takes the form of a master plan taking a long-term view of developments in the network over the concession area, and multi-year investment plans (programmes pluriannuels d'investissements - PPIs) for 4 and 5-year periods that are medium-term applications of the master plan.

PPIs contain detailed objectives for each investment purpose, concerning a selection of quantified, localised investments with financial valuations for the duration of the plan.

PPIs are revised when necessary, after consulting with Enedis and the authority granting the concession, to take account of changes in each party's investment priorities and financial resources.

If it were observed at the end of a PPI that any investment concerned by Enedis' financial commitment had not been made, the concession-granting authority could oblige Enedis to deposit a sum equal to 7% of the investments still to be made. This deposit would then be returned or retained after a two-year period, depending on the investments made by that time.

In accordance with the concession agreement model defined in late 2017 with the FNCCR and France Urbaine, negotiations for concession renewals continued in the regions of France during 2022. The phase of mass renewal of agreements is nearly finished.

By 31 December 2022, 302 concession agreements had been concluded under the new model validated in December 2017, for local projects with all kinds of concession-granting authorities: syndicated counties, two individual counties (*départements*), syndicated municipalities, major cities, urban boroughs, conglomerations and towns. 93% of contracts with the principal concession-granting authorities have thus been renewed under the new model.

Added to the 33 previously renewed or amended concessions that contain stipulations similar to the new model, these 302 concessions bring the total number of modernised concession agreements to 335 of the 364 that were due for renewal. Negotiations are continuing with a view to renewing agreements based on the old model as soon as possible.

11.1 Property, plant and equipment operated under French public electricity distribution concessions

| <i>(in millions of euros)</i> | 31/12/2021 | Increases ⁽¹⁾ | Decreases | Other movements ⁽²⁾ | 31/12/2022 |
|--|-----------------|--------------------------|--------------|--------------------------------|-----------------|
| Land and buildings | 3,407 | 139 | (30) | 1 | 3,517 |
| Networks | 104,700 | 4,292 | (445) | (3) | 108,544 |
| Other installations, plant, machinery, equipment & other | 5,072 | 371 | (425) | 5 | 5,023 |
| Assets in progress ⁽³⁾ | 1,886 | 327 | (2) | (7) | 2,204 |
| Gross value | 115,065 | 5,129 | (902) | (4) | 119,288 |
| Land and buildings | (1,661) | (83) | 26 | (12) | (1,730) |
| Networks | (48,119) | (233) | 327 | (2,465) | (50,490) |
| Other installations, plant, machinery, equipment & other | (3,153) | (229) | 417 | (137) | (3,102) |
| Depreciation and impairment | (52,933) | (545) | 770 | (2,614) | (55,322) |
| NET VALUE | 62,132 | 4,584 | (132) | (2,618) | 63,966 |

⁽¹⁾ Increases also include facilities provided by the concession-granting authorities.

⁽²⁾ Other movements mainly concern depreciation of assets operated under concessions, booked against amortization recorded in the special concession liability accounts.

⁽³⁾ Increases in assets in progress are stated net of the effects of newly-commissioned assets.

11.2 Special French public electricity distribution concession liabilities

Accounting principles and methods

Concession liabilities represent the contractual obligations specific to the concession rules for public electricity distribution concessions in France, and comprise the following:

- the concession-granting authority's rights in existing assets (its right to recover all the concession assets):
 - › the value in kind of the facilities (the net book value of assets operated under concessions),
 - › less any as yet unamortised financing provided by the operator;
- the concession-granting authority's rights in assets to be replaced (the operator's obligations relating to assets due for replacement):
 - › amortisation of financing by the grantor: this is a liability owed by the concession operator to the grantor and is recognised progressively as the asset is used,
 - › provision for replacement: this provision exclusively concerns assets due for replacement before the end of concessions using the 1992 concession agreement model, except for the rising mains transferred in application of the ELAN law. It is accrued over the asset's useful life, based on the difference between the asset's replacement value for identical capacity and functions, and the original value. In application of the 2017 concession model, used in almost all current concession agreements, no provision for renewal is now established for concession assets. The balance of provisions at the end of the previous concession agreement have been transferred to the new concession and the provisions for renewal continue to be used for their intended purpose.

When assets are replaced, amortisation recognised on the portion of assets considered to be financed by the grantor, and the provision for replacement established for the relevant asset, are cancelled and transferred to rights in existing assets. Any excess provision is taken to income.

During the concession, the grantor's rights in assets to be replaced are thus transferred upon the asset's replacement to become the grantor's rights in existing assets, with no outflow of cash to the benefit of the grantor.

The Group considers that the obligations related to assets to be replaced are to be valued on the basis of the special clauses contained in the concession agreements. Under this approach, these obligations are stated at the value of the contractual obligations as calculated and reported annually in the reports to the grantors. This contractual value also reflects the eventuality that the EDF group may one day lose its status as the mandatory concession operator.

The changes in special concession liabilities for existing assets and assets to be replaced are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|-------------------|-------------------|
| Value in kind of assets ⁽¹⁾ | 55,788 | 54,391 |
| Unamortised financing by the operator | (31,681) | (30,307) |
| Rights in existing assets – net value | 24,107 | 24,084 |
| Amortisation of financing by the grantor | 16,331 | 15,630 |
| Provisions for replacement | 9,021 | 9,139 |
| Rights in assets to be replaced | 25,352 | 24,769 |
| SPECIAL FRENCH PUBLIC ELECTRICITY DISTRIBUTION CONCESSION LIABILITIES | 49,459 | 48,853 |

⁽¹⁾ Including contributions received to finance concession assets, amounting to €127 million (€129 million in 2021).

Note 12 Investments in associates and joint ventures

Investments in associates and joint ventures are as follows:

| (in millions of euros) | Notes | Ownership% | 31/12/2022 | | 31/12/2021 | |
|--|-------|------------|---------------------|---------------------|---------------------|---------------------|
| | | | Share of net equity | Share of net income | Share of net equity | Share of net income |
| Principal investments in associates | | | | | | |
| CTE | 12.1 | 50.10 | 1,766 | 250 | 1,478 | 307 |
| Taishan (TNPJVC) ⁽¹⁾ | 12.2 | 30.00 | n.c. | n.c. | 1,210 | (39) |
| Other investments held by EDF SA | 12.3 | n.a. | 1,944 | 79 | 2,282 | 102 |
| Investments held by EDF Renewables | 12.3 | n.a. | 2,519 | (52) | 1,453 | (117) |
| Other investments in associates and joint ventures | 12.3 | n.a. | n.c. | n.c. | 1,661 | 260 |
| Subtotal | | - | 9,421 | 759 | 8,084 | 513 |
| CENG (sold on 6 August 2021) | 3.1 | n.a. | n.a. | n.a. | n.a. | 131 |
| Subtotal | | | - | - | - | 131 |
| TOTAL | | | 9,421 | 759 | 8,084 | 644 |

n.a. = not applicable.

n.c. = not communicated.

⁽¹⁾ The financial data for Taishan at 31 December 2022 are not reported in this table as CGN (Taishan's parent company) publishes its consolidated financial statements later than the Group.

12.1 Coentreprise de Transport d'Électricité (CTE)

The key financial indicators for the CTE subgroup (on a 100% basis) are as follows:

| (in millions of euros) | 31/12/2022 | 31/12/2021 |
|---|---------------|---------------|
| Non-current assets | 20,484 | 19,866 |
| Current assets | 6,241 | 3,577 |
| TOTAL ASSETS | 26,725 | 23,443 |
| Equity | 3,525 | 2,950 |
| Non-current liabilities | 15,017 | 15,163 |
| Current liabilities | 8,183 | 5,330 |
| TOTAL EQUITY AND LIABILITIES | 26,725 | 23,443 |
| Sales | 4,928 | 5,254 |
| Operating profit before depreciation and amortisation | 1,841 | 2,094 |
| Net income | 498 | 612 |
| Net indebtedness | 10,831 | 12,602 |
| Gains and losses recorded directly in equity | 433 | (161) |
| Dividends paid | 356 | 259 |

CTE's affiliate, RTE (Réseau de Transport d'Électricité), is responsible for managing the high voltage and very high voltage public electricity transmission network in France. Enedis uses RTE's network to convey energy to the distribution network.

12.2 Taishan

12.2.1 Taishan financial indicators

The key financial indicators published for Taishan (on a 100% basis) are as follows:

| <i>(in millions of euros)</i> | 31/12/2021 | 31/12/2020 |
|-------------------------------------|---------------|---------------|
| Non-current assets | 12,265 | 11,303 |
| Current assets | 900 | 897 |
| TOTAL ASSETS | 13,165 | 12,200 |
| Equity | 4,036 | 3,744 |
| Non-current liabilities | 6,680 | 6,022 |
| Current liabilities | 2,449 | 2,434 |
| TOTAL EQUITY AND LIABILITIES | 13,165 | 12,200 |
| Sales | 919 | 1,027 |
| Net income | (131) | (41) |
| Dividends paid | - | - |

12.2.2 Transactions between the EDF group and Taishan

EDF owns 30% of Taishan Nuclear Power Joint Venture Company Limited (TNPJVC), which was set up to build and operate two EPR nuclear reactors in Taishan, in the province of Guangdong in China. Comprising two 1750MW EPR reactors, Taishan nuclear power plant is the biggest cooperation project between China and France in the energy sector. CGN holds a 51% stake and Guangdong Energy Group a 19% stake.

Following the start of commercial operation by the first reactor on 13 December 2018, the second reactor began commercial operation on 7 September 2019. The first shutdowns for refueling took place in 2020 for Taishan 1 and 2021 for Taishan 2.

On 20 March 2019, the NDRC (National Development and Reform Commission) attributed regulated tariffs to the first three third-generation nuclear projects in China, one of which is Taishan. The tariff attributed to Taishan was set at RMB435/MWh until the end of 2021, with retroactive effect to the date the first unit was commissioned (13 December 2018). The indexing mechanisms applicable from 2022 were not set out in this decision and are still currently unknown. The NDRC announced that the current tariffs would be extended to 3rd generation plants (including Taishan).

On 14 June 2021, during its second cycle of operation, a build-up of noble gases was detected in the primary circuit of reactor 1 at the Taishan plant. The Chinese ministry for ecology and the environment stated that this was due to a few unsealed fuel rods. Following an initial analysis of the situation, on 30 July 2021 the operator of the Taishan plant decided to shut down reactor 1 to assess the situation in more detail, prevent it from progressing, and take remedial action. Defueling operations were completed on 22 August 2021. Inspections carried out on the fuel assemblies of Taishan reactor 1 following the technical issue encountered during its second operating cycle showed mechanical wear on certain assembly components. This phenomenon has already been encountered in several reactors in the French nuclear fleet. During the first half of 2022, EDF and Framatome contributed to drawing up the documentation to safely restart Taishan reactor 1, and supported TNPJVC for its examination by the Chinese authorities. On 15 August 2022, Taishan reactor 1 was reconnected to the Chinese electricity network after the final inspection by the competent Chinese authorities at the end of July 2022.

Reactor 2 generated energy continuously throughout the first half of 2022, and was then taken offline for maintenance and refuelling in mid - 2022. It was successfully reconnected to the network before the end of the year 2022.

Under the TNPJVC shareholder pact, EDF began an "interpretation" arbitration procedure in January 2021 in the Singapore International Chamber of Commerce against its partner CGN. The disagreement concerns the accounting policy for the power plant, particularly its depreciation period. EDF recommends a 60 - year period in line with the plant's operating lifetime, while CGN considers it should be 41 years, ending at the same time as the entity TNPJVC. This accounting policy could influence the remuneration received by the EDF group through this partnership. EDF filed an initial request for arbitration in November 2021, and CGN responded in March 2022. Hearings have been scheduled for 10 - 14 October 2023.

A provision has been established in consideration of the persistent uncertainties regarding the level of tariff changes that could threaten the recoverable value of the investment accounted for by the equity method (this provision is included in "Provisions for contingencies related to subsidiaries and investments" in note 17.2).

12.3 Other investments in associates and joint ventures

The other investments held by EDF SA are included in dedicated assets (see note 15.1.2).

The other investments held by EDF Renewables are mainly located in North America, and to a lesser degree in Europe, China and Brazil.

Other investments in associates and joint ventures principally concern:

- JERA Global Markets (JERA GM), 33%-owned by EDF Trading, a company specializing in trading and optimization activities, particularly for liquified natural gas (LNG);
- the supercritical coal-fired plant owned by Jiangxi Datang International Fuzhou Power Generation Company Ltd. in China, 49% - owned by the Group;
- the dam owned by Compagnie Énergétique de Sinop (CES) in Brazil, 51% - owned by the Group;
- the Nachtigal dam in Cameroon, 40%-owned by the Group: construction began in March 2019, with commissioning expected in 2024.

In 2022, €(141) million of impairment was booked in respect of investments in associates and joint ventures, principally concerning associates of EDF Renewables (a net amount of €(121) million). €139 million of this impairment (see note 10.8) concerns wind power assets in Texas, due to congestion problems on the electricity network. Some impairment was also booked in respect of unlisted assets held by EDF SA (EDF Invest) that are included in dedicated assets.

In 2021, €(219) million of impairment was booked in respect of investments in associates and joint ventures, principally concerning associates of EDF Renewables (€(149) million). This impairment primarily relates to wind power assets in the USA following the major weather event of February 2021 in Texas, photovoltaic plants in France due to revision of purchase obligation tariffs introduced for certain facilities by the French Finance Law for 2021 (see note 10.8.2), and an offshore wind farm currently being built off the coast of Scotland, following construction difficulties with the foundations. Some impairment was also booked on unlisted assets owned by EDF SA (EDF Invest), included in dedicated assets.

Principal developments in investments accounted for by the equity method in 2022

Successful bid for a maritime zone in New York bight to develop offshore wind energy

On 25 February 2022, EDF Renewables and Shell New Energies US LLC (Shell), equal partners in the Atlantic Shores Offshore Wind LLC (Atlantic Shores) consortium, won development rights for a 32,112 - hectare offshore area in the New York Bight, between Long Island and the New Jersey coast. After completing the development phase, the consortium will be able to build and operate an offshore wind project with an estimated capacity of 1.5 gigawatts (GW) for a period of 33 years.

EDF and its partner won one of six proposed lease areas to host offshore wind projects in an auction held by the Bureau of Ocean Energy Management (BOEM) from February 23 – 25, 2022.

Saint-Nazaire offshore wind farm: erection of France's first offshore wind turbine

On 13 April 2022, EDF Renewables, EIH SARL (owned by Enbridge Inc. and CPP Investments), the joint owners of the Saint-Nazaire offshore wind farm, and GE Renewable Energy, the wind turbine supplier, announced the erection of France's first offshore wind turbine, 12 km off the coast of the Guérande peninsula in the Loire-Atlantique department.

The Saint-Nazaire offshore wind farm was commissioned progressively over the second half of the year. It has total capacity of 480MW and is expected to generate the equivalent of 20% of the Loire-Atlantique department's total annual electricity consumption.

EDF Renewables commissioned four solar power plants, including two floating plants, in Israel

On 8 June 2022, EDF Renewables announced the commissioning of four new solar farms in Israel, with a total 54MW of installed capacity. These new facilities are part of the Israeli government's target to increase the share of renewable energy in the country's energy mix to 30% by 2030. It also contributes to the EDF Group's Cap 2030 strategy, which aims to double its net renewable energy capacity from 28GW to 60GW between 2015 and 2030.

A consortium consisting of EDF, KEPCO and Kyushu Electric Power Co., finalises the financing of a strategic power transmission project with ADNOC and TAQA in the United Arab Emirates

On 26 September 2022, a consortium composed of EDF, KEPCO and Kyushu Electric Power Co., world leaders in the energy sector, announced the financial closing of a transmission project in the United Arab Emirates alongside Emirati companies ADNOC (Abu Dhabi National Oil Company) et TAQA2 (Abu Dhabi National Electricity Company) for a total amount of \$3.8 billion. The project consists in building and operating a high-voltage, direct current (HVDC-VSC) subsea transmission system, a first-of-its-kind in the Middle East and North Africa region.

This strategic project is expected to reduce the carbon footprint of ADNOC's offshore operations by more than 30%, replacing existing offshore thermal plants with low carbon power sources available on the Abu Dhabi onshore power network.

The consortium, which will hold a combined 40% stake in the project, was selected in December 2021 by ADNOC and TAQA to develop and then operate the 3.2GW innovative transmission system for 35 years.

The construction started in 2022 and the project's commercial operation is scheduled for 2025.

Note 13 Working capital

13.1 Working capital: composition and change

13.1.1 Composition of working capital

Changes in net working capital during 2022 are as follows:

| <i>(in millions of euros)</i> | Notes | 31/12/2021 | Monetary changes | Non-monetary changes | 31/12/2022 |
|--|-----------------|-----------------|------------------|----------------------|----------------|
| Inventories and work-in-process | 13.2 | (16,197) | (1,894) | 430 | (17,661) |
| Trade receivables net of provisions | 13.3 | (22,235) | (3,643) | 1,034 | (24,844) |
| Trade payables | 13.4 | 19,565 | 4,524 | (805) | 23,284 |
| Compensation receivable for Public Energy Service charges (CSPE payable) | 13.3.4 | 294 | 5,780 | - | 6,074 |
| Other receivables and payables ⁽¹⁾ | 13.3.4 and 13.5 | 6,050 | 3,538 | (581) | 9,007 |
| Other components of working capital ⁽²⁾ | | (648) | (4) | 535 | (117) |
| NET WORKING CAPITAL | | (13,171) | 8,301 | 613 | (4,257) |

⁽¹⁾ Excluding receivables and payables on acquisition/disposal of assets and investment subsidies.

⁽²⁾ The other components of working capital includes CO2 emission rights and green certificates presented in intangible assets in the balance sheet, and derivatives related to operations.

13.1.2 Non-monetary changes in working capital

Non-monetary changes include the effect of changes in the scope of consolidation, foreign exchange effects, changes in fair values and the effect of reclassifications. The variation in non-monetary changes in 2022 is mainly explained by the €0.5 billion change in the fair value of operating derivatives.

13.1.3 Monetary changes in working capital

| <i>(in millions of euros)</i> | Notes | 2022 | 2021 |
|--|-----------------|--------------|----------------|
| Change in inventories | 13.2 | (1,894) | (626) |
| Change in trade receivables | 13.3 | (3,643) | (7,411) |
| Change in trade payables | 13.4 | 4,524 | 7,407 |
| Change in the Compensation receivable for Public Energy Service charges (CSPE payable) | 13.3.4 | 5,780 | 2,268 |
| Change in other receivables and payables ⁽¹⁾ | 13.3.4 and 13.5 | 3,534 | (3,164) |
| CHANGE IN WORKING CAPITAL | | 8,301 | (1,526) |

⁽¹⁾ The change in other receivables and payables includes monetary changes in CO2 emission rights and green certificates presented in intangible assets in the balance sheet, and derivatives related to operations.

Monetary changes in working capital improved, at €8.3 billion in 2022, mainly as a result of surplus CSPE compensation of €5.8 billion (see note 13.5.4), lower net margin calls in the trading activities (€4.8 billion), and the €(1.9) billion change in the net inventory position (see note 13.2).

13.2 Inventories

Accounting principles and methods

Inventories are recognised at the lower of acquisition cost or net realisable value, except for inventories held for trading activities, which are carried at market value. Inventories consumed are generally valued by the weighted average unit cost method.

Cost includes all direct materials costs, labour costs, and a share of indirect production costs.

Nuclear fuel

Inventory accounts include:

- nuclear materials, whatever their form during the fuel production cycle;
- and fuel components in the warehouse or in the reactor.

The stated value of nuclear fuel and materials and work-in-progress is determined based on direct processing costs including materials, labour and subcontracted services (e.g. fluorination, enrichment, fabrication, etc.).

In accordance with regulatory obligations specific to each country, inventories of fuel (new or not entirely consumed) may also comprise expenses for spent fuel management and long-term radioactive waste management, with corresponding provisions or debts in the liabilities, or full and final payments made when the fuel is loaded.

In France, in application of the concept of "loaded fuel" as defined in the ministerial order of 21 March 2007, the cost of inventories for fuel loaded in the reactors but not yet irradiated includes expenses for spent fuel management and long-term radioactive waste management. The corresponding amounts are taken into account in the relevant provisions.

In compliance with IAS 23, interest expenses incurred in financing inventories of nuclear fuels are charged to expenses for the period provided these inventories are manufactured in large quantities on a repetitive basis.

Nuclear fuel consumption is determined by component (natural uranium, fluorination, enrichment, fuel assembly fabrication) as a proportion of the expected output when the fuel is loaded in the reactor. These quantities are valued at weighted average cost of inventories. Inventories are periodically corrected in view of forecast spent quantities based on neutronic measurements and physical inventories.

Other inventories

Other inventories comprise:

- other fuels, comprising fossil fuels required for operation of fossil-fired power plants and gas stocks;
- other operating supplies, consisting of operating materials and equipment such as spare parts supplied under a maintenance programme (excluding capitalised strategic safety spare parts);
- goods and services in progress, particularly relating to the businesses of EDF Renewables, Dalkia and Framatome;
- other inventories, mainly consisting of certificates issued under the various environmental schemes (see notes 5.5.4 and 10.2) and capacity obligation mechanisms (capacity guarantees in France – see note 5.1).

Other non-trading operating inventories are generally valued at weighted average cost including direct and indirect purchasing costs.

Impairment of spare parts principally depends on the turnover of these parts.

The carrying value of inventories, broken down by nature, is as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | | | 31/12/2021 | | |
|---|---------------|--------------|---------------|---------------|--------------|---------------|
| | Gross value | Provision | Net value | Gross value | Provision | Net value |
| Nuclear fuel | 10,737 | (422) | 10,315 | 10,938 | (459) | 10,479 |
| Other fuel | 2,029 | (2) | 2,027 | 1,255 | (4) | 1,251 |
| Other supplies | 1,878 | (422) | 1,456 | 1,770 | (402) | 1,368 |
| Work-in-progress for production of goods and services | 622 | (35) | 587 | 615 | (38) | 577 |
| Other inventories | 3,326 | (50) | 3,276 | 2,540 | (18) | 2,522 |
| TOTAL INVENTORIES | 18,592 | (931) | 17,661 | 17,118 | (921) | 16,197 |

The long-term portion (more than one year) mainly concerns nuclear fuel inventories and amounts to €8,557 million at 31 December 2022 (8,576 million at 31 December 2021).

The change in inventories in 2022 is principally explained by the increase over the year in stocks of energy savings certificates, presented in "Other inventories" (see note 5.5.4), and the rise in gas prices and volumes, presented in "Other fuel".

13.3 Trade receivables

Accounting principles and methods

Trade receivables are initially recognised at the fair value of the consideration received or receivable, and subsequently carried at amortised cost or at fair value through OCI.

Trade receivables also include the value of unbilled receivables for energy already supplied, which are presented net of advances received from customers who pay in regular monthly instalments.

The Group applies IFRS 9's simplified approach to measure expected credit losses on trade receivables, using provision matrices established on the basis of credit loss histories.

Details of net trade receivables are as follows:

| <i>(in millions of euros)</i> | <i>Note</i> | 31/12/2022 | 31/12/2021 |
|--|-------------|-------------------|-------------------|
| Trade receivables, gross value – excluding EDF Trading | | 21,568 | 19,781 |
| - contract assets | 13.3.3 | 441 | 545 |
| Trade receivables, gross value – EDF Trading | | 4,598 | 3,545 |
| Impairment | | (1,322) | (1,091) |
| TRADE RECEIVABLES - NET VALUE | | 24,844 | 22,235 |

Most trade receivables mature within one year.

Advances received from customers in France who pay in regular monthly instalments, amounting to €7,423 million at 31 December 2022 (€7,071 million at 31 December 2021), are deducted from trade receivables.

The increase in 2022 in the gross value of trade receivables excluding EDF Trading is mainly explained by changes in the prices billed to customers due to the impact of rising market prices: this mainly concerned EDF Energy (€1.5 billion). In France, the variation in this item was negative due to the tariff cap measures introduced by the government, particularly the lower rate of the TICFE.

Impairment of trade receivables increased, principally in the United Kingdom and Belgium, as the credit risk was considered higher due to the higher prices billed to customers in line with rising market prices.

13.3.1 Trade receivables due and not yet due

| <i>(in millions of euros)</i> | 31/12/2022 | | | 31/12/2021 | | |
|--------------------------------------|--------------------|------------------|------------------|--------------------|------------------|------------------|
| | Gross value | Provision | Net value | Gross value | Provision | Net value |
| Trade receivables | 26,166 | (1,322) | 24,844 | 23,326 | (1,091) | 22,235 |
| overdue by up to 6 months | 2,037 | (183) | 1,854 | 1,285 | (215) | 1,070 |
| overdue by 6-12 months | 678 | (242) | 436 | 481 | (136) | 345 |
| overdue by more than 12 months | 1,117 | (551) | 566 | 978 | (551) | 427 |
| Trade receivables due | 3,832 | (976) | 2,856 | 2,744 | (902) | 1,842 |
| Trade receivables not yet due | 22,334 | (346) | 21,988 | 20,582 | (189) | 20,393 |

13.3.2 Assignment of receivables

Accounting principles and methods

When it can be demonstrated that the Group has transferred substantially all the risks and benefits related to assignment of receivables, particularly the credit risk, the items concerned are derecognised.

Otherwise, the operation is considered as a financing operation, and the receivables remain in the balance sheet assets, with recognition of a corresponding financial liability.

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|---|-------------------|-------------------|
| Trade receivables assigned and wholly retained in the balance sheet | 324 | 340 |
| Trade receivables assigned and partly retained in the balance sheet | - | - |
| Trade receivables assigned and wholly derecognised | 2,470 | 1,456 |

The Group assigned trade receivables for a total of €2,470 millions at 31 December 2022, mainly concerning Edison, EDF SA, Dalkia and Luminus (€1,456 million at 31 December 2021).

As most assignment operations are carried out on a recurrent, without-recourse basis, the corresponding receivables are no longer carried in the Group's consolidated balance sheet.

13.3.3 Contract assets

Contract assets are rights held by an entity to receive a consideration in return for goods or services supplied to customers, when such rights are conditional on something other than the passage of time. Most contract assets mature within one year.

The contract assets included in receivables represent an amount of €441 million at 31 December 2022 and €545 million at 31 December 2021 and mainly concern Framatome, Dalkia and EDF Renewables.

13.3.4 Other receivables

Details of other receivables are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|-------------------------------|---------------|---------------|
| Prepaid expenses | 1,592 | 1,485 |
| VAT receivables | 1,968 | 2,051 |
| Other tax receivables | 274 | 348 |
| Other operating receivables | 13,496 | 14,405 |
| OTHER RECEIVABLES | 17,330 | 18,289 |
| Non-current portion | 2,165 | 2,092 |
| Current portion | 15,165 | 16,197 |
| Gross value | 17,390 | 18,344 |
| Impairment | (60) | (55) |

At 31 December 2022, other operating receivables include €5.2 billion of margin calls made in the trading activity (€9.8 billion in 2021). The decrease in this item is due to collateral being replaced by letters of credit. The amounts of margin calls recognised in assets cannot be netted with the margin calls recognised in liabilities (see note 13.5). Other receivables also include the €1,723 million receivable from RTE, corresponding to transfers of interconnection income following the CRE's decision 2022 - 296 of 17 November 2022, confirmed by decision 2023 - 50 of 31 January 2023 (see note 5.1.1).

Other operating receivables also include €3,234 million of advances paid to suppliers (€1,274 million at 31 December 2021). Most of these advances concern nuclear fuel supply contracts in the France – Generation and Supply segment.

13.4 Trade payables

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|---------------|---------------|
| Trade payables – excluding EDF Trading | 16,001 | 14,041 |
| Trade payables – EDF Trading | 7,283 | 5,524 |
| Trade payables | 23,284 | 19,565 |

The increase in 2022 in trade payables excluding EDF Trading is mainly explained by changes in market prices, and therefore concerns various Group entities.

The Group has a reverse factoring programme allowing suppliers to transfer their receivables on EDF to a factoring company, at their own initiative. For the Group, this programme does not cause any change in the substance and features of the receivables held by suppliers on EDF. In particular it does not affect the sequences of operating cash flows. The associated liabilities are therefore included in "trade payables" in the Group's financial statements.

13.5 Other liabilities

Details of other liabilities are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | Including contract liabilities | 31/12/2021 | Including contract liabilities |
|--|---------------|--------------------------------|---------------|--------------------------------|
| Advances and progress payments received | 3,973 | 2,025 | 2,114 | 1,635 |
| Liabilities related to property, plant and equipment | 4,631 | - | 4,368 | - |
| Tax liabilities | 3,488 | - | 5,093 | - |
| Social charges | 5,865 | - | 5,092 | - |
| Deferred income on long-term contracts | 3,180 | 3,144 | 3,146 | 3,110 |
| Other deferred income ⁽¹⁾ | 1,172 | 694 | 997 | 592 |
| Other | 16,163 | - | 9,254 | - |
| OTHER LIABILITIES | 38,472 | 5,863 | 30,064 | 5,337 |
| Non-current portion | 4,968 | 2,929 | 4,816 | 3,107 |
| Current portion | 33,504 | 2,934 | 25,248 | 2,230 |

⁽¹⁾Including the payment made under the Fessenheim compensation protocol (see note 5.5.4).

13.5.1 Advances and progress payments received

Advances and progress payments received comprise €630 million of payments made by the customers in Framatome's long-term contracts (€642 million at 31 December 2021).

13.5.2 Tax liabilities

At 31 December 2022, tax liabilities mainly include an amount of €116 million for the CSPE to be collected by EDF on energy supplied but not yet billed, less the CSPE tax collected on advances from customers who pay in regular monthly instalments (€562 million at 31 December 2021).

13.5.3 Deferred income on long-term contracts

EDF's deferred income on long-term contracts at 31 December 2022 comprises €1,777 million (€1,746 million at 31 December 2021) of partner advances made to EDF under the nuclear plant financing plans.

Deferred income on long-term contracts also includes an advance of €1.7 billion paid to the EDF group in 2010 under the agreement with the Exeltium consortium. This advance is transferred to the income statement progressively over the term of the contract (24 years).

13.5.4 Other

At 31 December 2022, other operating liabilities include €5.9 billion of margin calls made in the trading activity (€5.8 billion in 2021). The amounts of margins calls recognised in liabilities cannot be netted with margin calls recognised in assets (see note 13.3.4).

Other liabilities at 31 December 2022 also include a €6,074 million operating liability due to the State in connection with the CSPE (€294 million at 31 December 2021).

The final line of the table of other liabilities includes investment subsidies received during 2022, amounting to €566 million (€536 million in 2021). Investment subsidies received by Group companies are included in liabilities under the heading "Other liabilities" and transferred to income as and when the economic benefits of the corresponding assets are utilised.

EDF's public service charges

The amount of public service charges to be compensated to EDF for 2022 is €808 million (€5,472 million in 2021). Public service charges to be covered in connection with purchase obligations decreased significantly and became negative in 2022 because of very high market prices, which were generally well above the purchase obligation cost for EDF. However, the public service charges to be covered in 2022 include an amount of €1,571 million to cover the sales revenue shortfall caused by the cap on sale prices to final customers introduced by the French authorities through the electricity and gas tariff caps (see note 5.1.1).

The amounts received in 2022 out of the State's General Budget totalled €6,602 million (this includes a payment of €141 million for forecast 2022 expenses relating to the gas tariff cap).

This compensation received from the State in 2022 was defined in the Finance Law for 2022 based on 2021 market prices, and was thus ultimately much higher than the public service charges to be covered for 2022.

At 31 December 2022, EDF SA therefore recognised an operating liability of €6,074 million payable to the State (€294 million at 31 December 2021).

The compensation mechanism for public energy service charges in France is presented in note 5.5.1.

13.5.5 Contract liabilities

Contract liabilities represent an entity's obligations to provide customers with goods or services for which it has already been paid, or for which payment is due.

Changes in contract liabilities were as follows:

| <i>(in millions of euros)</i> | 31/12/2021 | Amounts recorded during the period | Amounts transferred to sales during the period | Amounts cancelled during the period with no impact on sales | Effect of unwinding the discount | Change in scope of consolidation | Foreign exchange effect | 31/12/2022 |
|--|------------|------------------------------------|--|---|----------------------------------|----------------------------------|-------------------------|------------|
| Advance payments received | 1,635 | 1,824 | (1,360) | (25) | (1) | 2 | (50) | 2,025 |
| Deferred income on long-term contracts | 3,110 | 439 | (476) | - | 51 | 10 | 10 | 3,144 |
| Other deferred income | 592 | 613 | (515) | - | - | 2 | 2 | 694 |

These liabilities comprise the majority of advances and progress payments received, amounting to €2,025 million (principally concerning the Framatome, United Kingdom and France – Regulated Activities segments), and the majority of deferred income (on long-term and other contracts), amounting to €3,838 million (principally concerning the France – Generation and Supply segment). They thus total €5,863 million at 31 December 2022 (€5,337 million at 31 December 2021).

Contracts expiring in more than one year on which obligations are unfulfilled or partially fulfilled at the reporting date should generate sales revenues of approximately €12,211 million which have not yet been recognised. €997 million of these sales revenues will be recognised progressively until 2034 on the Exeltium contract, and the balance will be recognised over the operating period for contracts relating to jointly-operated power plants, and over the term of the contract for other firm sale contracts (excluding energy sales).

Note 14 Equity and earnings per share

14.1 Share capital

Accounting principles and methods

Share issue expenses correspond exclusively to external costs expressly related to the capital increase. They are charged against the issue premium at their net-of-tax value.

Other expenses are classified as expenses of the period.

At 31 December 2022, EDF's share capital amounts to €1,943,859,210 comprising 3,887,718,420 fully subscribed and paid-up shares with nominal value of €0.50, owned 89.01% by the French State, 9.38% by the public (institutional and private investors) and 1.59% by current and retired Group employees, with 0.02% held by EDF as treasury shares. On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023. Following completion of the Offer, the French State will own 95.82% of the share capital with at least 96.53% of voting rights, and 99.96% of the outstanding OCEANE bonds (see note 2). This fulfils the conditions for proceeding to a compulsory squeeze-out for EDF shares and OCEANEs. As indicated in an AMF notice of 25 January 2023, while awaiting the Paris Court of Appeal's ruling on the action brought by the employee shareholding fund Actions EDF and the shareholders' associations *Energie En Actions* and *Association pour la Défense des Actionnaires Minoritaires* seeking annulment of the AMF's approval of the Offer, the French government has made an undertaking that it will not proceed with the compulsory squeeze-out until the Court of Appeal has issued its decision on the merits of the case.

On 7 April 2022, EDF carried out a cash capital increase, maintaining the shareholders' preferential subscription rights. This capital increase totalled €3,164 million gross (including the issue premium) and led to the issuance of 498,257,960 new shares with a unit issue price of €6.35, recognised in the financial statements as follows:

- a €249 million increase to the share capital;
- a €2,899 million increase to the issue premium, net of expenses.

The French State, as undertaken, subscribed €2.7 billion or approximately 83.88% of this capital increase.

In June 2022, the payment of part of the dividend for 2021 in the form of a scrip dividend led to a €66 million increase in the share capital and an issue premium of €913 million following issuance of 131,545,635 new shares.

On 25 July 2022, the "ERO 2022" capital increase reserved for employees, with elimination of preferential subscription rights, led to a €9 million increase in the share capital and an issue premium of €94 million, following the issue of 18,100,741 new EDF shares (see note 7).

In December 2022, conversion of OCEANE bonds resulted in a €0.57 million increase in the share capital, following the issue of 1,137,336 new EDF shares (see note 14.5).

Under Article L. 111-67 of the French Energy Code, the French State must hold more than 70% of the capital of EDF at all times.

14.2 Treasury shares

Accounting principles and methods

Treasury shares are shares issued by EDF and held either by that company or by other entities in the consolidated Group. They are valued at acquisition cost and deducted from equity until the date of disposal. Net gains or losses on disposals of treasury shares are directly included in equity and do not affect net income.

A share repurchase programme authorised by the General Shareholders' Meeting of 9 June 2006 was implemented by the Board of Directors, within the limit of 10% of the total number of shares making up the Company's capital. The initial duration of the programme was 18 months, renewed for 12 months then by tacit agreement every year.

A liquidity contract exists for this programme, as required by the French market regulator AMF (Autorité des marchés financiers).

At 31 December 2022, treasury shares deducted from consolidated equity represent 888,511 shares with total value of €7 million.

14.3 Dividends

At the Ordinary and Extraordinary Shareholders' Meeting of 12 May 2022 it was decided to distribute an ordinary dividend of €0.58 per share in respect of 2021, offering shareholders the choice of payment in cash or shares (scrip option).

In application of Article 24 of the Company's articles of association, shareholders who have held their shares continuously for at least 2 years at the year-end and still hold them at the dividend distribution date benefit from a 10% bonus on their dividends. The number of shares carrying an entitlement to the bonus dividend cannot exceed 0.5% of the Company's capital per shareholder. The bonus dividend amounts to €0.638 per share.

The French government opted for the scrip dividend for 2021.

The amount of the cash dividend paid to shareholders who did not opt for the scrip dividend for 2021 amounts to €72 million.

No interim dividend was paid for 2022.

14.4 Perpetual subordinated bonds

Accounting principles and methods

Perpetual subordinated bonds ("hybrid" bond issue)

The perpetual subordinated bonds issued by the Group ("hybrid" bond issue) incorporate options for redemption at the initiative of EDF. These options may be exercised after a minimum period that depends on the specific terms of each issue, and subsequently at each coupon date or in the event of highly specific circumstances. The annual yield is fixed and reviewable based on contractual clauses that vary according to the specific terms of the issuance. There is no obligation for EDF to make any payment, due to the existence of contractual clauses entitling it to defer payment indefinitely.

However, those clauses stipulate that any deferred payments must be made in the event of a dividend distribution. All these features give EDF an unconditional right to avoid paying out cash or another financial asset for the principal or interest. Consequently, in compliance with IAS 32, these bonds are recorded as equity instruments and any payment made is treated in the same way as dividends.

14.4.1 Outstanding perpetual subordinated bonds at 31 December 2022

At 31 December 2022, perpetual subordinated bonds carried in equity amounted to €11,722 million (less net-of-tax transaction costs) (€12,264 million at 31 December 2021).

On 30 November 2022 the Group issued hybrid bonds, recorded in equity, with a total value of €994 million (see note 14.4.2).

On 29 January 2023 EDF exercised its option to redeem all the perpetual subordinated bonds, totalling USD 2,098 million. EDF consequently reclassified these equity instruments as financial liabilities at 31 December 2022 at the amount of €1,538 million, considering the redemption as certain (see note 18.3.2.1).

Interest paid by EDF to the bearers of perpetual subordinated bonds issued totalled €606 million in 2022 and €547 million in 2021. The resulting cash payout is reflected in a corresponding reduction in Group equity.

In January 2023, EDF paid interest of around €224 million to the bearers of perpetual subordinated bonds.

Perpetual subordinated bonds in the accounts of EDF

(in millions of currency units)

| Entity | Issue ⁽¹⁾ | Nominal amount | Currency | Redemption option | Coupon |
|--------|----------------------|----------------|----------|-------------------|--------|
| EDF | 01/2013 | 1,250 | EUR | 12 years | 5.38% |
| EDF | 01/2013 | 1,250 | GBP | 13 years | 6.00% |
| EDF | 01/2014 | 1,500 | USD | 10 years | 5.63% |
| EDF | 01/2014 | 1,000 | EUR | 12 years | 5.00% |
| EDF | 01/2014 | 750 | GBP | 15 years | 5.88% |
| EDF | 10/2018 | 1,250 | EUR | 6 years | 4.00% |
| EDF | 11/2019 | 500 | EUR | 8 years | 3.00% |
| EDF | 09/2020 | 850 | EUR | 6.5 years | 2.88% |
| EDF | 09/2020 | 1,250 | EUR | 10 years | 3.38% |
| EDF | 06/2021 | 1,250 | EUR | 7 years | 2.63% |
| EDF | 12/2022 | 1,000 | EUR | 6 years | 7.50% |

⁽¹⁾ Date funds were received.

14.4.2 Changes in perpetual subordinated bonds during 2022

On 30 November 2022, EDF launched a Euro-denominated 1 billion hybrid note offering, with a 7.5% coupon and a 6 - year first call date.

The Company can redeem the hybrid note for cash at any time during the 90 days before the first interest reset date, which is expected to be in six years and on every coupon payment date thereafter. Although the proposed hybrid note are perpetual, they can be called at any time for withholding tax, tax deductibility, tax gross-up, rating methodology, accounting, or clean-up call event, or through the exercise of the make-whole call.

The amount of New Notes issued has been calibrated so that EDF's aggregate outstanding nominal amount of hybrid capital does not decrease by more than 10% after redemption of the USD Hybrid Notes⁽¹⁾ and the Company remains committed to raising financing through hybrid capital securities as a permanent component of its capital structure.

This issue was recorded in equity upon reception of the proceeds, at the total net value of €994 million.

EDF exercised its option to redeem on 29 January 2023 all of the USD Hybrid Notes, which are admitted to trading on the regulated market of the Luxembourg Stock Exchange. If the Company proceeds with the redemption, the holders of the USD Hybrid Notes will be formally notified of such redemption according to the Terms and Conditions of the USD Hybrid Notes.

14.5 Convertible green bonds (OCEANEs)

Accounting principles and methods

OCEANEs (bonds convertible into new shares and/or exchangeable for existing shares)

OCEANE bonds, which are convertible by remittal of a fixed number of shares in exchange for a fixed amount of cash (the "fixed-for-fixed" rule) give rise to recognition of a debt component and an equity component, in accordance with IAS 32.

The debt-equity proportions remain constant even if there is a change in the likelihood that the conversion option will be exercised.

The debt component is measured by the discounted future cash flows method using a discount rate applicable to a comparable market bond with no conversion option. The equity component corresponds to the difference between the fair value of the bond and the fair value of the debt component.

Issue expenses are allocated between the debt and equity components in the same proportions as the initial allocation.

On 8 September 2020, EDF made an issuance of Green Bonds convertible into new shares and/or exchangeable for existing shares (*OCEANEs Vertes*) with the nominal amount of €2,400 million and an issue value of €2,569 million.

In accordance with the terms of the OCEANE bonds, a consequence of the Simplified Tender Offer initiated by the French government (see note 2) was that if the offer was declared compliant by the AMF, the opening of the Offer would lead to temporary adjustment of the EDF share allocation ratio for conversion of the bonds during the defined Tender Offer Adjustment Period.

The bondholders were thus formally notified on 23 November 2022 that the new share allocation ratio (NRAA - *nouveau ratio d'attribution d'actions*) would be 1.289 EDF shares for one OCEANE bond from 24 November 2022.

At 31 December 2022, 882,340 OCEANE bonds had been converted into new shares (during the period 24 November - 31 December 2022), giving rise to creation of 1,137,336 shares.

These operations increased the share capital by €0.57 million since exchange for new shares was the only option. They generated a bond/share conversion premium of €9.08 million (see note 14.1).

For information, the French government acquired 127,147,355 bonds (OCEANEs) through this Simplified Tender Offer, with the result that it held 214,979,011 OCEANE bonds or 98.30% of the total portfolio of OCEANEs at 31 December 2022.

On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023 (see notes 2 and 14.1). Consequently, in accordance with paragraph 2.6.3 (public offerings) of the terms of the offer, the share allocation ratio adjustment period in the event of a tender offer will expire on 1 March 2023, *i.e.* 15 business days after the AMF's publication of the result of the Offer. After the adjustment period in the event of a tender offer, the share allocation ratio will be adjusted to 1.124 shares per OCEANE bond, the same as the share allocation ratio that applied before the adjustment period in the event of a tender offer. Due to the French government's undertakings pending the Paris Court of Appeal ruling on the action seeking annulment of the AMF's approval of the Offer, if the Court confirms the AMF's approval and the Offer is reopened, the share allocation ratio will be adjusted again, to 1.289 shares per OCEANE bond, respecting a new adjustment period in the event of a tender offer, on terms that will be announced by EDF.

(1) The US\$3,000,000,000 Reset Perpetual Subordinated Notes of which US\$2,097,614,000 is currently outstanding.

14.6 Non-controlling interests (minority interests)

14.6.1 Details of non-controlling interests

| | Ownership % | 31/12/2022 | | 31/12/2021 | |
|---|-------------|------------------------------------|--|------------------------------------|--|
| | | Equity (non-controlling interests) | Net income attributable to non-controlling interests | Equity (non-controlling interests) | Net income attributable to non-controlling interests |
| <i>(in millions of euros)</i> | | | | | |
| Principal non-controlling interests: | | | | | |
| EDF Energy Nuclear Generation Ltd. | 20.00% | 2,198 | 142 | 2,567 | (307) |
| NNB Holding Company (HPC) Ltd. | 33.50% | 6,778 | (514) | 6,305 | (39) |
| NNB Holding Company (SZC) Ltd. | 32.06% | 719 | - | 394 | - |
| EDF Investissements Groupe SA | 7.54% | 519 | 11 | 518 | 11 |
| Luminus SA | 31.37% | 538 | (49) | 381 | (30) |
| Framatome | 24.50% | 63 | (12) | 86 | (22) |
| Other non-controlling interests | | 1,457 | 137 | 1,527 | 102 |
| TOTAL | | 12,272 | (285) | 11,778 | (285) |

Non-controlling interests in EDF Energy Nuclear Generation Ltd., which is owned 80% by the Group *via* EDF Energy, correspond to Centrica's share.

Non-controlling interests in NNB Holding Company (HPC) Ltd, the holding company for the Hinkley Point C project, which is owned 66.5% by the Group *via* EDF Energy, correspond to CGN's share.

Non-controlling interests in NNB Holding Company (SZC) Ltd, the holding company for the Sizewell C project, which is owned 67.94% by the Group *via* EDF Energy, correspond to His Majesty's Government's share in the project at 31 December 2022 after its investment made on 30 November 2022 and CGN's withdrawal from the entity at the same date (see note 10.6).

Non-controlling interests in EDF Investissements Groupe correspond to the investment held by Natixis Belgique Investissements.

Non-controlling interests in Luminus correspond principally to the investments held by Belgian local authorities, and partner contributions to the Seraing CCGT project.

Non-controlling interests in Framatome, which is owned 75.5% by the Group *via* EDF SA, correspond to the 19.5% share held by Mitsubishi Heavy Industries and the 5% share held by Assystem.

Other non-controlling interests principally consist of the minority interests in subsidiaries of the Edison and EDF Renewables subgroups.

Other non-controlling interests also include instruments in the form of bonds convertible into shares, issued by the Dalkia group and subscribed by minority interests, amounting to a total €129 million at 31 December 2022 (€165 million in 2021).

14.6.2 Key financial indicators for EDF Energy Nuclear Generation Ltd.

The key financial indicators (100% basis) for EDF Energy Nuclear Generation Ltd. are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|----------------|---------------|
| Non-current assets | 24,348 | 25,784 |
| Current assets | 3,132 | 3,868 |
| TOTAL ASSETS | 27,480 | 29,652 |
| Equity | 10,988 | 12,837 |
| Non-current liabilities | 16,019 | 16,352 |
| Current liabilities | 473 | 463 |
| TOTAL EQUITY AND LIABILITIES | 27,480 | 29,652 |
| Sales | 3,472 | 1,842 |
| Net income | 710 | (1,535) |
| GAINS AND LOSSES RECORDED DIRECTLY IN EQUITY | (1,515) | 906 |
| Net cash flow from operating activities | 1,002 | 84 |
| Net cash flow from investing activities | (307) | (420) |
| Net cash flow from financing activities | (340) | (11) |
| CASH AND CASH EQUIVALENTS – OPENING BALANCE | 279 | 585 |
| Net increase/(decrease) in cash and cash equivalents | 355 | (347) |
| Effect of currency fluctuations | (15) | 42 |
| Other | (1) | - |
| CASH AND CASH EQUIVALENTS – CLOSING BALANCE | 618 | 279 |
| Dividends paid to non-controlling interests | 70 | 2 |

14.7 Basic earnings per share and diluted earnings per share

The diluted earnings per share is calculated by dividing the Group's share of net income, corrected for dilutive instruments and the payments made during the year to bearers of perpetual subordinated bonds, by the weighted average number of potential shares outstanding over the period after elimination of treasury shares.

The following table shows the reconciliation of the basic and diluted earnings used to calculate earnings per share (basic and diluted), and the variation in the weighted average number of shares used in calculating basic and diluted earnings per share:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|-----------------|---------------|
| Net income attributable to ordinary shares | (17,940) | 5,113 |
| <i>EDF net income from continuing operations</i> | <i>(17,946)</i> | <i>5,114</i> |
| <i>EDF net income from discontinued operations</i> | <i>6</i> | <i>(1)</i> |
| Payments on perpetual subordinated bonds | (606) | (547) |
| Net income used to calculate earnings per share | (18,546) | 4,566 |
| <i>from continuing operations</i> | <i>(18,552)</i> | <i>4,567</i> |
| <i>from discontinued operations</i> | <i>6</i> | <i>(1)</i> |
| Cancellation of the effect of dilutive instruments | 2 | 2 |
| Net income used to calculate diluted earnings per share | (18,544) | 4,567 |
| <i>from continuing operations</i> | <i>(18,550)</i> | <i>4,568</i> |
| <i>from discontinued operations</i> | <i>6</i> | <i>(1)</i> |
| Average weighted number of ordinary shares outstanding during the year | 3,683,790,611 | 3,138,060,309 |
| Effect of dilutive instruments | 244,227,763 | 222,574,780 |
| Average weighted number of diluted shares outstanding during the year | 3,928,018,374 | 3,360,635,089 |
| Earnings per share (in euros): | | |
| BASIC EARNING PER SHARE | (5.03) | 1.46 |
| DILUTED EARNINGS PER SHARE | (5.03) | 1.36 |
| BASIC EARNINGS PER SHARE OF CONTINUING OPERATIONS | (5.03) | 1.46 |
| DILUTED EARNINGS PER SHARE OF CONTINUING OPERATIONS | (5.03) | 1.36 |
| BASIC EARNINGS PER SHARE OF DISCONTINUED OPERATIONS | - | - |
| DILUTED EARNINGS PER SHARE OF DISCONTINUED OPERATIONS | - | - |

The diluted earnings per share incorporates the impact of conversion of OCEANE bonds (see note 18.3.2.2) and adjustment of the conversion/exchange ratio following capital increases undertaken during the year.

As the EDF net income was negative in 2022, conversion of the OCEANE bonds had an accretive effect and consequently the diluted earnings per share is identical to the basic earnings per share.

Note 15 Provisions related to nuclear generation and dedicated assets

Accounting principles and methods

The Group recognises provisions when it has a present obligation (legal or constructive) arising from a past event, an outflow of resources will probably be required to settle the obligation, and the obligation amount can be estimated reliably.

If it is anticipated that all or part of the expenses covered by a provision will be reimbursed, the reimbursement is recognised under receivables if and only if the Group is virtually certain of receiving it.

Provisions are determined based on the Group's expectation of the cost necessary to settle the obligation. Estimates are based on management data from the information system, assumptions adopted by the Group, and if necessary, experience of similar transactions or operations, based on independent expert reports, or contractor quotes. The various assumptions are reviewed for each closing of the accounts.

In the case of decommissioning provisions for power plants in operation, adjustments are recorded *via* fixed assets.

The discount effect generated at each closing to reflect the passage of time is recorded under "Discount effect" in financial expenses.

Changes in provisions resulting from a change in discount rates, a change in the disbursement schedule or a change in contractor quote are recorded:

- as an increase or decrease in the corresponding assets, up to the net book value, if the provision was initially covered by balance sheet assets;
- in the income statement in all other cases.

Provisions related to nuclear generation mainly cover the following:

- back-end nuclear cycle expenses: provisions for spent fuel management, for waste removal and conditioning and long-term radioactive waste management are established in accordance with the obligations and final contributions specific to each country;
- costs for decommissioning power plants;
- costs relating to fuel in the reactor when the reactor is shut down (provisions for last cores). These correspond to the cost of the fuel stock in the reactor that is not totally spent at the time of the final reactor shutdown and cannot be reused due to technical and regulatory constraints, the cost of processing for that fuel, and the cost of removal and storage of the resulting waste.

Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved.

The breakdown between current and non-current provisions related to nuclear generation is as follows:

| (in millions of euros) | 31/12/2022 | | | 31/12/2021 | | |
|--|--------------|---------------|---------------|--------------|---------------|---------------|
| | Current | Non-current | Total | Current | Non-current | Total |
| Provisions for the back-end of the nuclear cycle | 1,602 | 24,982 | 26,584 | 1,359 | 28,155 | 29,514 |
| Provisions for decommissioning and last cores | 1,539 | 31,039 | 32,578 | 1,346 | 33,912 | 35,258 |
| Provisions related to nuclear generation | 3,141 | 56,021 | 59,162 | 2,705 | 62,067 | 64,772 |

The breakdown of provisions by company is shown below:

| (in millions of euros) | EDF | EDF Energy | Belgium | Total |
|---|---------------|---------------|------------|---------------|
| | Note 15.1 | Note 15.2 | Note 15.3 | |
| Provisions for spent fuel management | 11,379 | 1,284 | - | 12,663 |
| Provisions for waste removal and conditioning | - | 373 | - | 373 |
| Provisions for long-term radioactive waste management | 12,475 | 1,066 | 7 | 13,548 |
| PROVISIONS FOR THE BACK-END OF THE NUCLEAR CYCLE AT 31/12/2022 | 23,854 | 2,723 | 7 | 26,584 |
| Provisions for the back-end of the nuclear cycle at 31/12/2021 | 26,052 | 3,455 | 7 | 29,514 |
| Provisions for nuclear plant decommissioning | 17,094 | 11,296 | 625 | 29,015 |
| Provisions for last cores | 2,434 | 1,129 | - | 3,563 |
| PROVISIONS FOR DECOMMISSIONING AND LAST CORES AT 31/12/2022 | 19,528 | 12,425 | 625 | 32,578 |
| Provisions for decommissioning and last cores at 31/12/2021 | 20,390 | 14,434 | 434 | 35,258 |
| PROVISIONS RELATED TO NUCLEAR GENERATION AT 31/12/2022 | 43,382 | 15,148 | 632 | 59,162 |
| Provisions related to nuclear generation at 31/12/2021 | 46,442 | 17,889 | 441 | 64,772 |

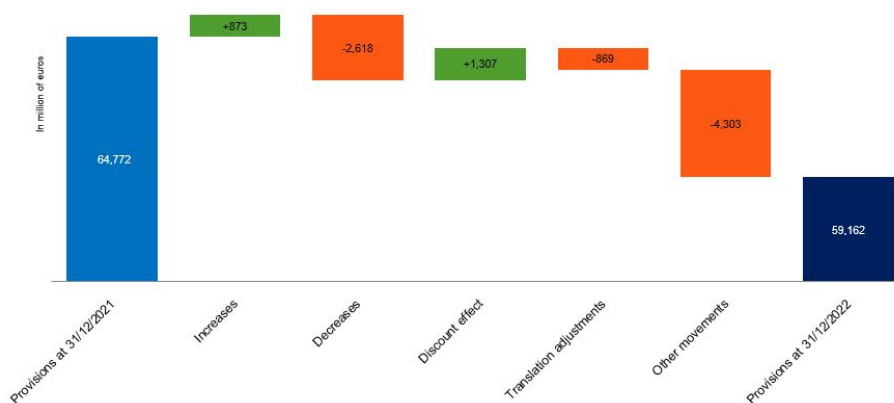
The movement in provisions for the back-end of the nuclear cycle, provisions for decommissioning and provisions for last cores break down as follows:

| (in millions of euros) | 31/12/2021 | Increases | Decreases | Discount effect | Translation adjustments | Other movements | 31/12/2022 |
|---|---------------|------------|----------------|-----------------|-------------------------|-----------------|---------------|
| Provisions for spent fuel management | 13,220 | 439 | (1,014) | 245 | (72) | (155) | 12,663 |
| Provisions for waste removal and conditioning | 639 | 1 | - | 80 | (25) | (322) | 373 |
| Provisions for long-term radioactive waste management | 15,655 | 130 | (204) | (1,126) | (63) | (844) | 13,548 |
| Provisions for the back-end of the nuclear cycle | 29,514 | 570 | (1,218) | (801) | (160) | (1,321) | 26,584 |
| Provisions for nuclear plant decommissioning | 30,759 | 303 | (824) | 1,979 | (637) | (2,565) | 29,015 |
| Provisions for last cores | 4,499 | - | (576) | 129 | (72) | (417) | 3,563 |
| Provisions for decommissioning and last cores | 35,258 | 303 | (1,400) | 2,108 | (709) | (2,982) | 32,578 |
| PROVISIONS RELATED TO NUCLEAR GENERATION | 64,772 | 873 | (2,618) | 1,307 | (869) | (4,303) | 59,162 |
| Current portion | 2,705 | | | | | | 3,141 |
| Non-current portion | 62,067 | | | | | | 56,021 |

The change in provisions related to nuclear generation in 2022 is mainly due to:

- a 50 base point increase in the real discount rate in France (see note 15.1.1.5): the corresponding effects of €(4,069) million are presented in the "Discount effect" (€(2,548) million) for changes in provisions adjusted *via* profit and loss, and in "Other movements" (€(2,061) million) for changes in provisions backed by assets (assets associated with provisions and underlying assets);
- an increase in the real discount rate in the United Kingdom (particularly +100 base points on provisions for the back-end of the nuclear cycle and decommissioning – see note 15.2.4): the corresponding effects are presented in "Other movements" (€(2,934) million) for changes in these provisions backed by assets (specifically, the receivable representing reimbursements due from the Nuclear Liabilities Fund (NLF) and the British government in the case of provisions for the back-end of the nuclear cycle and decommissioning, or associated assets and underlying assets in the case of provisions for last cores).

Details of the change in provisions related to nuclear generation in 2021 are as follows:



15.1 Provisions related to nuclear generation and dedicated assets in France

15.1.1 Nuclear provisions

In France, the provisions established by EDF SA for the nuclear generation fleet result principally from the Law of 28 June 2006 on long-term management of radioactive materials and waste, and the associated implementing provisions concerning secure financing of nuclear expenses.

In compliance with the accounting principles described above:

- EDF books provisions to cover all obligations related to the nuclear facilities it operates;
- EDF also holds dedicated assets for secure financing of long-term obligations (see note 15.1.2).

The calculation of provisions incorporates a level of risks and uncertainties as appropriate to the operations concerned. It also includes uncertainty factors as described in note 1.3.4.2.

Details of changes in provisions for the back-end of the nuclear cycle, decommissioning and last cores in France are as follows:

| <i>(in millions of euros)</i> | Notes | 31/12/2021 | Increases | Decreases | Discount effect | Other movements | 31/12/2022 |
|--|----------|---------------|------------|----------------|-----------------|-----------------|---------------|
| Provisions for spent fuel management | 15.1.1.1 | 11,819 | 417 | (849) | 51 | (59) | 11,379 |
| - amount unrelated to the operating cycle | | 1,726 | 23 | (41) | (85) | (16) | 1,607 |
| - amount outside the scope of the Law of 28 June 2006 | | 1,136 | 44 | (41) | 56 | - | 1,195 |
| Provisions for long-term radioactive waste management | 15.1.1.2 | 14,233 | 128 | (204) | (1,308) | (374) | 12,475 |
| Provisions for the back-end of the nuclear cycle | | 26,052 | 545 | (1,053) | (1,257) | (433) | 23,854 |
| Provisions for nuclear plant decommissioning | 15.1.1.3 | 17,730 | 273 | (201) | 340 | (1,048) | 17,094 |
| Provisions for last cores | 15.1.1.4 | 2,660 | - | - | 104 | (330) | 2,434 |
| Provisions for decommissioning and last cores | | 20,390 | 273 | (201) | 444 | (1,378) | 19,528 |
| PROVISIONS RELATED TO NUCLEAR GENERATION | | 46,442 | 818 | (1,254) | (813) | (1,811) | 43,382 |
| Provisions related to nuclear generation within the scope of the Law of 28 June 2006 ⁽¹⁾ | | 45,306 | 774 | (1,213) | (869) | (1,811) | 42,187 |
| Provisions related to nuclear generation outside the scope of the Law of 28 June 2006 ⁽¹⁾ | | 1,136 | 44 | (41) | 56 | - | 1,195 |

⁽¹⁾ Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations (see below).

The discount effect principally comprises the €1,830 million cost of unwinding the discount, and the €(2,548) million effects of the change in the real discount rate in 2022 for provisions not backed by assets, which were recorded in the income statement (cost of unwinding the discount).

Other movements mainly include the €(2,061) million effect of the change in the real discount rate at 31 December 2022 for provisions backed by assets.

In 2021, the change in EDF SA's provisions related to nuclear generation was mainly explained by the extension of the depreciation period of 1300MW-series power plants, which had an impact of €(1,016) million at 1 January 2021 (see note 1.4.1 to the consolidated financial statements at 31 December 2021), distributed as follows: €(916) million on provisions for decommissioning, €(214) million on provisions for last cores, and €114 million on provisions for long-term radioactive waste management.

Concerning non-EDF installations:

- EDF, COGEMA (now Orano Recyclage) and the French Atomic Energy Commission (Commissariat à l'Energie Atomique or CEA) signed an agreement in December 2004 which transferred the management and financing of final shutdown, decommissioning and waste recovery and reconditioning for the UP1 reprocessing facility at Marcoule to the CEA. In return, EDF paid the CEA a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs;
- EDF, AREVA and AREVA NC (now Orano Recyclage) signed two agreements in December 2008 and July 2010 defining the legal and financial terms for the transfer to AREVA NC of EDF's contractual obligations regarding its financial contribution to the dismantling of La Hague installations and the recovery and conditioning of waste. In application of those agreements, EDF paid Orano Recyclage a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs.

15.1.1.1 Provisions for spent fuel management

EDF's currently adopted strategy with regards to the fuel cycle, in agreement with the French State, is to process spent fuel, to recycle the separated plutonium in the form of MOX fuel (Mixed OXide of plutonium and uranium) and to recycle the reprocessed uranium.

The quantities processed by Orano Recyclage at the request of EDF, totalling approximately 1,100 tonnes per year, are determined based on the quantity of recyclable plutonium in the reactors that are authorised to load MOX fuel (currently, 24 authorised reactors).

Consequently, provisions for spent fuel management (€11,379 million) mainly cover the following services to be provided by Orano Recyclage

- removal of spent fuel from EDF's generation centres, and its reception and interim storage;
- processing, including conditioning and storage of recyclable matter.

The processing expenses included in these provisions concern spent fuel that can be recycled in existing facilities, including the portion in reactors but not yet irradiated.

Expenses are measured based on forecast physical flows at the year-end, with reference to the contracts with Orano Recyclage which define the terms of the framework agreement for the period 2008-2040. The most recent contract, signed on 5 February 2016, covers the period 2016 - 2023. These contracts contain price indexes that are revised annually.

Negotiations are currently in process with Orano Recyclage, notably concerning the current amendment for the period 2016 - 2023. At 31 December 2021, EDF adjusted its provisions for spent fuel management using its best estimate of the costs to be incurred under this amendment, which are currently in negotiation, considering progress in the discussions with Orano. An additional provision of €267 million was recognised to cover the increase in EDF's processing costs associated with the various Orano projects, notably in view of changes concerning the new fission product concentrators. In 2022, some of these costs were defined in letters of agreement relating to the 2016 - 2023 amendment, while others are still in negotiation. Negotiations also took place in 2022 for an amendment to cover the period 2024 - 2026, to be continued in 2023, and a corresponding provision for contingencies and losses was recognised at 31 December 2022 (see note 17.2).

Furthermore, the provisions for spent fuel management incorporate specific provisions for the interim storage of spent fuel, which is a key issue for the back-end of the nuclear cycle because usage forecasts for Orano's interim storage facilities at La Hague for spent fuel from EDF's generation fleet suggest that the pools at La Hague could be saturated by 2030. To prevent saturation, the long-term storage capacity for spent fuel is to be increased by construction of a centralised fuel storage pool under EDF's supervision. Commissioning of the new pool is scheduled for 2034 and it will be operated by EDF. The following measures will also be taken to address storage needs.

For the period until the centralised storage pool is built, studies of transitional solutions were launched by Orano in 2019 in association with EDF and the Nuclear Safety Authority (*Autorité de Sûreté Nucléaire* - ASN). The preferred solution is densification of the existing pools at Orano's La Hague. A supplementary solution would be to use a dry storage facility for plutonium (MOX) fuel and reprocessed uranium (RepU). The need for interim storage is accentuated by production issues at Orano's Melox plant, which are affecting the pace of processing in the short and medium term: the lower level of recycling has caused an increase in the quantities requiring storage in the medium term.

In 2022, studies of the transitional solutions continued, notably on densification of the existing pools at Orano's La Hague site with the submission in December 2022 to the ASN of the application file for a notable modification. Development studies regarding this solution are expected to continue until the end of 2024.

The provisions for spent fuel management also cover long-term storage of spent fuel that cannot currently be recycled in industrial facilities that already exist or are under construction: plutonium fuel (spent MOX fuel) or uranium fuel derived from processing (spent RepU), and fuel from Creys-Malville and Brennilis until fourth-generation reactors become available. Dedicated assets are held in association with these provisions, which is unrelated to the operating cycle as defined by the law of 2006 (see note 15.1.2). The provision is founded on a scenario assuming construction of a centralised storage pool at La Hague, to be managed by EDF as nuclear operator. This project was presented during the public debate on the National Plan for Managing Radioactive Matter and Waste (PNGMDR) in 2019-2020, and was subject to a specific public consultation organised by France's National Public Debate Commission (CNDP) that began on 22 November 2021 and ended on 8 July 2022. On 7 October 2022 EDF published a document on the lessons of the consultation and the company's responses, entitled "*Enseignements de la concertation préalable et suites données par EDF*". EDF plans to set up a formal structure for continuous exchanges and dialogue, under the supervision of guarantors appointed by the CNDP. EDF has also stated that at this stage, it is moving ahead with the project, and preparing to file the application for authorisation to create the installation by the end of 2023, with a view to a public inquiry being held in 2025.

In total, provisions for specific storage solutions for spent fuel amount to €257 million for the cost of densification of Orano's pools at La Hague, and €1,607 million for interim storage of spent MOX fuel and spent RepU, first at La Hague then in the centralised storage pool (these fuels cannot be recycled in existing facilities or facilities currently under construction).

Finally, in 2018, the Board of Directors approved resumption of reprocessed uranium recycling, which had been suspended in 2013 pending availability of a new industrial schema. The corresponding contracts were signed with the respective suppliers in the second quarter of 2018. The first assemblies are being made at the Framatome plant in Romans sur Isère and will be loaded in 2023 into a 900MW reactor that is already authorised. Subject to completion of technical modifications and issuance of the necessary authorisations by the safety authority, other 900MW reactors and certain 1300MW reactors will be loaded with assemblies based on reprocessed uranium by 2027. Since 2021, the provision for storage of uranium for reprocessing included in the provisions for spent fuel management (€410 million) has been based on a 50-year operating lifetime for nuclear plants for the considered series, following the extension of the depreciation period of 1300MW-series plants from 40 to 50 years.

15.1.1.2 Provisions for long-term radioactive waste management

Provisions for long-term radioactive waste management concern the following future expenses:

- interim storage, removal and storage of radioactive waste packages resulting from spent fuel processing;
- direct storage, after long-term interim storage where relevant, of spent fuel that cannot be recycled in existing installations: specifically plutonium (MOX) fuel or uranium fuel derived from processing, and fuel from Creys-Malville and Brennilis;
- characterisation, processing, conditioning and interim storage of radioactive waste resulting from decommissioning and certain operating waste, and removal and final storage of this radioactive waste;
- EDF's share of the costs of studies, construction, operation and maintenance, shutdown and surveillance of existing and future storage centres.

The volumes of waste concerned by provisions include existing packages of waste and all waste to be conditioned, resulting in particular from plant decommissioning or spent fuel processing at La Hague (comprising all fuel in reactors at 31 December, irradiated or otherwise). These volumes are regularly reviewed, in keeping with the data declared for the purposes of the national waste inventory undertaken by ANDRA.

The provisions for long-term radioactive waste management break down as follows:

| <i>(in millions of euros)</i> | Storage centre | 31/12/2022 | 31/12/2021 |
|--|---|-------------------|-------------------|
| Very low-level and low and medium-level waste | Very low-level waste: CIRES -Morvilliers (ANDRA) | 2,958 | 3,093 |
| | Low and medium-level waste: CSA - Soulaines (ANDRA) | | |
| Long-lived low-level waste | Project under examination: Soulaines (ANDRA) | 363 | 394 |
| Long-lived medium and high-level waste | Geological storage centre (Cigéo project) / ICEDA conditioning and interim storage facility | 9,154 | 10,746 |
| PROVISIONS FOR LONG-TERM RADIOACTIVE WASTE MANAGEMENT | | 12,475 | 14,233 |

Very low-level and low and medium-level waste

Basis for estimation

Very low-level waste and low and medium-level waste come from nuclear facilities in operation or in the process of being decommissioned:

- very low-level waste mainly comes from nuclear plant decommissioning, and generally takes the form of metals (large components, piping, support structures, etc.) or rubble (concrete, earth, etc.). This type of waste is stored at surface level at the Morvilliers storage centre managed by ANDRA commissioned in 2003;
- low and medium-level waste (gloves, filters, resins, materials, etc.) is stored at surface level at the Soulaines storage centre managed by ANDRA, commissioned in 1992.

The cost of removing, processing and storing short-lived waste (very low-level and low and medium-level) is assessed on the basis of:

- current contracts with transporters, and ANDRA for operation of the existing storage centres;
- the costs of the plant run by the subsidiary Cyclife France (the Centraco site at Marcoule, commissioned in 1999) for processing some of this waste that can be melted prior to storage in the ANDRA's centres;
- an estimate of the cost of a centralised facility for interim storage, segmentation and conditioning of major components such as steam generators.

Furthermore for the management of very low-level waste, the regulations (decrees by the Ministry for the Ecological Transition) governing recycling of very low-level metallic waste in France were published in the *Journal Officiel* of 15 February 2022. EDF is thus continuing with the development of a segmentation and fusing facility to process and recycle the very low-level metallic waste resulting from decommissioning of nuclear plants. This project, called Technocentre, is led by EDF in collaboration with Orano, with a target commissioning date of 2031. In line with France's 5th National Plan for Managing Radioactive Matter and Waste, a roadmap setting out the objectives and timetable for the Technocentre project is due to be released in early 2023.

Developments in 2021

In 2021, in addition to changing the technical assumptions underlying provisions so as to reflect the impacts of extending the depreciation period for 1300MW-series plants (the modified timing of waste production from decommissioning results in an increase in decommissioning waste to be sent to storage in some years and industrial solutions will be required to smooth the waste dispatch flows), the industrial scenario for management of decommissioning waste prior to storage was optimized by introducing prior processing to reduce the volumes stored. This had no significant impact on provisions.

Developments in 2022

In 2022, the annual review incorporated the most recent assumptions regarding management of this waste. This had no significant impact on provisions.

Long-lived low-level waste

Long-lived low-level waste belonging to EDF essentially consists of graphite waste from the ongoing decommissioning of the former UNGG (natural uranium graphite gas-cooled) nuclear plants.

As this waste has a long lifetime but is lower-level than long-lived medium and high-level waste, specific subsurface storage requirements apply under the French Law of 28 June 2006.

Following the initial geological investigations, in July 2015 ANDRA remitted a report on a proposed storage centre for long-lived low-level waste on a site located in the Soulaines region (Aube) in France. This report was submitted to the ASN for its opinion. Uncertainties remain about the site's capacity to accommodate all of the waste included in the baseline inventory of the long-lived low-level waste storage facility.

Further studies were planned under the 2016 - 2018 period of the National Plan for the Management of Radioactive Materials and Waste (PNGMDR), concerning both the feasibility of this storage centre and the search for additional waste management solutions. The ASN's opinion on management of this waste, issued on 6 August 2020, and the 5th PNGMDR (decree 2022-1547 and the implementation decision were published in the *Journal Officiel* of 10 December 2022) have set ANDRA the deadline of 2023 to produce a file presenting the technical and safety options selected for storage of long-lived low-level waste at the Vendevre-Soulaines site.

Long-lived medium and high-level waste

Long-lived medium and high-level waste essentially comes from processing of spent fuel, and to a lesser extent waste resulting from nuclear plant decommissioning (metallic components that have been inside the reactor).

The Cigéo project for an industrial geological storage centre

The French Law of 28 June 2006 requires reversible storage in deep geological layers for long-lived medium and high-level waste.

On 15 January 2016 the Ministry of Ecology, Sustainable Development and Energy issued a ministerial order setting the target cost for the Cigéo storage project at €25 billion under 2011 year-end economic conditions. The cost as defined constitutes an objective to be met by ANDRA, in compliance with safety standards set by the ASN, working in close cooperation with the operators of nuclear installations.

The provisions for storage of long-lived medium and high-level waste, totalling €8,381 million (including preliminary interim storage of radioactive waste resulting from spent fuel processing, removal to the storage site, direct storage of spent fuel that cannot be recycled in existing installations), are based on the cost objective for storage, taking account of producers' shares that depend on the volumes and characteristics of the waste.

In application of this ministerial order, the cost of the Cigéo project will be regularly updated, at least at each key milestone in the course of the project's development (authorisation to create the facility, commissioning, end of the "pilot industrial phase", safety reviews) in accordance with the opinion of the ASN.

This project has seen the following developments since 2016:

- 2016: in April 2016, ANDRA sent the ASN a safety option report (DOS), and the law of 11 July 2016 clarified the concept of reversibility.
- 2018: in January 2018, the ASN issued its opinion on the DOS. It considered that the Cigéo project had reached satisfactory overall technological maturity at that stage. This opinion included a requirement for examination of alternatives to the proposal to store bituminous waste at Cigéo with no processing.
- 2019: in September 2019, a group of experts appointed by the DGEC to draw up a report on current bituminous waste management concluded that various options were feasible (storage or neutralisation) but stressed the importance of continuing the studies in order to identify the most appropriate option. A quadripartite research programme involving producers and ANDRA is still examining this question.
- 2020: A detailed design review by a group of independent experts, organised at the request of the DGEC, reported its conclusions. While issuing a generally favourable opinion for ANDRA's submission, the experts made a certain number of recommendations for finalisation of the detailed design studies and the application for authorisation to create the centre, calling for closer involvement of EDF, Orano and the CEA on these matters.

Also in 2020, the French finance law for 2021, published in the *Journal officiel* of 30 December 2020, included a change to the tax treatment of this project (based on storage tax instead of the standard tax regime). At the 2022 year-end, the associated measures still remain to be defined and bounded by the Government to prevent any related cost increase for the Cigéo project.

- 2021: After its filing by ANDRA in August 2020, its examination by the government departments and a public inquiry from 15 September to 23 October 2021, the application for a *Déclaration d'utilité publique* (DUP) officially recognising the public utility of the Cigéo storage centre received a favourable opinion from the inquiry commissioners on 20 December 2021.
- 2022: On 8 July 2022, the DUP decree was published.

The delivery horizon for the first waste packages was also clarified. It should begin between 2035 and 2040 according to the ANDRA report of October 2022 summarising the consultations on the pilot industrial phase and governance of the Cigéo project, whereas at the end of 2021, producers were working on the hypothesis that the first waste packages would be received in 2031. Consequently, the provision has been updated to reflect this deferred reception date for the first packages, with no significant impact.

On 16 January 2023, ANDRA filed its application for authorisation to create Cigéo (DAC) with the Ministry for the Energy Transition. This step marks the start of a new phase: examination of the project by the ASN, after which the project could be authorised and construction could begin. Based on ANDRA's latest schedule, the decree authorising creation is now expected for 2027 (instead of 2025 as previously).

ICEDA

The provision established for long-lived medium and high-level waste, also includes €773 million to cover the conditioning and interim storage of long-lived medium-level waste, principally at the ICEDA conditioning and storage facility (*Installation de Conditionnement et d'Entreposage des Déchets Activés*).

This facility, constructed at the Bugey power plant, received its first waste packages in September 2020 after the ASN authorised its commissioning on 28 July 2020. The ASN's decision approving and governing the conditioning of long-lived medium-level waste into packages at the ICEDA facility was formally received on 19 July 2021. At the end of 2021 the first waste packages were sealed, in compliance with the authorisations granted and the commissioning schedule. Two waste packaging campaigns were completed in 2022, as expected.

15.1.1.3 Provisions for nuclear plant decommissioning

EDF bears full technical and financial responsibility for decommissioning of the basic nuclear facilities (*Installations Nucléaires de Base*, INB) it operates. The final shutdown and decommissioning process is governed by legal provisions and regulations set out in Articles L. 593-20 to L. 593-25 and R.593-65 to R.593-74 of the environmental code. It involves the following operations for each INB:

- a definitive shutdown declaration, to be made at least two years prior to the planned shutdown date:
 - › since the Energy Transition Law of 17 August 2015, the final shutdown of the INB, which takes place during its operating phase, is considered separately from its dismantling, as a significant modification of lesser importance (simply requiring a declaration by the operator to the Minister and the ASN);
- a dismantling plan compiled by the operator and sent to the minister in charge of nuclear safety, which after examination by the authorities and a public inquiry, leads to a decree prescribing dismantling that authorises the start of dismantling operations;
- key-stage progress reviews submitted for the ASN's approval, with a safety file specific to the dismantling operations to be performed;
- an internal control process concerning significant modifications introduced by the operator in the case of operations that must be declared to or approved by the ASN;
- finally, once these operations are complete, declassification of the facility, which removes it from the scope of the laws governing basic nuclear facilities.

The decommissioning scenario adopted by EDF complies with France's Environmental Code, which requires as short a period as possible to elapse between final shutdown and dismantling in economically acceptable conditions and in compliance with the principles laid down in Article L. 1333 - 1 of the Public Health Code (radioprotection) and section II of Article L. 110 - 1 of the Environmental Code (protection of the environment). The intended end-state is industrial use: the sites will be restored to their original condition and will be reusable for industrial purposes.

The ongoing dismantling operations concern plants that were constructed and operated before the nuclear fleet currently in operation, known as "first-generation" plants, the Superphenix plant, and the Irradiated Materials Workshop in Chinon. These operations cover four different technologies: a heavy water reactor (Brennilis), a sodium-cooled fast-neutron reactor (the Superphenix at Creys-Malville), natural uranium graphite gas-cooled (UNGG) reactors (at Chinon, Saint Laurent and Bugey) and a pressurised water reactor (PWR, at Chooz). For the Fessenheim PWR plant, the dismantling application is currently under examination by the ASN, and the operations completed concern the pre-dismantling phase.

Each of these operations is a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no international experience. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists. Decommissioning of the PWR is benefiting from past experience (essentially in the US and limited). The Chooz plant also has the specificity of being located in a cave: this means it is also a unique operation, generating experience that is not immediately transposable and involves specific challenges.

Based on the ongoing decommissioning operations at permanently shut-down plants (particularly the experience gained from the Chooz PWR), the studies conducted for the Summary Preliminary Plan for the two 900MW reactors at Fessenheim, and the preparatory work for dismantling of Fessenheim, it was possible at the end of 2021 to establish a detailed reference estimate of future decommissioning costs for the nuclear fleet currently in operation ("second-generation" plants). However, neither EDF nor any other operator has yet begun a decommissioning programme on a scale comparable to the current PWR fleet, and as a result the estimates include both opportunities and risks, especially associated with the scale effect.

The decommissioning provisions cover future decommissioning expenses as described above (excluding the cost of removing waste from the site and storing it, which is covered by the provisions for long-term waste management).

Details of changes in provisions for nuclear plant decommissioning are as follows:

| <i>(in millions of euros)</i> | 31/12/2021 | Increases | Decreases | Discount effect | Other movements | 31/12/2022 |
|---|---------------|------------|--------------|-----------------|-----------------|---------------|
| Provisions for decommissioning nuclear plants in operation | 12,680 | - | (7) | 500 | (1,048) | 12,125 |
| Provisions for decommissioning permanently shut-down nuclear plants | 5,050 | 273 | (194) | (160) | - | 4,969 |
| PROVISIONS FOR NUCLEAR PLANT DECOMMISSIONING | 17,730 | 273 | (201) | 340 | (1,048) | 17,094 |

Other movements in provisions for decommissioning nuclear plants in operation include principally the effects of the change in the real discount rate at 31 December 2022, as well as the effects of the other changes in cost estimates, for provisions backed by assets.

Decreases reflect decommissioning expenses paid in 2022. Increases essentially correspond to changes to estimates during the year, detailed below, for provisions not backed by assets.

For nuclear power plants currently in operation (PWR pressurized water reactor plants with 900MW, 1300MW and N4 reactors)

History of the calculation of provisions and the 2014-2015 Audit commissioned by the DGEC

Until 2013, provisions were estimated based on a 1991 study by the French Ministry of Trade and Industry, which set an estimated benchmark cost for decommissioning expressed in €/MW, confirming the assumptions defined in 1979 by the PEON commission. These

estimates were confirmed from 2009 by a detailed study of decommissioning costs conducted by EDF at the representative site of Dampierre (four 900MW units), and the results of that study were corroborated by an intercomparison with the study carried out by consultants La Guardia, based mainly on the Maine Yankee reactor in the United States.

In 2014 the Dampierre study was reviewed by EDF to make sure that the previous calculations were still valid in view of recent developments and experience, both internationally and internally, which called the past estimates into question. For this review, the decommissioning provisions for plants in operation were based on costs resulting from the Dampierre study, in order to incorporate the company's best estimates and experience from inside and outside France. This change of estimate had no significant impact on the level of provisions at 31 December 2014.

Between June 2014 and July 2015, an audit of decommissioning costs for EDF's nuclear fleet currently in operation was conducted by specialised consulting firms, at the request of the French Department for Energy and Climate (*Direction Générale de l'Énergie et du Climat* or DGEC). On 15 January 2016 the DGEC published a summary of the audit report. It stated that although estimating the cost of decommissioning nuclear reactors is a demanding exercise due to relatively limited past experience, the prospects of changes in techniques and the distant timing of the expenditure, overall, the audit confirmed EDF's estimate of decommissioning costs for its nuclear fleet currently in operation. The DGEC also made a number of recommendations to EDF following this audit.

Revision in 2016 and current basis for estimation

In 2016, EDF revised the decommissioning estimate, in order to incorporate the recommendations resulting from the audit commissioned by the DGEC, and past experience gained from dismantling operations for first-generation reactors (particularly Chooz A).

A detailed analytical approach was used to revise this estimate, identifying all costs for the engineering, construction work, operation and waste processing involved in future decommissioning of reactors currently in operation. This led to figures based on detailed timetables for plant decommissioning. The approach adopted provided a more thorough assessment of costs specific to the first-of-their-kind units, estimated for each series based on transposition coefficients applied to the baseline costs for the initial 900MW unit, and the series and mutualisation effects, as these costs and effects are inherent to the fleet's size and configuration.

The natures of the principal series and mutualisation effects used to arrive at the estimate are explained below.

Series effects (effects of work at a first-of-a-kind site on the following sites of the same series) are mainly of two types:

- first, in a fleet using the same technology, many studies do not need to be repeated each time;
- second, in a fleet using the same technology, robots and tooling can be largely reused from one site to another.

Mutualisation effects (effects between units on the same site, whether in operation or being decommissioned) are of several different types:

- some of them relate to the fact that several reactors may share common buildings and facilities on the same site, and these buildings and facilities will not have to be dismantled twice;
- certain costs are not higher when two or four reactors are dismantled on the same site. This is usually the case for surveillance costs, common equipment, and the cost of maintaining safe operating conditions on the site.

Due to mutualisation effects, dismantling a pair of reactors on the same site costs less than dismantling two standalone reactors on two different sites. In France, unlike other countries, there are no single reactors but sites with two or four, and in one case six reactors.

Series and mutualisation effects reduce the estimated decommissioning cost by 10% and 7% respectively compared to an estimate for PWR fleet that ignores these effects. Series and mutualisation effects vary depending on the series: they are greater when there are more units in a series (series effect) and more units on a site (mutualisation effect), leading to a combined effect (series and mutualisation effect) of over 17% for the 900MW series.

In particular, series and mutualisation effects explain why it is not appropriate simply to compare the average dismantling cost per reactor between the French fleet and other countries' nuclear fleets.

Conversely, the estimates only marginally reflect changes in productivity and the learning effect. The DGEC-ordered external audit of the decommissioning cost for the fleet currently in operation considered that this approach resulted in a prudent estimation method.

For reasons of prudence, the estimate also includes an assessment of risks and uncertainties as follows:

- incorporation of uncertainties relating to each "elementary" block of costs, series effects, mutualisation effects, transposition coefficients and fleet expenses;
- incorporation of risks, corresponding to the completion risks (which are identifiable and quantifiable, but only contingent). An initial register of risks on the Fessenheim project was drawn up in 2021 based on the ongoing studies, and detailed assessment of these risks is continuing for one first-of-a-kind 900MW reactor on the Fessenheim site that has no specificities. Until the results are released, the financial impact of the risks and opportunities is included *via* a flat-rate increase.

The above method for assessing risks and uncertainties led to an overall margin of some 16.3% for the whole fleet (21% for the reference estimate for the first-of-a-kind 900MW reactor).

Since its in-depth revision in 2016 this cost estimate has been reviewed annually. The reviews have led to non-significant annual adjustments.

EDF also confirms its analyses through an international intercomparison, taking care to identify and characterise a number of factors that could distort direct comparisons, for example differences in the scope concerned by the cost estimate, or national and regulatory contexts.

Developments in 2021

In 2021, to take account of the impacts of the longer depreciation period for 1300MW-series plants (see note 15.1.1), the sequence of operations for dispatching waste resulting from decommissioning was adapted to reflect the increase in decommissioning waste to be sent for interim storage in certain years.

Additionally, the reference estimate of decommissioning costs for the first 900MW units was updated following preliminary studies conducted in preparation for the decommissioning of Fessenheim, and experience gained at the beginning of the pre-dismantling phase. This update also incorporates optimisation of the industrial scenario for management of decommissioning waste before storage, involving prior processing to reduce the volumes stored. Extrapolation of these elements to the whole PWR fleet had a limited impact on the provisions for decommissioning nuclear plants in operation: they were increased by €149 million *via* adjustment to balance sheet assets.

Developments in 2022

The annual review of the estimate did not lead to any significant impact on provisions.

Based on the estimates of the different types of cost, the cost to completion (in 2022 euros) for decommissioning of the two 900MW units of Fessenheim amounts to approximately €1.0 billion, giving an average of €0.5 billion per 900MW unit, compared to an average cost of €0.38 billion per unit for the entire PWR fleet, including the series and mutualisation effects described above.

For permanently shut-down nuclear power plants

Decommissioning of shut-down reactors involves pilot operations corresponding to four different technologies, each with clear specificities: a PWR reactor at Chooz A located in a cave, UNGG (natural uranium graphite gas-cooled) reactors at Bugey, Saint-Laurent and Chinon, a heavy water reactor at Brennilis, a sodium-cooled fast neutron reactor at Creys-Malville, and the first-of-a-kind second-generation PWR reactor at Fessenheim.

Basis for estimation

The decommissioning costs are based on estimates that take account of accumulated industrial experience, unforeseeable and regulatory developments, and the latest available figures. They have been revised annually since 2015.

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

- An essentially remote-controlled dismantling process;
- Qualification of tools and the remote operation platform on an "industrial demonstrator", which was inaugurated in 2022;
- Dismantling of the initial first-of-a-kind reactor (Chinon A2), and putting the 5 other reactors into a safe storage configuration.

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

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

From 2016 to 2020:

The amendment made in 2015 to the industrial scenario for dismantling of the UNGG reactors was presented to the ASN's commissioners on 29 March 2016, and examined by the ASN until 2019. It was reviewed by international experts, examined by the IRSN, and was the subject of three hearings before the ASN's commissioners, before the ASN issued two decisions dated 3 March 2020. These decisions and the discussions prior to their adoption by the ASN showed that there was convergence on most major technical questions: the dismantling technique ("in-air"), the usefulness of setting up an industrial demonstrator to develop the tools required for these complex operations, the timetable for dismantling the Chinon A2 reactor, and the need to gain experience from operations on a first reactor.

Regarding the timetable of operations, in draft decisions issued for public consultation in 2019, the ASN asked for this work to be brought forward compared to EDF's proposed schedule, so that dismantling operations on the five reactors after Chinon A2 would begin "no later than 31 December 2055".

In view of this request for a shorter timescale, the nuclear provisions were increased in 2019 by a total €108 million: €77 million for decommissioning provisions for permanently shut-down nuclear power plants and €31 million for provisions for long-term radioactive waste management (for long-lived low-level waste, very low-level and low and medium-level waste).

The ASN's decisions concerning dismantling of UNGG reactors were published in March 2020 and did not contradict the principles of the draft decisions of 2019. Consequently, the nuclear provisions for decommissioning of UNGG plants were not subjected to any particular reestimation in 2020, and reflect the best estimate of the industrial and technical scenario.

Developments in 2021

In 2021, the annual review of the cost estimates for decommissioning of permanently shut-down plants led to a €77 million increase in provisions due to revision of the industrial decommissioning strategy for Chooz A. That strategy was switched to a full continuous decommissioning scenario, dropping the period of cave runoff water surveillance between the end of installation dismantling and the start of final dismantling and decontamination work, as the quality of the water means this is no longer necessary. Also, the cost estimate for decommissioning of the APEC Fuel Storage Workshop at Creys-Malville – a facility operated by EDF with the principal activity of storing fuel from the Superphénix reactor – was updated based on Summary Preliminary Plan studies conducted in 2020 - 2021, leading to a €61 million increase in provisions.

Finally, in accordance with its powers under article 594-4 of the Environment Code, in June 2020 the DGEC commissioned an external audit of the estimated cost of dismantling operations for EDF's permanently shut-down nuclear facilities (UNGG plants and management of its long-lived low-level waste, Superphenix and Brennilis), conducted by a consortium of specialist firms. This audit took place from December 2020 to July 2021, and the audit report was posted on the Ministry for the Ecological Transition website in November 2021. Its conclusions (confirming the ASN's observations during its inspection of complex project management, the conclusions of which were released in the first quarter of 2021) highlight "an organization with a structural focus on execution of dismantling projects", an "annual estimation and revision process [that] is robust, and provides good traceability for the assumptions used and the original data", and "a long-term industrial approach to overcome the small number of technological challenges that remain". Finally, the report states that apart from a non-significant correction (taken into account in the 2021 provisions), "the provisions are coherent with the basic scenarios of the projects and cover the full scope of expenses for the scope audited", and of "adequate sizing" through testing the sizing of EDF's expenses and provisions.

Developments in 2022

In 2022, following the recommendations made by the DGEC-commissioned audit to confirm scheduling risk assessments and the uncertainty levels concerning estimates, an analytical methodology for assessment of scheduling risks and uncertainties (applied to most of decommissioning projects currently in process) and an additional level of uncertainty for estimates "based on expert assessment" (used in provisions for decommissioning and radioactive waste management) were introduced. This led to an increase of €116 million to decommissioning provisions for permanently shut-down nuclear plants.

The provision for decommissioning of Chooz A was also increased by €37 million to take account of confirmed experience, regarding unforeseen events and delays observed during the dismantling of the reactor vessel (slower segmentation, and unavailability of the bridge crane). As a result of this experience, the vessel dismantling work has been prolonged by 18 months, and a risk of a further 14-month delay on the overall timetable has been identified.

For UNGG plants, the annual review of cost estimates took into consideration delays in obtaining the dismantling decrees (which are now expected in late 2026 rather than late 2025 as previously). This did not have a significant impact on the provisions.

Over a short-term horizon, the provisions take into account expectations that the rises in certain commodity, energy and transport prices will exceed forecast inflation, particularly given the types of purchases relating to decommissioning expenses. This had an impact of €33 million on provisions for decommissioning of permanently shut-down nuclear plants.

At 31 December 2022, the gross amounts estimated under year-end economic conditions (amounts still to be spent) and the present value of those amounts are as follows, presented by type of reactor technology:

| <i>(in millions of euros)</i> | 31/12/2022 | |
|--|--|---|
| | Costs based on year-end economic conditions | Amounts in provisions at present value |
| Pressurised water reactor - PWR - Chooz A | 331 | 289 |
| Pressurised water reactor - PWR – Fessenheim(1) | 911 | 740 |
| Natural uranium graphite gas-cooled reactors – UNGG - Bugey, Saint Laurent, Chinon | 5,771 | 2,948 |
| Heavy water reactor – Brennilis | 374 | 321 |
| Sodium-cooled fast neutron reactor – Superphenix at Creys Malville | 559 | 492 |

⁽¹⁾excluding interim storage and processing of steam generators

Provisions for decommissioning of permanently shut-down nuclear plants also cover dismantling costs for related facilities such as the APEC Fuel Storage Workshop at Creys-Malville and the BCOT Operational Hot Unit at Tricastin.

Compared to decommissioning costs for the PWR technology, the cost at completion (all costs both settled and remaining) for decommissioning of the other reactors is higher, to different extents depending on their specific characteristics:

- costs are around twice as high for Brennilis (completion cost of approximately €0.96 billion for one reactor) due to its compactness, the fact that the core is encased in concrete and thus difficult to access, the absence of a fuel pool, which complicates remote-controlled segmentation, and the presence of zircaloy (a fire hazard), meaning that segmentation work takes longer and must be more closely supervised;
- costs are around twice as high for UNGG reactors (completion cost of approximately €7 billion for six reactors), because they require removal of 20 times more material than a PWR due to their size, and contain graphite which is hard to access and requires special handling such that specific remote-controlled equipment must be developed;
- costs are around four times as high for Superphenix (completion cost of approximately €1.9 billion for one reactor), due to processing of sodium for which elimination is very sensitive, and the size of the facilities, especially the reactor (with a vessel 20 times bigger than the vessel of the 1300MW PWR).

The following progress has been made on permanently shut-down plants:

- Chooz A: the reactor was shut down in 1991 and nuclear dismantling began in 2007 after the dismantling decree was issued. The final stage of dismantling began in 2016 and involves segmentation, conditioning and removal of reactor vessel internals, followed by dismantling of the vessel itself. These operations should be completed by December 2025. Under the new full continuous decommissioning scenario adopted in 2021, this plant is expected to be declassified by late 2035;

- Fessenheim: the two pressurised water reactors were shut down definitively on 22 February 2020 and 30 June 2020 respectively, in accordance with the law and before the end of their technical operating lifetime. The dismantling plan was sent to the ASN in September 2019 together with the declaration of the permanent shutdown of this INB. The studies conducted in 2019 and 2020 focused on preparing the dismantling plan, which was sent to the ASN on 2 December 2020. In early 2022, the *Mission de la Sécurité Nucléaire et de la Radioprotection* (MSNR) and the ASN formally acknowledged reception of an expanded version of this plan. The dismantling decree for the Fessenheim installations is now expected to be issued in early 2026, and its issuance will mark the start of the dismantling phase. At the end of 2022, the pre-dismantling operations (full defueling of reactors 1 and 2, treatment and removal of boron as planned, total chemical decontamination of the primary circuit of reactor 1 and connected circuits, etc) were in line with the provisional schedule. Total decontamination of reactor 2 was deferred to early 2023, without affecting the critical path;
- UNGG reactors: these six reactors were shut down between 1973 and 1994 and received their dismantling decrees between 2008 and 2010 (except for Chinon A1 and A2). Defuelling and circuit draining have been completed for all these reactors, and dismantling operations are in process for the conventional and nuclear buildings in the periphery of the "reactor caissons". Following the ASN's decision of 2020, applications for dismantling permits were submitted for all these reactors in December 2022, to obtain new decrees allowing continuation of dismantling operations under an "in-air" strategy (these are expected for the end of 2026 at the earliest). Opening of the top part of the first UNGG reactor caisson – Chinon A2 – is expected in 2034: the initial extractions of vessel internals and graphite blocks are due to start in 2041 and last 14 years. In parallel, the other UNGG sites are finalising work to put the sites into a safe storage configuration (by 2037). A safe storage configuration state means that 80% of surfaces have been dismantled and the reactor caissons are safe while awaiting the full benefit experience on dismantling the caisson of the Chinon A2 first-of-a-kind unit. Opening of subsequent caissons is scheduled to begin from 2056;
- Superphenix: this plant was shut down in 1998 and received its dismantling decree in 2006. The following key stages have been completed: defuelling, dismantling of the turbine hall, drainage of the circuits, processing and elimination of the sodium used for cooling in all circuits, filling the reactor vessel, opening and extracting the vessel caps, and the start of dismantling of the core vessel cap (which weighs several hundred tonnes). The next stages are dismantling the vessel internals (due to be completed in 2026), electromechanical dismantling in the reactor building, then decontamination (the plant is expected to be declassified in 2034);
- Brennilis: this plant was shut down in 1985 and received a partial dismantling decree in 2011 allowing dismantling of all installations peripheral to the "reactor block". The following key stages have been completed: defuelling, dismantling of the machine room, the fuel building, auxiliary buildings, heat exchangers and the effluent treatment station. The next stages are examination of the application for full dismantling authorisation, with a view to obtaining a dismantling decree in 2023 that would enable EDF to dismantle the reactor block (the end of these operations is currently forecast at 2040). Following a public inquiry held from 15 November 2021 to 2 February 2022, the inquiry commissioner issued an unreservedly favourable opinion on 2 March 2022.

15.1.1.4 Provisions for last cores

These provisions cover the future expenses resulting from scrapping fuel that will only be partially irradiated when the reactor is shut down. They are estimated based on:

- the cost of the loss on fuel in the reactor that is not totally spent at the time of final reactor shutdown and cannot be reused due to technical and regulatory constraints ("front-end" expenses);
- the cost of fuel processing, and waste removal and storage operations ("back-end" expenses). These costs are estimated in a similar way to provisions for spent fuel management and long-term radioactive waste management.

These unavoidable costs are components of the cost of nuclear reactor shutdown and decommissioning. As such, they are fully covered by provisions from the commissioning date and an asset associated with the provision is recognised. In a decision of 11 December 2020, France's Council of State challenged the tax-deductibility of the consequences of immediate recognition of a provision for dismantling of the last core ("front-end" last core expenses) (see note 17.3.1).

In 2020 after the Fessenheim plant was definitively shut down, €99 million of the provision for last cores, concerning the two reactors at Fessenheim, was reversed with a corresponding reduction in the inventories of non-irradiated fuel in the reactor at the time of the shutdown, and in parallel, provisions for spent fuel management and long-term radioactive waste management were recognised for the cost of processing this fuel and storage of the waste that will result.

In 2021, apart from the effects of extending the depreciation period for 1300MW-series plants at 1 January 2021 (see note 15.1.1), there were few changes in provisions for last cores.

In 2022, provisions for last cores were adjusted after experience with core management at Fessenheim and its optimisation was finalised. The main consequence was an update to the masses of unused heavy metals included in the calculation of the last core provisions for the entire fleet, resulting in a €145 million decrease in provisions.

15.1.1.5 Discount rate, inflation and sensitivity analyses

Calculation of the discount rate and inflation rate

The methodologies used to determine the discount rate changed as follows from 31 December 2020:

The discount rate is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (OAT bond 0-20 year curve) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) - with yields that become close to the UFR after 50 years – plus a curve of the spread of corporate bonds rated A to BBB. Based on the disbursement outflows expected to meet nuclear obligations, a single equivalent discount rate is deduced by applying the discount rates from the interest rate curve constructed in this way to each flow as appropriate to its maturity. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions.

The UFR was defined by the European Insurance and Occupational Pensions Authority (EIOPA) for very long-term insurance liabilities that will involve disbursements beyond market horizons. The UFR calculated for 2022 is 3.43%. This is used in the calculation methodology, in compliance with the decision by the French authorities, which in the ministerial order of 1 July 2020 amending the order of 21 March 2007 on secure financing of nuclear expenses (see below) changed the formula of the regulatory ceiling for the discount rate, such that it now refers to the UFR instead of the arithmetic 48-month average of the TEC 30-year rate. The UFR is considered more relevant for nuclear provisions in view of the very long-term maturities. The sovereign yield curve at 31 December 2022 indicates rates in a range of [2.7%;3.3%] ([-0.6% ;0.6%] in 2021) for outflows between 0 and 20 years, [3.3%;3.4%] [0.6% ;3.1%] in 2021) for outflows between 20 and 50 years, and a rate moving towards 3.43% (3.46% in 2021) for outflows after 50 years.

This calculation methodology for the discount rate provides the best assessment of the time value of money with regard to nuclear provisions, which are characterised by very long-term disbursement outflows, well beyond market horizons. This assessment is largely achieved through:

- use of an interest rate curve based on observed year-end market data with liquid horizons, converging over nonliquid horizons towards a very long-term rate with no cycle effect, *i.e.* yield data for all the maturities associated with nuclear provisions;
- use of a very long-term rate (calculated UFR) produced by an independent body and now adopted by the French authorities in setting the formula for the regulatory ceiling, to take account of long trends in yield movements, in coherence with the distant disbursement horizon;
- references from bond spreads to include corporate bonds rated A to BBB by ratings agencies, in order to construct a robust spread curve since there are few AA-rated bonds, particularly on long maturities, whereas most "Investment Grade" bonds are BBB-rated bonds and the great majority of them have longer maturities.

The inflation assumption is based on an inflation curve constructed by reference to inflation-indexed market products and economic forecasts, in long-term coherence with the inflation assumption underlying the UFR (2%).

The discount rate determined is thus 4.8% at 31 December 2022 (3.7% at 31 December 2021), assuming inflation of 2.3% (1.7% at 31 December 2021), *i.e.* a real discount rate of 2.5% at 31 December 2022 (2.0% at 31 December 2021).

The increase in the discount rate reflects the observed increase in OAT bond rates and the broader corporate bond spreads since 31 December 2021, notably driven by changes in the ECB's monetary policy and a riskier economic environment.

The increase in the inflation rate assumption reflects the higher inflation forecasts in France since that date, particularly for 2023, the forecast breakeven inflation rate beyond that horizon in the current context of geopolitical and economic crisis. A 2% long-term inflation rate is still used given the ECB's target level, consistent with the inflation assumption underlying the UFR (Ultimate Forward Rate).

Furthermore, cost estimates were adjusted to 2022 year-end economic conditions, with a total impact of €215 million on provisions for decommissioning, spent fuel management and waste management, since actual inflation rates exceeded initial inflation forecasts.

Regulatory discount rate limit

The discount rate must comply with two regulatory limits. Under the decree of 1 July 2020 on secure financing for nuclear expenses (which codified and updated the initial decree of 23 February 2007 as part of the Environmental Code) and the ministerial order of 1 July 2020 on secure financing for nuclear expenses (which amended the initial ministerial order of 21 March 2007), it must be lower than:

- a regulatory maximum, expressed in real value, *i.e.* net of inflation; this value is equal to the unrounded value representative of expectations concerning the real long-term interest rate, as used for the calculation of the Ultimate Forward Rate (UFR) applicable at the date concerned published by the European Insurance and Occupational Pensions Authority (EIOPA). This maximum is applicable from 2024. Until 2024, the maximum is the weighted average of 2.3% and the above calculation. The weighting applied to the 2.3% rate is set at 50% for 2020, 25% for 2021, 12.5% for 2022 and 6.25% for 2023;
- and the expected rate of return on assets covering the liability (dedicated assets).

The maximum discount rate calculated by reference to the UFR in application of the order that took effect on 1 July 2020 is 2.85% at 31 December 2022 (2.80% at 31 December 2021).

The real discount rate used in the financial statements at 31 December 2022, calculated by the method presented above, is 2.5%.

Analyses of sensitivity to macro-economic assumptions

Sensitivity to assumptions concerning costs, inflation rate, long-term discount rate, and disbursement schedules can be estimated through comparison of the gross amount estimated under year-end economic conditions with the present value of the amount.

| Provisions related to nuclear generation within the scope of the Law of 28 June 2006 | 31/12/2022 | | 31/12/2021 | |
|---|---|--|---|--|
| | Costs based on year-end economic conditions | Amounts in provisions at present value | Costs based on year-end economic conditions | Amounts in provisions at present value |
| <i>(in millions of euros)</i> | | | | |
| Spent fuel management | 16,194 | 10,184 | 16,121 | 10,683 |
| - amount unrelated to the operating cycle | 3,417 | 1,607 | 3,282 | 1,726 |
| Long-term radioactive waste management | 36,996 | 12,475 | 36,779 | 14,233 |
| Back-end nuclear cycle expenses | 53,190 | 22,659 | 52,900 | 24,916 |
| Decommissioning of nuclear plants in operation | 21,381 | 12,125 | 20,479 | 12,680 |
| Decommissioning of shut-down nuclear plants | 8,219 | 4,969 | 7,718 | 5,050 |
| Last cores | 4,189 | 2,434 | 4,349 | 2,660 |
| DECOMMISSIONING AND LAST CORE EXPENSES | 33,789 | 19,528 | 32,546 | 20,390 |
| PROVISIONS RELATED TO NUCLEAR GENERATION within the scope of the law of 28 June 2006 | | 42,187 | | 45,306 |

The cumulative disbursements of nuclear expenses (based on gross values at year-end economic conditions) are distributed as follows:

| Provisions related to nuclear generation within the scope of the Law of 28 June 2006 | 31/12/2022 | | |
|--|---|---|---------------|
| | Costs based on year-end economic conditions | | Total |
| | Disbursement expected after 10 years ⁽¹⁾ | Disbursement expected after 10 years ⁽¹⁾ | |
| <i>(in millions of euros)</i> | | | |
| Spent fuel management | 7,892 | 8,302 | 16,194 |
| - amount unrelated to the operating cycle | 534 | 2,883 | 3,417 |
| Long-term radioactive waste management | 5,422 | 31,574 | 36,996 |
| Back-end nuclear cycle expenses | 13,314 | 39,876 | 53,190 |
| Decommissioning of nuclear plants in operation | 499 | 20,882 | 21,381 |
| Decommissioning of shut-down nuclear plants | 3,093 | 5,126 | 8,219 |
| Last cores | 499 | 3,690 | 4,189 |
| Decommissioning and last core expenses | 4,091 | 29,698 | 33,789 |

⁽¹⁾Over a 20-year and 50-year horizon, 22% and 42% respectively of cumulative disbursements (at year-end economic conditions) will concern long-term radioactive waste management provisions, and 36% and 96% respectively will concern decommissioning provisions.

For additional information, the table below shows the estimated impact of a +/-20bp change in the discount rate on the present value of provisions for the back-end of the nuclear cycle, decommissioning of nuclear plants and last cores:

At 31 December 2022

| <i>(in millions of euros)</i> | Amounts in provisions at present value | Sensitivity to discount rate | | | |
|--|--|------------------------------|--------------|--------------------|--------------|
| | | Balance sheet provisions | | Pre-tax net income | |
| | | + 0.20% | - 0.20% | + 0.20% | - 0.20% |
| Back-end nuclear cycle expenses: | | | | | |
| - spent fuel management | 11,379 | (200) | 213 | 170 | (182) |
| - long-term radioactive waste management | 12,475 | (684) | 769 | 541 | (614) |
| Decommissioning and last core expenses: | | | | | |
| - decommissioning of nuclear plants in operation | 12,125 | (518) | 544 | - | - |
| - decommissioning of shut-down nuclear plants | 4,969 | (155) | 165 | 154 | (165) |
| - last cores | 2,434 | (85) | 90 | - | - |
| TOTAL | 43,382 | (1,642) | 1,781 | 865 | (961) |
| Amount covered by dedicated assets | 31,649 | (1,460) | 1,591 | 764 | (853) |

The impact of a +/-10 base point variation in discount rates on the present value of provisions for the back-end of the nuclear cycle, decommissioning and last cores is estimated at €(837)/894 million, including €444/(490) on the pre-tax net income.

15.1.2 EDF's dedicated assets

Regulations

Articles L. 594 - 1 and following of France's Environment Code and their implementing regulations require assets (dedicated assets) to be set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste. These regulations govern the way dedicated assets are built up, and the management and governance of the funds themselves. Dedicated assets are clearly identified and managed separately from the Company's other financial assets and investments. They are also subject to specific monitoring and control by the Board of Directors and the administrative authorities.

The law requires the realisable value of dedicated assets to be higher than the value of the provisions corresponding to the present value of the long-term nuclear expenses defined in France's Environment Code.

The Decree of 1 July 2020 codified the regulatory obligations concerning dedicated assets in articles D594 - 1 and following of the Environment Code, complemented by the ministerial order of 21 March 2007 amended by the order of 1 July 2020. These documents define the list of eligible assets, which is largely based on France's Insurance Code and mainly includes unlisted assets. In particular, they authorise allocation to dedicated assets of the shares of CTE, which has held 100% of the capital of RTE since 31 December 2017 (see note 15.1.2.2 below).

EDF received ministerial authorisation on 31 May 2018 to increase the portion of unlisted assets in its dedicated assets from 10% to 15% subject to conditions (this does not apply to the shares of CTE or real estate assets).

Since the decree of 1 July 2020, EDF is no longer obliged to add to dedicated assets when the coverage rate of obligations, determined by the ratio of the assets' realisable value to the amount of the provisions concerned, is above 100%, and withdrawals from assets are not authorised unless that rate is above 120%. The decree also increased the maximum period for allocating funds to dedicated assets in the event of undercoverage, subject to authorisation by the administrative authority, to 5 years (instead of 3 years previously).

15.1.2.2 Strategic allocation and composition of dedicated assets

Given the regulations governing dedicated assets, they form a highly specific category of assets.

Dedicated assets are structured and managed according to a strategic allocation defined by the Board of Directors and reported to the administrative authorities. The strategic allocation is designed to meet the overall objective of long-term coverage of obligations, and determines the structure and management of the portfolio as a whole. It takes into account regulatory constraints concerning the nature and liquidity of the dedicated assets, the financial outlook for the equity and bond markets, and the diversifying contribution of unlisted assets.

Several changes have been made to this strategic allocation in order to pursue the diversification into unlisted assets, particularly in 2010 when the shares in RTE (now held *via* CTE) were allocated to dedicated assets, and in 2013 when an unlisted asset portfolio (consisting of infrastructures, real estate and debt or equity funds) was set up. This portfolio is managed by EDF SA's "EDF Invest" Division.

On 29 June 2018 the Board of Directors validated the principle of strategic allocation for dedicated assets:

- yield assets (target of 30% of dedicated assets), consisting of infrastructure assets, including the shares of CTE, and real estate property;
- growth assets (target of 40% of dedicated assets), consisting of equity funds investing in listed or unlisted equities;
- fixed-income assets (target of 30% of dedicated assets), consisting of listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

These targets should be reached gradually by 2025.

Growth assets and fixed-income assets

Certain growth and fixed-income assets take the form of bonds held directly by EDF. Others consist of specialised collective investment funds on leading international markets and French general-purpose investment funds (FIVGs), managed by independent asset management companies. They take the form of open-end funds and "reserved" funds located in France, established for the company. The reserved funds are owned by EDF and are not consolidated as EDF does not participate in management of these funds and provides no financial support for them.

The value of the assets of the reserved investment funds amounts to €12,192 million at 31 December 2022 (€13,106 million at 31 December 2021). These funds mainly consist of 17 listed funds with total value of €11,000 million (at 31 December 2021, 16 listed funds with total value of €12,153 million).

The listed equity funds consist of international equities (mainly in North America but also in Europe, Asia-Pacific and emerging countries). Listed bonds and listed bond funds consist of sovereign and corporate bonds.

These investments are structured and managed in line with the strategic allocation, which takes into consideration international stock market cycles, for which the statistical inversion generally observed between equity market cycles and bond market cycles – as well as between geographical areas – has led the Group to define a long-term investment policy with appropriate allocation between growth assets and fixed-income assets.

Growth assets also include a small portion of funds invested in unlisted equities, and fixed-income assets also include a small portion of funds invested in unlisted debt. These funds are mainly managed by EDF Invest (see yield assets below).

At the year-end, dedicated assets are presented in debt and equity securities in the balance sheet, at their liquidation value.

In the course of operational asset monitoring, the Group applies long-term, specific management rules defined and supervised by its governance bodies (maximum investment ratios, volatility analyses and assessment of individual fund manager quality).

Yield assets

The yield assets managed by EDF Invest consist mainly of assets related to investments in infrastructures and real estate, made either directly by EDF Invest or by investment funds under delegated management arrangements.

Through unlisted investment funds, EDF Invest also manages growth assets and fixed-income assets.

At 31 December 2022, the assets managed by EDF Invest represent a total realisable value of €9,540 million, including €8,772 million of yield assets. Yield assets particularly include:

- 50.1% of the Group's shares in CTE, amounting to €3,791 million at 31 December 2022 (€3,343 million at 31 December 2021), presented in investments in associates in the consolidated balance sheet;
- the Group's investments in Madrileña Red de Gas (MRG), *Aéroports de la Côte d'Azur*, Energy Assets Group, Nam Theun Power Company, companies that own wind and solar power plants (in the United States, Canada, and the United Kingdom) and companies that own real estate assets (Central Sicaf, Ecowest, Korian & Partenaires Immobilier, Issy Shift, 92 France), presented in investments in associates in the consolidated balance sheet;
- the Group's investments in Teréga, Porterbrook, Autostrade per l'Italia, Q-Park, Géosel, Norlys, Databank and companies that own wind farms in the United Kingdom, presented in debt and equity securities in the consolidated balance sheet.

15.1.2.3 Changes in dedicated assets in 2022

As the coverage of provisions by dedicated assets was above 100% at 31 December 2021 (109.3%), EDF had no obligation to add to the dedicated asset portfolio in 2022, and no allocation was made during the year (in 2021, there was also no such obligation and no allocation to dedicated assets was made).

In 2022, the markets were affected by strong inflationary pressure and the realisation by the central banks and the markets that bold measures, particularly interest rate rises, would be necessary to prevent de-anchoring of inflation expectations. The issue was exacerbated by the war in Ukraine and the disruption it caused to energy supplies for Europe. This situation initially affected bond instruments, which ended the year on a record low with -18.5% on government bonds (FTSE EMU Government Bond Index (EGBI)). Credit instruments also suffered significantly (the FTSE EuroBIG Corporate index fell by -14.5%) under the double effect of higher interest rates and wider spreads. However, despite the partial currency hedge set up by the Group, the rise of the dollar limited the decline in the Euro value of assets expressed in dollars. The equity markets declined, but for the time being have only echoed the rise in real interest rates, apparently without responding to the risk to profits in a depressed economic environment. The markets seem to be counting on the central banks to succeed in containing inflation without creating a recession, and this situation will need to be closely monitored in 2023.

Negative changes in the fair value of the dedicated asset portfolio (investment funds, equities) amounting to €(3,096) million were recognised in the financial result in 2022 (see note 8.3), compared to positive changes amounting to €2,739 million in 2021. Negative changes in the fair value of the bonds in the dedicated asset portfolio amounting to €(875) million were recognised in OCI in 2022 (see note 18.1.2), compared to negative changes amounting to €(244) million in 2021.

In 2022, EDF Invest continued to extend its portfolio of unlisted assets, purchasing minority stakes in telecoms infrastructures (Norlys Fiber, a fibre optics network in Denmark), digital infrastructures (DataBank, a group of data centres in the United States), and shares in diversified unlisted investment funds. EDF Invest also sold its entire interest in Thyssengas (a gas network in Germany) and part of its stake in the Transport Stockage Hydrocarbures/Géosel group (salt cavern oil storage in France) and 50% of the MiRose wind farms in the US.

Withdrawals from dedicated assets in 2022 totalled €416 million, equivalent to payments made in respect of the long-term nuclear obligations to be covered during the year (€389 million in 2021).

15.1.2.4 Valuation of EDF's dedicated assets

EDF's dedicated assets are included in the Group's consolidated financial statements at the following values:

| (in millions of euros) | Consolidated balance sheet presentation | 31/12/2022 | | 31/12/2021 | |
|------------------------------------|--|---------------|------------------|---------------|------------------|
| | | Book value | Realisable value | Book value | Realisable value |
| Yield assets (EDF Invest) | | 6,477 | 8,772 | 5,626 | 7,908 |
| CTE | Investments in associates ⁽¹⁾ | 1,766 | 3,791 | 1,478 | 3,343 |
| Other associates | Investments in associates ⁽²⁾ | 2,268 | 2,495 | 2,567 | 2,923 |
| Other unlisted assets | Debt and equity securities and other net assets ⁽³⁾ | 2,422 | 2,465 | 1,581 | 1,642 |
| Derivatives | Fair value of derivatives | 21 | 21 | - | - |
| Growth assets | | 12,251 | 12,251 | 15,320 | 15,320 |
| Equities (investment funds) | Debt securities | 11,625 | 11,625 | 14,815 | 14,815 |
| Unlisted equity funds (EDF Invest) | Debt securities | 553 | 553 | 519 | 519 |
| Derivatives | Fair value of derivatives | 73 | 73 | (14) | (14) |
| Fixed-income assets | | 12,881 | 12,881 | 14,226 | 14,226 |
| Bonds | Debt securities | 11,264 | 11,264 | 13,007 | 13,007 |
| Unlisted debt funds (EDF Invest) | Debt securities | 215 | 215 | 199 | 199 |
| Cash portfolio | Debt securities | 1,414 | 1,414 | 1,016 | 1,016 |
| Derivatives | Fair value of derivatives | (12) | (12) | 4 | 4 |
| TOTAL EDF DEDICATED ASSETS | | 31,609 | 33,904 | 35,172 | 37,454 |

⁽¹⁾ The Group's investment of 50.1% of CTE, the company that holds 100% of the shares in RTE. The CTE shares are included at their equity value in the consolidated financial statements (book value in the table). The realisable value of CTE in the above table has been determined by an independent assessor, in the same way as for EDF Invest's other assets.

⁽²⁾ Including the value of the share in equity of the controlled companies owning these investments.

⁽³⁾ Including debt and equity securities amounting to €2,299 million and the value of the share in equity of other controlled companies.

The structure of the dedicated asset portfolio in 2022 and 2021 is as follows (in realisable value):



15.1.3 Coverage of EDF's long-term nuclear obligations

The Group's long-term nuclear obligations in France concerned by the regulations for dedicated assets related to nuclear generation are included in the EDF group's consolidated financial statements at the following values:

| (in millions of euros) | 31/12/2022 | 31/12/2021 |
|---|---------------|---------------|
| Provisions for spent fuel management – portion unrelated to the operating cycle as defined in the regulations | 1,607 | 1,726 |
| Provisions for long-term radioactive waste management | 12,475 | 14,233 |
| Provisions for nuclear plant decommissioning | 17,094 | 17,730 |
| Provisions for last cores – portion for future long-term radioactive waste management | 473 | 587 |
| PRESENT COST OF LONG-TERM NUCLEAR OBLIGATIONS | 31,649 | 34,276 |
| REALISABLE VALUE OF DEDICATED ASSETS | 33,904 | 37,454 |
| REGULATORY COVERAGE RATE | 107.1% | 109.3% |

At 31 December 2022, by the regulatory calculations provisions are 107.1% covered by dedicated assets. The potential regulatory caps on the realisable value of certain investments set in the Environment Code were not applicable at 31 December 2022. At 31 January 2023, nuclear provisions (as measured at 31 December 2022) were 109.7% covered by dedicated assets, in line with the noticeable positive developments on the financial markets in January 2023.

At 31 December 2021, by the regulatory calculations provisions were 109.3% covered by dedicated assets. Again, the regulatory caps were not applicable.

15.2 EDF Energy's nuclear provisions

The specific financing terms for long-term nuclear commitments related to EDF Energy are reflected as follows in the EDF group's financial statements:

- the obligations are reported in liabilities in the form of provisions amounting to €15,148 million at 31 December 2022;
- in the assets, EDF Energy reports receivables corresponding to the amounts payable under the restructuring agreements by the Nuclear Liabilities Fund (NLF), for non-contracted obligations or decommissioning obligations, and by the British Government for contracted obligations (or historical liabilities).

These receivables are discounted at the same real rate as the obligations they are intended to finance. They are included in "Financial assets" in the consolidated balance sheet (see note 18.1.3) at the amount of €14,000 million at 31 December 2022 (€15,986 million at 31 December 2021).

Details of changes in provisions for the back-end of the nuclear cycle and provisions for decommissioning and last cores are as follows:

| <i>(in millions of euros)</i> | 31/12/2021 | Increases | Decreases | Discount effect | Translation adjustments | Other movements | 31/12/2022 |
|---|---------------|-----------|----------------|-----------------|-------------------------|-----------------|---------------|
| Provisions for spent fuel management | 1,401 | 21 | (166) | 194 | (72) | (94) | 1,284 |
| Provisions for waste removal and conditioning | 639 | 1 | - | 80 | (25) | (322) | 373 |
| Provisions for long-term radioactive waste management | 1,415 | 2 | - | 181 | (63) | (469) | 1,066 |
| Provisions for the back-end of the nuclear cycle | 3,455 | 24 | (166) | 455 | (160) | (885) | 2,723 |
| Provisions for nuclear plant decommissioning | 12,595 | 3 | (623) | 1,588 | (637) | (1,630) | 11,296 |
| Provisions for last cores | 1,839 | - | (576) | 25 | (72) | (87) | 1,129 |
| Provisions for decommissioning and last cores | 14,434 | 3 | (1,199) | 1,613 | (709) | (1,717) | 12,425 |
| PROVISIONS RELATED TO NUCLEAR GENERATION | 17,889 | 27 | (1,365) | 2,068 | (869) | (2,602) | 15,148 |

"Other movements" include the changes in nuclear liabilities with a corresponding adjustment in the amount of reimbursements receivable from the NLF and the British government, and the change in the provision for last cores *via* an adjustment to fixed assets.

The overall change of the "other movements" is mainly due to an increase in the real discount rate in the United Kingdom (particularly +100 base point on provisions for the backend of the cycle and decommissioning), resulting in a decrease of the provisions for an amount of €(2,934) million.

As planned, in 2022, EDF Energy ended power generation at the Hunterston B and Hinkley Point B power plants (on 7 January 2022 and 1 August 2022 respectively). Defueling began on 16 May 2022, for Hunterston B and on 14 September 2022, for Hinkley Point B. The provision for last cores consequently decreased by €(576) million and the stock of nuclear fuel decreased by an equivalent amount, corresponding to the fuel stock still in the reactor.

15.2.1 Regulatory and contractual framework

Amendments signed with the Nuclear Liabilities Fund (NLF – an independent trust set up by the UK Government as part of the restructuring of British Energy) following the EDF group's acquisition of British Energy had a limited impact on the contractual financing commitments made to British Energy by the UK Secretary of State and the NLF under the "Restructuring Agreements". These agreements were entered into by British Energy on 14 January 2005 as part of the restructuring led by the UK Government in order to stabilise British Energy's financial position. These agreements were amended and restated on 5 January 2009 as part of the acquisition of the British Energy Generation Limited by the Group. British Energy Generation Limited changed its name to EDF Energy Nuclear Generation Limited on 1 July 2011 and replaced British Energy in these agreements and amendments.

Under the terms of the Restructuring Agreements:

- the NLF agreed to fund, to the extent of its assets: (i) qualifying contingent and/or latent nuclear liabilities (including liabilities for management of spent fuel from the Sizewell B power station); and (ii) qualifying decommissioning costs for EDF Energy's existing nuclear power stations;

- the Secretary of State agreed to fund: (i) qualifying contingent and/or latent nuclear liabilities (including liabilities for the management of spent fuel from the Sizewell B power station) and qualifying decommissioning costs related to EDF Energy's existing nuclear power stations, to the extent that they exceed the assets of the NLF; and (ii) subject to a cap of £2,185 million (in December 2002 monetary values, adjusted accordingly), qualifying known existing liabilities for EDF Energy's spent fuel (including liabilities for management of spent fuel from plants other than Sizewell B loaded in reactors prior to 15 January 2005);
- EDF Energy is responsible for funding certain excluded or disqualified liabilities (e.g. those defined as EDF Energy liabilities), and additional liabilities which could be created as a result of failure by EDF Energy to meet minimum performance standards under applicable law. The obligations of EDF Energy to the NLF and the Secretary of State are guaranteed by the assets of the principal members of EDF Energy.

EDF Energy also made commitments to pay:

- annual decommissioning contributions for a period limited to the useful life of the plants as at the date of the "restructuring agreements"; the corresponding provision amounts to €90 million at 31 December 2022;
- £150,000 (indexed to inflation) per tonne of uranium loaded in the Sizewell B reactor after the date of the "restructuring agreements".

Furthermore, EDF Energy entered into a separate contract with the Nuclear Decommissioning Authority (NDA) for management of AGR spent fuel and associated radioactive waste resulting from operation of power plants other than Sizewell B after 15 January 2005, and bears no responsibility for this fuel and waste once it is transferred to the processing site at Sellafield. The corresponding costs of £150,000 (indexed to inflation) per tonne of loaded uranium – plus a rebate or surcharge dependent on market electricity price and electricity generated in the year – are included in inventories.

On 23 June 2021 EDF and the UK government signed an update to the Restructuring Agreements. The changes and clarifications to the Agreements confirm the recovery of qualifying costs and stipulate that once the AGR stations have finished defueling under EDF Energy responsibility, they will transfer to the NDA which will be responsible for subsequent decommissioning activities. These amended agreements have no consequences in the Group financial statements at 31 December 2022.

Phase 1 of the Decommissioning Plan Submission (DPS 20) submitted in 2020, which was an update to the defueling liability, was approved by the NDA in June 2021. The Integrated Plan (IP) 22, which updated the AGR defueling cost estimates previously submitted in 2020, was approved by the Non-Nuclear Liabilities Assurance team (NLA) in December 2021.

Phase 2 of the Decommissioning plan submission (DPS 21) which included updates for all the other decommissioning activities for the AGR plants, decommissioning of Sizewell B and an update to the Uncontracted Liability Discharge Plan (UCLDP), was approved by the NLA in August 2022.

The IP23, which updated the cost estimates from IP22 and DPS21, respectively, was approved by the NLA in December 2022.

The cost estimates from IP23 form the basis of EDF Energy's Back End Nuclear Cycle and Nuclear Plants Decommissioning provision as at 31 December 2022, incorporating the deferral of Sizewell B's decommissioning costs associated with life extension in 2021.

15.2.2 Provisions for the back-end of the nuclear cycle

Spent fuel from the Sizewell B PWR (pressurised water reactor) plant is stored on site. Spent fuel from the AGR plants is transferred to Sellafield for storage and reprocessing.

EDF Energy's provisions for the back-end of the nuclear cycle concern obligations for reprocessing and storage of spent fuel and long-term storage of radioactive waste, required by the existing regulations in the UK approved by the Nuclear Decommissioning Authority (NDA). Their amount is based on contractual agreements or if this is not possible, on the most recent technical estimates.

| (in millions of euros) | 31/12/2022 | | 31/12/2021 | |
|--|--|--|--|--|
| | Costs based on year-end economic conditions ⁽¹⁾ | Amounts in provisions at present value | Costs based on year-end economic conditions ⁽¹⁾ | Amounts in provisions at present value |
| Spent fuel management | 3,695 | 1,284 | 2,725 | 1,401 |
| Waste removal and conditioning | 1,867 | 373 | 2,154 | 639 |
| Long-term radioactive waste management | 5,158 | 1,066 | 5,126 | 1,415 |
| BACK-END NUCLEAR CYCLE EXPENSES | 10,720 | 2,723 | 10,005 | 3,455 |

⁽¹⁾ The costs based on year-end economic conditions include spent fuel and associated waste management over the operating life of the reactors (including future load fuel for Sizewell B only); the provisions are based on the fuel committed to date.

15.2.3 Provisions for nuclear plant decommissioning

Provisions for decommissioning of nuclear plants cover the full cost of decommissioning and are measured on the basis of existing techniques and methods that are most likely to be used for application of current regulations.

As explained above, the Restructuring Agreements updated in June 2021 provide that once the AGR power plants have finished defueling that they will transfer to the NDA for subsequent decommissioning activities.

The signature of these agreements has no immediate accounting consequences for decommissioning provisions or the receivable representing reimbursements to be made by the NLF and the UK government. Nuclear decommissioning liabilities and the associated assets

will be derecognised during the agreement's operational implementation phase.

Phase 1 of the Decommissioning Plan Submission (DPS 20) submitted in early 2020 and approved by the NDA in June 2021, which was an update to the defueling liability, led to a €1.9 billion increase in the provision at 31 December 2019, notably reflecting i) the extension of the defueling period following risk and contingency modelling, ii) better definition of the costs covered, and iii) an updated estimate of the costs of preparing and removing fuel, following a review of the industrial scenario.

The Integrated Plan (IP) 22, approved by the NLA in December 2021, which updated the AGR defueling cost estimates previously submitted in 2020, led to a €0.9 billion increase in the provision at 31 December 2021. This increase is mainly explained by the unexpected early end of generation at Dungeness B in June 2021, previously expected to be 2028, leading in particular to a longer defueling duration (and hence an increase in costs) due to the unplanned nature of this shutdown.

Furthermore, in 2021 EDF Energy updated the cost estimates relating to phase 2 of the decommissioning plan submission (DPS 21) which includes the other decommissioning activities for the AGR plants, decommissioning of Sizewell B and an update to the UCLDP. The updated cost estimate represented an increase in the provision of €0.2 billion at 31 December 2021, which includes the upward effects of the unexpected early end of generation at Dungeness (previously planned for 2028) and the new assumptions regarding the closure of Heysham 2 and Torness AGR plants, scheduled for 2028 (previously 2030), as well as the downward effect of extension of the depreciation period of Sizewell B (PWR plant) at 31 December 2021. As mentioned above, phase 2 of the DPS 21 was approved by the NLA in August 2022.

The IP23 was approved by the NLA in December 2022, which updated the cost estimates from IP22 and DPS21.

| <i>(in millions of euros)</i> | 31/12/2022 | | 31/12/2021 | |
|---------------------------------------|---|--|---|--|
| | Costs based on year-end economic conditions | Amounts in provisions at present value | Costs based on year-end economic conditions | Amounts in provisions at present value |
| Plant decommissioning EXPENSES | 20,875 | 11,206 | 19,864 | 12,494 |

15.2.4 Discounting of EDF Energy's provisions related to nuclear generation

The method used to determine the discount rate changed as follows from 31 December 2020:

- Like the discount rate for nuclear provisions in France, the discount rate for EDF Energy's provisions is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (UK gilt 0-20 year yield) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) plus a curve of the spread of corporate bonds rated A to BBB. Based on expected disbursements corresponding to nuclear obligations, a single equivalent discount rate is deduced from the curve constructed in this way. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions;
- The inflation assumption is based on an inflation curve constructed by reference to economic forecasts and inflation-indexed market products, in long-term coherence with the inflation assumption underlying the UFR (2%).

Determined under this method, the real discount rate used to calculate provisions for the back-end of the nuclear cycle and decommissioning of nuclear plants is 2.9% (1.9% as at 31 December 2021).

15.3 Nuclear provisions in Belgium

In Belgium, the law of 11 April 2003 assigned management of provisions concerning the Belgian nuclear plants, and the funds that cover them, to Synatom (a subsidiary of the ENGIE group). Luminus contributes *via* Synatom to these funds, to cover its share of plant decommissioning and back-end nuclear fuel expenses as a co-owner of 4 nuclear plants. These funding mechanisms are reflected through the following items in the consolidated financial statements:

- obligations presented in the liabilities in the form of provisions, amounting to €377 million at 31 December 2022 (€272 million at 31 December 2021);
- a receivable representing the advance payments made to Synatom, recognised in the consolidated balance sheet assets as financial assets carried at fair value (see note 18.1.3) at the value of €253 million at 31 December 2022 (€282 million at 31 December 2021). This receivable, which corresponds to the fair value of the share of funds held by Synatom on behalf of Luminus, is discounted by applying the same real discount rate used to determine the obligations they will cover.

Other provisions related to nuclear generation in Belgium correspond to liabilities covered by provisions that are not part of the mechanisms described above.

At 31 December 2022, nuclear provisions in Belgium reflect the three-year review of nuclear provisions, which incorporated the conclusions of the Nuclear Provisions Commission that were reported to Synatom and Electrabel (ENGIE group subsidiaries) on 16 December 2022. Following the review, decommissioning provisions were increased by €183 million.

Note 16 Provisions for employee benefits

Accounting principles and methods

The Group grants its employees post-employment benefits (pension plans, retirement indemnities, etc.) and other long-term benefits (e.g. long-service awards) in compliance with the specific laws and measures in force in each country where it does business.

Calculation and recognition of employee benefit obligations

Obligations under defined-benefit plans are calculated by the projected unit credit method, which determines the present value of entitlements earned by employees at year-end under all types of plan, taking into consideration the prospects for wage increases and each country's specific economic conditions.

Post-employment benefit obligations are valued mainly using the following methods and assumptions:

- retirement age, determined on the basis of the applicable rules for each plan, and the requirements to qualify for a full pension;
- career-end salary levels, with reference to employee seniority, projected salary levels at the time of retirement based on the expected effects of career advancement, and estimated trends in pension levels;
- forecast numbers of pensioners, determined based on employee turnover rates and mortality data available in each country;
- reversion pensions where relevant, taking into account both the life expectancy of the employee and his/her spouse and the marriage rate;
- a discount rate that depends on the geographical zone and the duration of the obligations, determined at the year-end date by reference to the market yield on high-quality corporate bonds or the rate on government bonds whose duration is coherent with EDF group's commitments to employees.

The amount of the provision corresponds to the value of obligations less the fair value of the fund assets that cover those obligations.

The net expense booked during the year for employee benefit obligations includes:

- in the income statement:
 - › the current service cost, corresponding to additional benefit entitlements earned during the year,
 - › the net interest expense, corresponding to interest on obligations net of the return on fund assets, which is calculated using the same discount rate as for the obligations,
 - › the past service cost, including the income or expense related to amendments or settlements of benefit plans or introduction of new plans,
 - › the actuarial gains and losses relating to other long-term benefits;
- in other components of consolidated comprehensive income:
 - › the actuarial gains and losses relating to post-employment benefits and any return on hedging assets in excess of the discount rates used,
 - › the effect of the limitation to the asset ceiling if any.

Post-employment benefit obligations

When they retire, Group employees benefit from pensions determined under local rules. They may also be entitled to benefits directly paid by the companies, and additional benefits prescribed by the relevant regulations.

French entities covered by the IEG system

Entities belonging to the specific IEG (electricity and gas) sector system, namely EDF, Enedis, Électricité de Strasbourg and EDF PEI, are Group companies where almost all employees benefit from the IEG statutes, including the special pension system and other statutory benefits.

After the financing reform for the IEG sector system took effect on 1 January 2005 (law of 9 August 2004), pension provisions were recognised by IEG companies to cover entitlements not funded by France's standard systems (CNAV, AGIRC and ARRCO), to which the IEG system is affiliated, or by the CTA (*contribution tarifaire d'acheminement*) levy on gas and electricity transmission and distribution services.

As a result of the system affiliation mechanism, any change (whether favourable or unfavourable to employees) in the standard French pension system that is not passed on to the IEG pension system is likely to cause a variation in the amount of the provisions recorded by the Group to cover its obligations.

The obligations concerned by the pensions and for which a provision is recorded thus include:

- specific benefits of employees in the deregulated or competitive activities;
- specific benefits earned by employees from 1 January 2005 for the regulated activities (transmission and distribution) (benefits earned prior to that date are financed by the CTA levy).

In addition to pensions, other benefits are granted to IEG status former employees (not currently in active service), as detailed below:

- benefits in kind: Article 28 of the IEG national statutes entitles such employees and current employees to benefits in kind in the form of supplies of electricity or gas at preferential prices. The obligation for supplies of energy to employees of the EDF and ENGIE (formerly GDF-Suez) groups corresponds to the probable present value of kWh to be supplied to beneficiaries or their dependants

during their retirement, valued on the basis of the unit cost (which mainly depends on the marginal production cost and taxes). It also includes the payment made under the energy exchange agreement with ENGIE;

- retirement gratuities: these are paid upon retirement to employees due to receive the statutory old-age pension, or to their dependants if the employee dies before reaching retirement. These obligations are almost totally covered by an insurance policy;
- bereavement benefit: this is paid out upon the death of an inactive or disabled employee, in order to provide financial assistance for the expenses incurred at such a time (Article 26 - § 5 of the National Statutes). It is paid to the deceased's principal dependants (statutory indemnity equal to three months' pension, subject to a ceiling) or to a third party that has paid funeral costs (discretionary indemnity equal to the costs incurred);
- bonus pre-retirement paid leave: all employees eligible to benefit immediately from the statutory old-age pension and aged at least 55 at their retirement date are entitled to 18 days of bonus paid leave during the last twelve months of their employment;
- other benefits include help with the cost of studies, time banking for pre-retirement leave, and pensions for personnel sent on secondment to subsidiaries not covered by the IEG system.

EDF Energy

Regarding pension obligations in the United Kingdom, EDF Energy's three defined-benefit plans (BEGG (British Energy Generation Group), EEGSG (EDF Energy Generation and Supply Group), and EEPS (EDF Energy Pension Scheme)) were closed at 31 December 2021, and replaced by a new defined-contribution plan called "myRetirement Plan". The rights vested under the previous plans up to their closing date still exist, and the corresponding obligations are update for changes in discount and inflation rates, but are no longer affected by new members or wage increases. Meanwhile, the closed plans were merged into a single plan called "EDF group of the Electricity Supply Pension Scheme (ESPS)" (EDFG).

Other long-term benefit obligations

These benefits concern employees currently in service, and are earned according to local regulations, particularly the statutory regulations for the electricity and gas sector for EDF and French subsidiaries covered by the IEG regime. They include:

- annuities following incapacity, invalidity, industrial accident or work-related illness;
- long-service awards;
- specific benefits for employees who have been in contact with asbestos.

16.1 Group provisions for employee benefits

(in millions of euros)

| | 31/12/2022 | 31/12/2021 |
|--|---------------|---------------|
| Provisions for employee benefits – current portion | 790 | 792 |
| Provisions for employee benefits – non-current portion | 16,231 | 21,716 |
| PROVISIONS FOR EMPLOYEE BENEFITS | 17,021 | 22,508 |

16.1.1 Breakdown of the change in the provision by geographical area: obligations, fund assets, net liability

| <i>(in millions of euros)</i> | France ⁽¹⁾ | United Kingdom | Other | Total |
|-----------------------------------|-----------------------|----------------|------------|---------------|
| Obligations at 31/12/2021 | 35,436 | 10,410 | 910 | 46,756 |
| Net expense for 2022 | 1,110 | 222 | 65 | 1,397 |
| Actuarial gains and losses | (9,260) | (3,386) | (143) | (12,789) |
| Employees' contributions to funds | - | 1 | - | 1 |
| Benefits paid ⁽²⁾ | (1,232) | (439) | (50) | (1,721) |
| Changes in scope of consolidation | - | - | 1 | 1 |
| Translation adjustment | - | (407) | - | (407) |
| Other movements | - | - | (8) | (8) |
| OBLIGATIONS AT 31/12/2022 | 26,054 | 6,401 | 775 | 33,230 |

| <i>(in millions of euros)</i> | France ⁽¹⁾ | United Kingdom | Other | Total |
|-----------------------------------|-----------------------|-----------------|--------------|-----------------|
| Fund assets at 31/12/2021 | (13,411) | (13,124) | (446) | (26,981) |
| Net expense for 2022 | (171) | (242) | (6) | (419) |
| Actuarial gains and losses | 3,737 | 5,505 | 53 | 9,295 |
| Employer's contributions to funds | - | (102) | (55) | (157) |
| Employees' contributions to funds | - | (1) | - | (1) |
| Benefits paid | 447 | 439 | 13 | 899 |
| Changes in scope of consolidation | - | - | - | - |
| Translation adjustment | - | 486 | (13) | 473 |
| Other movements | - | - | 7 | 7 |
| FUND ASSETS AT 31/12/2022 | (9,398) | (7,039) | (447) | (16,884) |

| <i>(in millions of euros)</i> | France ⁽¹⁾ | United Kingdom | Other | Total |
|---|-----------------------|----------------|------------|---------------|
| Net employee benefit liability at 31/12/2021⁽²⁾ | 22,025 | (2,714) | 464 | 19,775 |
| Net expense for 2022 | 939 | (20) | 59 | 978 |
| Actuarial gains and losses | (5,523) | 2,119 | (90) | (3,494) |
| Employer's contributions to funds | - | (102) | (55) | (157) |
| Benefits paid | (785) | - | (37) | (822) |
| Changes in scope of consolidation | - | - | 1 | 1 |
| Translation adjustment | - | 79 | (13) | 66 |
| Other movements | - | - | (1) | (1) |
| NET EMPLOYEE BENEFIT LIABILITY AT 31/12/2022 | 16,656 | (638) | 328 | 16,346 |
| Including: | | | | |
| Provisions for employee benefits | | | | 17,021 |
| Non-current financial assets ⁽²⁾ | | | | (675) |

⁽¹⁾ France comprises the two operating segments "France – Generation and Supply" and "France – Regulated activities" (see note 16.2).

⁽²⁾ The net liability at 31 December 2021 comprised €22,508 million for the provisions for employee benefits and €(2,733) million of non-current financial assets, giving a net liability amount of €19,775 million.

Actuarial gains and losses on obligations in 2022

Actuarial gains and losses on obligations amount to €(12,789) million for 2022, including:

- €(9,260) million in France as a result of:
 - › the €(16,997) million change in the discount rate,
 - › the €(145) million change in demographic assumptions,
 - › the €5,045 million change in the inflation rate,
 - › the €2,276 million impact of pay rise measures decided in 2022 for application from January 2023,
 - › the €561 million change in experience adjustments; and
- €(3,386) million in the United Kingdom, essentially associated with changes in the discount and inflation rates (€(4,475) million) and experience adjustments (€1,257 million) (see note 16.1.2).

Actuarial gains and losses on obligations amounted to €(239) million for 2021, including:

- €110 million in France as a result of:
 - › the €(3,099) million change in the discount rate,

- › the €(540) million change in experience adjustments,
- › the €151 million change in the ARRCO-AGIRC agreement,
- › the €3,598 million change in the inflation rate; and
- €(356) million in the United Kingdom, essentially associated with changes in the discount and inflation rates (see note 16.1.2).

Actuarial gains and losses on fund assets in 2022

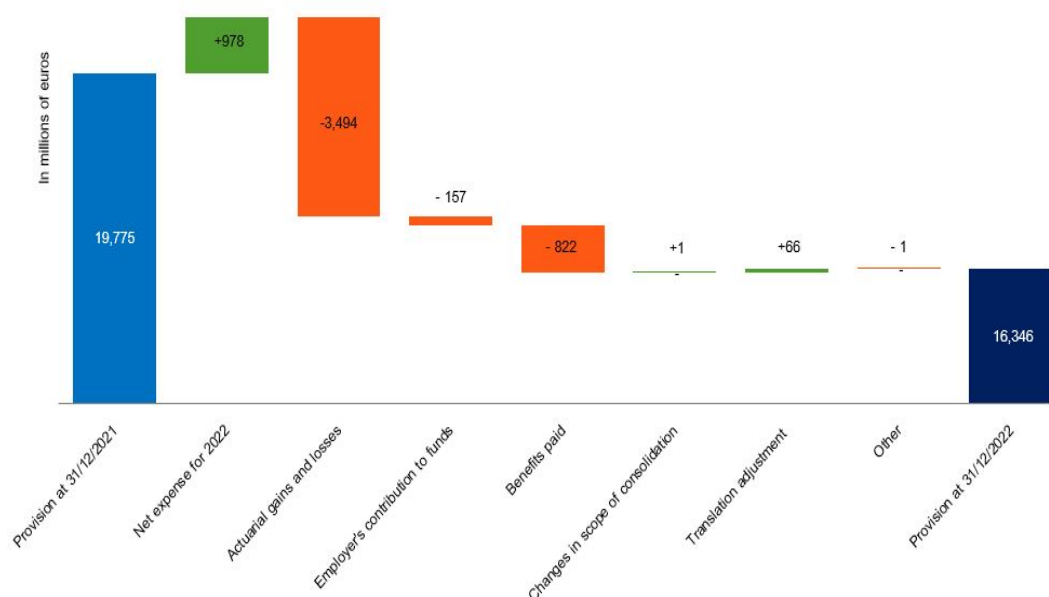
Actuarial gains and losses on fund assets amount to €9,295 million for 2022. They mainly result from a €3,737 million change in France and a €5,505 million change in the United Kingdom, in an environment of falling bond and equity markets.

Net employee benefit liability at 31 December 2022

The net liability at 31 December 2022 amounted to €16,346 million, including:

- €16,656 million in France;
- €(638) million in the United Kingdom, reflecting recognition by EDF Energy of surplus funding on its EDFG pension scheme, totalling €658 million compared to €2,733 million at 31 December 2021. This surplus funding, which has decreased due to the negative performance by fund assets given substantial interest rate increases over the period, is recognised in balance sheet assets under "non-current financial assets".

Changes in the net liability in 2022 were as follows:



16.1.2 Actuarial assumptions and sensitivity analyses

The following actuarial assumptions are used:

| (in %) | France | | United Kingdom | |
|---|------------|------------|----------------|------------|
| | 31/12/2022 | 31/12/2021 | 31/12/2022 | 31/12/2021 |
| Discount rate/rate of return on assets ⁽¹⁾ | 3.90% | 1.30% | 4.75% | 1.90% |
| Inflation rate | 2.30% | 1.70% | 2.90% | 2.95% |
| Wage increase rate ⁽²⁾ | 3.70% | 2.80% | 2.65% | 2.70% |

⁽¹⁾ The interest income generated by assets is calculated using the discount rate. The difference between this interest income and the real return on assets is recorded in actuarial gains and losses in equity.

⁽²⁾ Average wage increase rate, including inflation and projected over a full career.

The discount rate used for employee benefit obligations is determined by applying the yield rate on high-quality corporate bonds of appropriate duration to maturities corresponding to the future disbursements resulting from these obligations. For longer durations, the calculation also takes into consideration data from a wider selection of corporate bonds adjusted for comparability with the high-quality bonds, given the smaller panel of bonds with these durations since 2017.

Changes in the economic and market parameters used have led the Group to set the nominal discount rate in France at 3.90% at 31 December 2022 (1.30% at 31 December 2021). The increase in the discount rate essentially relates to the increase in risk-free rates



observed in 2022.

The inflation assumption is based on an inflation curve constructed from economic forecasts and inflation-indexed market products. As a result of changes in the economic and market parameters, the assumed average inflation rate used as the Group's benchmark for Euro zone countries is 2.30% at 31 December 2022 (1.70% at 31 December 2021).

The pay rise agreements signed in 2022 have been taken into consideration in calculating the obligations. For 2024 and subsequent years, the wage laws referred to for these calculations are based on average wage increases observed in recent years (adjusted for non-recurring effects).



The mortality table used to calculate obligations is based on the INSEE 2013 -2070 generation table (produced by the French statistics office), corrected for differences in mortality between the general French population and the population covered by the IEG regime.



Sensitivity analyses on the amount of the obligations are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | |
|---|--|--|
| |  France |  United Kingdom |
| Impact of a 25bp increase or decrease in the discount rate | (1,066) / 1,144 | (269) / 256 |
| Impact of a 25bp increase or decrease in the inflation rate | 1,115 / (1,043) | 235 / (238) |
| Impact of a 25bp increase or decrease in the wage increase rate | 1,028 / (964) | n.a. |

n.a. : not applicable.

16.1.3 Breakdown by geographical area of post-employment and other long-term employee benefits

| <i>(in millions of euros)</i> | 2022 | | | |
|--|--|---|-------------|--------------|
| |  France |  United Kingdom | Other | Total |
| Current service cost | (779) | (32) | (52) | (863) |
| Past service cost | - | - | (2) | (2) |
| Actuarial gains and losses – other long-term benefits | 131 | - | - | 131 |
| Net expenses recorded as operating expenses | (648) | (32) | (54) | (734) |
| Interest expense (discount effect) | (462) | (190) | (11) | (663) |
| Return on fund assets | 171 | 242 | 6 | 419 |
| Net interest expense included in financial result | (291) | 52 | (5) | (244) |
| EMPLOYEE BENEFIT EXPENSES RECORDED IN THE INCOME STATEMENT | (939) | 20 | (59) | (978) |
| Actuarial gains and losses – post-employment benefits | 9,260 | 3,386 | 143 | 12,789 |
| Actuarial gains and losses on fund assets | (3,737) | (5,505) | (53) | (9,295) |
| Actuarial gains and losses | 5,523 | (2,119) | 90 | 3,494 |
| Translation adjustments | - | (79) | 13 | (66) |
| GAINS AND LOSSES ON EMPLOYEE BENEFITS RECORDED DIRECTLY IN EQUITY | 5,523 | (2,198) | 103 | 3,428 |

| <i>(in millions of euros)</i> | 2021 | | | |
|--|--|---|-------------|----------------|
| |  France |  United Kingdom | Other | Total |
| Current service cost | (793) | (223) | (25) | (1,041) |
| Past service cost | - | 35 | - | 35 |
| Actuarial gains and losses – other long-term benefits | (123) | - | (6) | (129) |
| Net expenses recorded as operating expenses | (916) | (188) | (31) | (1,135) |
| Interest expense (discount effect) | (321) | (168) | (9) | (498) |
| Return on fund assets | 119 | 196 | 4 | 319 |
| Net interest expense included in financial result | (202) | 28 | (5) | (179) |
| EMPLOYEE BENEFIT EXPENSES RECORDED IN THE INCOME STATEMENT | (1,118) | (160) | (36) | (1,314) |
| Actuarial gains and losses – post-employment benefits | (110) | 356 | (7) | 239 |
| Actuarial gains and losses on fund assets | 287 | 859 | 22 | 1,168 |
| Actuarial gains and losses | 177 | 1,215 | 15 | 1,407 |
| Translation adjustments | - | 123 | - | 123 |
| GAINS AND LOSSES ON EMPLOYEE BENEFITS RECORDED DIRECTLY IN EQUITY | 177 | 1,338 | 15 | 1,530 |

The actuarial gains and losses on obligations in France are as follow:

| <i>(in millions of euros)</i> | 2022 | 2021 |
|--|--------------|--------------|
| Experience adjustments | (767) | 437 |
| Changes in demographic assumptions | 145 | 1 |
| Changes in financial assumptions ⁽¹⁾ | 10,013 | (671) |
| ACTUARIAL GAINS AND LOSSES ON OBLIGATIONS | 9,391 | (233) |
| Including: | | |
| Actuarial gains and losses on post-employment benefits | 9,260 | (110) |
| Actuarial gains and losses on other long-term benefits | 131 | (123) |

⁽¹⁾ Financial assumptions mainly concern the discount rate, inflation rate and wage increase rate.

16.2 France (regulated activities, and generation and supply)

The two operating segments "France – Generation and Supply" and "France – Regulated activities" (see note 4.1) are combined here into a single subtotal, "France", which primarily includes EDF and Enedis. Almost all of these companies' employees have IEG status, including the special IEG pension and other IEG benefits.

16.2.1 Breakdown of obligations by type of beneficiary

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|-------------------------------|-------------------|-------------------|
| Current employees | 12,831 | 18,463 |
| Retirees | 13,223 | 16,973 |
| OBLIGATIONS | 26,054 | 35,436 |

16.2.2 Provision for employee benefits by nature

At 31 December 2022

| <i>(in millions of euros)</i> | Obligations | Fund assets | Provisions in the balance sheet |
|---|--------------------|------------------------|--|
| Provisions for post-employment benefits at 31/12/2022 | 24,650 | (9,398) | 15,252 |
| Including: | | | |
| Pensions | 19,564 | (8,827) ⁽¹⁾ | 10,737 |
| Benefits in kind (electricity/gas) | 3,129 | - | 3,129 |
| Retirement gratuities | 754 | (557) | 197 |
| Other | 1,203 | (14) | 1,189 |
| Provisions for other long-term employee benefits at 31/12/2022 | 1,404 | - | 1,404 |
| Including: | | | |
| Annuities following work-related accident and illness, and invalidity | 1,191 | - | 1,191 |
| Long service awards | 188 | - | 188 |
| Other | 25 | - | 25 |
| PROVISIONS FOR EMPLOYEE BENEFITS AT 31/12/2022 | 26,054 | (9,398) | 16,656 |

⁽¹⁾ Mainly EDF SA's fund assets (49% of pension obligations were covered by funds at 31 December 2022).

At 31 December 2021

| <i>(in millions of euros)</i> | Obligations | Fund assets | Provisions in the balance sheet |
|---|---------------|-------------------------|---------------------------------|
| Provisions for post-employment benefits at 31/12/2021 | 33,813 | (13,411) | 20,402 |
| Including: | | | |
| Pensions | 26,196 | (12,620) ⁽¹⁾ | 13,576 |
| Benefits in kind (electricity/gas) | 4,925 | - | 4,925 |
| Retirement gratuities | 897 | (776) | 121 |
| Other | 1,795 | (15) | 1,780 |
| Provisions for other long-term employee benefits at 31/12/2021 | 1,623 | - | 1,623 |
| Including: | | | |
| Annuities following work-related accident and illness, and invalidity | 1,362 | - | 1,362 |
| Long service award | 230 | - | 230 |
| Other | 31 | - | 31 |
| PROVISIONS FOR EMPLOYEE BENEFITS AT 31/12/2021 | 35,436 | (13,411) | 22,025 |

⁽¹⁾ Mainly EDF SA's fund assets (53% of pension obligations were covered by funds at 31 December 2021).

16.2.3 Fund assets

For France, fund assets, managed under an asset/liability model, amount to €9,398 million at 31 December 2022 (€13,411 million at 31 December 2021) and concern the coverage of retirement gratuities and the specific benefits of the special pension system.

They consist of insurance contracts with the following risk profile:

- 65% in a hedging pocket consisting of bonds, designed to replicate variations in the obligation caused by changes in interest rates;
- 33% in a growth asset pocket consisting of international equities.
- 2% in real estate investments

Fund assets break down as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|--|--------------|---------------|
| FUND ASSETS | 9,398 | 13,411 |
| Assets funding special pension benefits | 8,827 | 12,620 |
| Including (%) | | |
| Listed debt instruments (bonds) | 65% | 67% |
| Listed equity instruments (shares) | 33% | 33% |
| Real estate property | 2% | - |
| Assets funding retirement gratuities | 557 | 776 |
| Including (%) | | |
| Listed debt instruments (bonds) | 69% | 67% |
| Listed equity instruments (shares) | 31% | 33% |
| Other fund assets | 14 | 15 |

At 31 December 2022, the bonds held as part of fund assets are distributed as follows:

- approximately 59% of the total are AAA and AA rated bonds;
- approximately 41% of the total are bonds with A, BBB and other ratings.

Around 59% of bonds are sovereign bonds issued by Euro zone countries, and the balance mainly consists of bonds issued by financial and non-financial firms.

At 31 December 2022, the equities held as part of fund assets are distributed as follows:

- approximately 62% of the total are shares in North American companies;
- approximately 19% of the total are shares in European companies;
- approximately 19% of the total are shares in companies in the Asia-Pacific zone and emerging countries.

This distribution is relatively stable compared to the distribution at 31 December 2021.

The performance of pension fund assets in France is -27.1% in 2022.

16.2.4 Future Cash Flows

Cash flows related to future employee benefits are as follows:

| <i>(in millions of euros)</i> | Cash flow under year-end economic conditions | Amount covered by provisions (present value) |
|--|--|--|
| Less than one year | 1,258 | 1,237 |
| One to five years | 4,493 | 3,997 |
| Five to ten years | 5,765 | 4,265 |
| More than ten years | 53,963 | 16,555 |
| CASH FLOWS RELATED TO EMPLOYEE BENEFITS | 65,479 | 26,054 |

At 31 December 2022, the average duration of employee benefit commitments in France is 16.8 years.

16.3 United Kingdom

16.3.1 Breakdown of obligations by type of beneficiary

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|-------------------------------|--------------|---------------|
| Current employees | 2,603 | 5,837 |
| Retirees | 3,798 | 4,573 |
| OBLIGATIONS | 6,401 | 10,410 |

16.3.2 Fund assets

The investment strategy applied in these funds is a liability driven investment strategy. The allocation between growth and back-to-back is regularly reviewed by the trustees, at least after every actuarial valuation, to ensure that the funds' overall investment strategy remains coherent in order to achieve the target coverage level required.

These assets break down as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|------------------------------------|--------------|---------------|
| FUND ASSETS | 7,039 | 13 124 |
| Including (%) | | |
| Listed equity instruments (shares) | 0% | 10% |
| Listed debt instruments (bonds) | 62% | 60% |
| Real estate properties | 10% | 5% |
| Cash and cash equivalents | 3% | 5% |
| Other (including private equity) | 25% | 20% |

At 31 December 2022, the bonds held as part of fund assets are distributed as follows:

- approximately 67% of the total are AAA and AA-rated bonds;
- approximately 33% of the total are bonds with A, BBB and other ratings.

Around 65% of all these bonds are sovereign bonds, mainly issued by the United Kingdom. The balance mainly consists of bonds issued by financial and non-financial firms.

16.3.3 Future cash flows

Cash flows related to future employee benefits are as follows:

| <i>(in millions of euros)</i> | Cash flow under year-end economic conditions | Amount covered by provisions (present value) |
|--|--|--|
| Less than one year | 235 | 256 |
| One to five years | 1,003 | 897 |
| Five to ten years | 1,414 | 1,025 |
| More than ten years | 12,098 | 4,223 |
| CASH FLOWS RELATED TO EMPLOYEE BENEFITS | 14,750 | 6,401 |

The average weighted duration of funds in the United Kingdom is 17.2 years at 31 December 2022.

Note 17 Other provisions and contingent liabilities

| (in millions of euros) | Notes | 31/12/2022 | | | 31/12/2021 | | |
|--------------------------------------|-------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | Current | Non-current | Total | Current | Non-current | Total |
| Other provisions for decommissioning | 17.1 | 127 | 2,006 | 2,133 | 95 | 1,872 | 1,967 |
| Other provisions | 17.2 | 3,885 | 2,665 | 6,550 | 3,245 | 3,570 | 6,815 |
| OTHER PROVISIONS | | 4,012 | 4,671 | 8,683 | 3,340 | 5,442 | 8,782 |

17.1 Other provisions for decommissioning

The breakdown by company is as follows:

| (in millions of euros) | EDF | EDF Energy | Edison | Framatome | Other | Total |
|---|------------|------------|------------|------------|------------|--------------|
| OTHER PROVISIONS FOR DECOMMISSIONING AT 31/12/2022 | 987 | 108 | 192 | 418 | 428 | 2,133 |
| Other provisions for decommissioning at 31/12/2021 | 770 | 123 | 188 | 443 | 443 | 1,967 |

Other provisions for decommissioning principally concern fossil-fired power plants, installations for the production of nuclear fuel assemblies, and dismantling of wind farms.

The costs of decommissioning fossil-fired power plants are calculated using regularly updated studies based on estimated future costs, measured by reference to the charges recorded on past operations and the most recent estimates for plants still in operation. The provision recorded at 31 December 2022 reflects the most recent known cost estimates and includes rehabilitation costs for generation sites.

Provisions for decommissioning notably include €153 million for Basic nuclear facilities (INB) in France, in the amounts of €110 million for Framatome and €43 million for Cyclife France. Dedicated assets are set aside to cover these provisions as required by the regulations.

Dedicated assets of Framatome and Cyclife France

The dedicated assets of Framatome and Cyclife France relating to Basic nuclear facilities (INB) in France have realisable values of €92 million in Framatome and €53 million in Cyclife France and the degree of coverage of provisions according to the regulations is 83% for Framatome and 123% for Cyclife France. At Framatome, a plan is currently in preparation to reach at least 100% coverage within 5 years, in accordance with decree 2020-830 of 1 July 2020.

17.2 Other provisions

Details of changes in other provisions are as follows:

| (in millions of euros) | 31/12/2021 | Increases | Utilisations | Decreases Reversals | Changes in scope | Other changes ⁽¹⁾ | 31/12/2022 |
|--|--------------|--------------|----------------|------------------------|---------------------|------------------------------|--------------|
| Provisions for contingencies related to subsidiaries and investments | 585 | 315 | (17) | (257) | (9) | (12) | 605 |
| Provisions for tax liabilities (excluding income tax) | 112 | 2 | (56) | (10) | (1) | 2 | 49 |
| Provisions for litigation | 327 | 89 | (66) | (32) | - | 3 | 321 |
| Provisions for onerous contracts and losses on completion | 1,651 | 117 | (360) | (654) | (3) | (113) | 638 |
| Provisions related to environmental schemes | 1,572 | 2,341 | (1,932) | (2) | - | (53) | 1,926 |
| Other provisions for contingencies and losses | 2,568 | 4,197 | (3,553) | (164) | 1 | (38) | 3,011 |
| TOTAL | 6,815 | 7,061 | (5,984) | (1,119) | (12) | (211) | 6,550 |

⁽¹⁾ Other changes principally concern foreign exchange effects resulting from adjustment of the provisions for onerous contracts concerning Dunkirk LNG, and the rise of the pound sterling against the euro.

Provision for onerous contracts

Provisions for onerous contracts mainly relate to multi-year agreements for the purchase or sale of energy and services:

- losses on energy purchase agreements are measured by comparing the acquisition cost under the contractual terms with the forecast market price;
- losses on energy sale agreements are measured by comparing the estimated income under the contractual terms with the cost of the energy to be supplied;
- losses on gas-related service agreements are measured by comparing the costs of fulfilling a contract with the resulting economic benefits, based on market and sales assumptions.

Provisions for onerous contracts are mainly attributable to the Group's LNG activities (long-term LNG purchase contracts and a long-term regasification contract with Dunkerque LNG).

A provision for a liquefied natural gas (LNG) supply contract from the United States was totally recovered at 31 December 2022 following an improvement in medium-term and long-term United States/Europe spreads, in a market that remains very volatile.

A partial reversal of a provision concerning a regasification contract was recognised at 31 December 2022, as a result of better use of European terminals in the new geopolitical context for gas.

The revenues and margin on Framatome's long-term contracts are recorded under the percentage-of-completion method. When the estimated result upon completion is negative, the loss is immediately recorded in profit and loss, after deducting the loss already recognised under the percentage-of-completion method, and a provision is booked.

Provisions related to environmental schemes

Provisions related to environmental schemes include provisions to cover shortfalls in greenhouse gas emission rights, renewable energy certificates and where relevant energy savings certificates, based on the assigned obligations (see notes 5.5.4, 10.2, 20.1 and 20.2.1).

Through the **renewable energy certificates scheme**, the EDF group has an obligation to surrender renewable energy certificates, particularly in the United Kingdom and Belgium.

At 31 December 2022, a provision of €1,117 million was booked in connection with the obligation to surrender renewable energy certificates at that date, essentially concerning EDF Energy (United Kingdom) and Luminus (Belgium). A large portion of these obligations is covered by purchases of certificates included in intangible assets (see note 10.2).

One of the main features of the fourth period (2021-2030) of the European Union **greenhouse gas emission quota system** (SEQUE-EU or EU-ETS) is to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015. One key step was accelerating annual quota reductions to 43 million tonnes per year.

In the EDF group, the entities concerned by this European system are EDF, Edison, Dalkia, PEI and Luminus. Free emissions quota allocations for the Group stopped in 2020.

The volume of emissions at 31 December 2022 stood at 18 million tonnes (17 million tonnes for 2021).

Actual greenhouse gas emissions amounted to €799 million at 31 December 2022 (€380 million at 31 December 2021) and are included in provisions in the balance sheet.

In 2022, the Group surrendered 17 million tonnes in respect of emissions generated in 2021 under the EU ETS (in 2021 it surrendered 16 million tonnes in respect of emissions generated in 2020).

Now that Brexit has taken place, the United Kingdom is no longer a member of the European system (EU ETS) and has set up its own system (UK ETS - Emissions Trading Scheme). The UK ETS, which uses a bidding system, covers the same sectors as the EU ETS and operates under generally similar rules, with comparable accounting treatment.

The volume of EDF Energy's emissions at 31 December 2022 stood at 0.1 million tonnes (2 million tonnes for 2021). Actual greenhouse gas emissions amounted to €9 million at 31 December 2022 (€36 million at 31 December 2021) and are included in provisions in the balance sheet.

In 2022, EDF Energy surrendered 2 million tonnes in respect of emissions generated in 2021 under the UK ETS (in 2021 it surrendered 3 million tonnes in respect of emissions generated in 2020).

Other provisions for contingencies and losses

At 30 June 2022, other provisions for contingencies and losses included a provision of €2,749 million for the cost in the second half-year of 2022 of the additional ARENH allocation introduced by the decree of 11 March 2022 and its implementing orders. This provision was used entirely during the second half-year as and when the sales and purchases took place.

At 31 December 2022, a provision for contingencies was also recognised in connection with ongoing negotiations for a significant contract (see note 15.1.1.1).

These provisions also cover various contingencies and expenses related to operations (employers' matching contributions to employee profit sharing, restructuring operations, contractual maintenance obligations, etc.). No individual provision is significant.

In extremely rare cases, specific litigation covered by a provision may be unmentioned in the notes to the financial statements if such disclosure could cause serious prejudice to the Group.

At 31 December 2021, other provisions for risks and liabilities include a provision related to proceedings before the French Competition Authority (ADLC). On 22 February 2022, in a settlement procedure, the ADLC fined the EDF Group €300 million for abuse of its dominant

position. The provision was reversed when the expense, which was disbursed in July 2022, was recognised.

17.3 Contingent liabilities

Accounting principles and methods

A contingent liability is:

- a potential obligation arising from past events, which will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control, or
- a present obligation arising from past events that is not recognised in the financial statements because an outflow of resources representing economic benefits is unlikely to be necessary to extinguish the obligation, or because the amount of the obligation cannot be measured reliably.

The principal contingent liabilities at 31 December 2022 are the following:

17.3.1 Tax inspections

EDF

For the period 2008 to 2019, EDF was notified of proposed tax adjustments, notably concerning the tax-deductibility of certain long-term nuclear liabilities. In two rulings made in 2017 and one in 2019, Montreuil Administrative Court recognised the tax-deductibility of these liabilities and validated the position taken by the Company. The Minister appealed against two of these rulings. In January 2020, the Versailles Administrative Court upheld EDF's position for the year 2008, but the Minister appealed. In a decision of 11 December 2020 the Council of State overturned the Versailles court's decision and sent the case back before the same court. On 17 June 2021 the Administrative Appeal Court found against the Company and cancelled the first-instance rulings that had been in its favour. The Company lodged a further appeal before the Council of State, which was deemed admissible in late 2022. EDF is now waiting for a hearing date to be set. EDF recognised a net tax liability of €510 million in its 2020 financial statements in connection with this dispute, and has a tax liability covering the residual risk at 31 December 2022.

For the years 2012 to 2019, the French tax authorities questioned the tax-deductibility of certain long-term nuclear provisions. In a ruling of 29 August 2022, Montreuil Administrative Court validated the Company's position for one of the contested provisions, but upheld the tax adjustment for the other. In execution of this decision, the Company paid €297 million (see note 9.2) and filed an appeal against the unfavourable part of the ruling.

EDF International

Following the tax inspections of EDF International for the years 2009 to 2014, the French tax authorities questioned the valuation of the bond convertible into shares issued to refinance the acquisition of British Energy. The total amount concerned was approximately €310 million. EDF International contested this reassessment.

In judgements of 2 July 2019 for the period 2009 - 2013 and 30 January 2020 for the year 2014, Montreuil Administrative Court confirmed the tax reassessments. EDF International therefore paid the tax in execution of these decisions, but also appealed against them. In a ruling of 25 January 2022, Versailles Administrative Court found in favour of EDF International and cancelled the first-instance judgments, thus nullifying the notified reassessments. In early 2022, EDF International received a full refund of the amounts it had paid. In a decision of 16 November 2022, the Council of State overturned the Administrative Court's ruling and sent the case back to be rejudged before the same court. In application of this decision, EDF International repaid the full amount previously received (see note 9.2).

17.3.2 Labour litigation

EDF and its subsidiaries are party to a number of labour lawsuits. The Group considers that none of these lawsuits, individually, is likely to have a significant impact on its financial results or financial position. However, because they relate to situations that could concern a large number of EDF's employees in France, any increase in such litigations could have a potentially negative impact on the Group's financial position.

Additionally, EDF and its subsidiaries in France regularly undergo inspections by social security bodies such as URSSAF, some of which are currently in process.

17.3.3 Litigation with photovoltaic producers

Announcements in France in 2010 of a cut in purchase tariffs for photovoltaic electricity (the PV purchase tariff) triggered an upsurge in connection applications submitted to distribution network operators. By a decree of 9 December 2010 (the "moratorium decree") the French Government suspended the conclusion of new contracts with purchase obligations for a three-month period, and stated that any applications not approved by 2 December 2010 would have to be resubmitted at the end of this three-month period, based on a new tariff. The decision setting that tariff was issued on 4 March 2011, and significantly reduced the PV purchase tariffs. A tender system was developed in parallel.

A ruling given by the French Council of State on 16 November 2011 rejecting appeals against the moratorium decree generated a large volume of legal proceedings against Enedis and EDF in late 2011 which continued until 2015. Since March 2016, new actions for compensation relating to the photovoltaic moratorium have been definitively barred.

In response to an application for a preliminary ruling, on 15 March 2017 the Court of Justice of the European Union (CJEU) confirmed that the decisions of 10 July 2006 and 12 January 2010 setting the PV purchase tariffs constituted State aid that had been implemented without prior notification to the European Commission, and was therefore illegal. The CJEU concluded that it was now up to the national courts to take the appropriate action.

On 18 September 2019, the Court of Cassation issued several decisions rejecting claims concerning both Enedis and EDF, judging the aid illegal because it had not been notified; consequently, the prejudice of producers who could not benefit from that aid is deemed not legally repairable. Since then, further Court of Cassation decisions have essentially confirmed its ruling of 18 September 2019 and rejected producers' appeals founded on state aid arguments.

Since court decisions were now consistently following this precedent, some producers brought actions before administrative courts, claiming reparation from the State. To date the administrative courts have dismissed the producers' claims.

In parallel to the compensation claims before civil courts, EDF and Enedis sought to apply their Civil Liability insurance policy, but the insurers refused their claim. The French Court of Cassation considered in a ruling of 9 June 2015 (for the Green Yellow case) that the insurance payment was due and that the distribution network operator was at fault. Following that ruling, Enedis and EDF brought action against their insurers in April 2017, applying to the courts for formal recognition of two partial serial claims. If the courts were to recognise the existence of two partial serial claims, a single excess and a single limit would apply for all claims with the same technical cause. In view of the favourable developments in cases before the Court of Cassation, EDF and Enedis decided to apply for this case to be removed from the court list on 17 February 2021, to suspend the procedure for 2 years in order to draw up the final list of cases still outstanding. EDF and Enedis will file submissions by 17 February 2023 in order to suspend the time limit on this civil action for 2 years.

17.3.4 ARENH dispute - Force majeure

In the crisis caused by the Covid-19 pandemic, some suppliers applied to the President of the Paris Commercial Court in 2020 for an emergency order suspending ARENH deliveries either totally, or partially, equivalent to the decline in electricity consumption by their customer portfolio during the crisis, citing the *force majeure* clause contained in the master ARENH agreement signed with EDF.

On 20, 26 and 27 May 2020, after summary proceedings the Paris Commercial Court issued provisional rulings on the applications for suspension of ARENH contracts made by four alternative suppliers (TotalEnergies, Gazel, Alpiq and Vattenfall). The urgent application judge ruled that *force majeure* was established, and ordered the suspension of deliveries for three of the applicants (TotalEnergies, Gazel, and Alpiq). EDF appealed against this ruling. On 28 July 2020, the Paris Court of Appeal upheld these Commercial Court decisions. On 24 September 2020 EDF filed an appeal before the Court of Cassation which was rejected on 11 May 2022.

Meanwhile, as a precautionary measure to protect its rights, on 2 June 2020 EDF notified the energy suppliers Alpiq, Gazel and TotalEnergies of the termination of their ARENH contracts. By an order of 1 July 2020, the president of the Paris Commercial Court declared this termination null and void. EDF appealed against that decision. On 19 November 2020, the Paris Court of Appeal overturned the Commercial Court's order and stated that there were no grounds for summary proceedings, thus restoring the effects of the termination.

Further summary proceedings were initiated in late September 2020 by Ohm Energie, seeking a suspension of payments due for ARENH volumes, claiming that deliveries had been continued illegally by EDF since it had requested suspension of ARENH deliveries from April to June 2020 due to *force majeure*. On 23 October 2020 the Paris Commercial Court rejected all of Ohm Energie's claims.

In parallel, seven cases concerning the substance of the matter were brought by suppliers, claiming compensation from EDF for the prejudice caused by its allegedly unlawful refusal to apply the *force majeure* clause. The suppliers concerned are Hydroption, Vattenfall, Priméo Energie Grands Comptes and Priméo Energie Solutions, Arcelor Mittal Energy, Plüm Energy et Entreprises et Collectivités, TotalEnergies and Ekwateur.

On 13 April 2021, the Paris Commercial Court issued a first judgement on the merits in the Hydroption case, ordering EDF to pay the claimant €5.88 million in damages. The court considered that the conditions for *force majeure* were fulfilled and concluded that in continuing its ARENH deliveries against Hydroption's wishes EDF had committed a breach of contract for which it could be held liable. On 15 October 2021, the Paris Court of Appeal overturned the Commercial Court's judgement insofar as it considered EDF liable and ordered it to pay damages to Hydroption, considering that the exemption clause of *force majeure* was not established, and that EDF was not obliged to satisfy a request for suspension of the contract. On 2 December 2021, the Toulon Commercial Court placed Hydroption SAS in liquidation. The liquidator filed an appeal before the Court of Cassation on 19 January 2022, and the proceedings are still ongoing.

On 30 November 2021 the Paris Commercial Court issued two more judgements on the merits in the cases brought by TotalEnergies et Ekwateur, ordering EDF to pay damages of €53.93 million to TotalEnergies and €1.77 million to Ekwateur. EDF has appealed against these two judgments, and the proceedings are still ongoing.

On 6 December 2022, the Paris Commercial Court issued two further judgements on the merits in the cases brought by Priméo Energie Grands Comptes and Priméo Energie Solutions, ordering EDF to pay these two companies damages of €1.73 million and €2.36 million respectively. EDF has appealed against these two judgments, and the proceedings are still ongoing.

The other cases on the merits are still ongoing.

17.3.5 Edison

Sale of Ausimont (site de Bussi)

Several legal actions before the civil, administrative and criminal courts were begun following the sale by Edison of the Ausimont SpA industrial complex to Solvay Solexis SpA in 2002. The following proceedings are still ongoing:

- two administrative cases:
 - › On 28 February 2018, the Province of Pescara notified Solvay Speciality Polymers Italy SpA (formerly Solvay Solexis SpA) and Edison SpA of the launch of an administrative procedure to determine who was responsible for the pollution of the land outside the industrial complex belonging to Ausimont SpA which had been sold. The Province also ordered Edison to remove waste that was on the land concerned. Edison first appealed against this order before Pescara regional administrative court, and then before the Italian Council of State. In April 2020 the Council of State rejected the claim and Edison, considering the ruling unfair and unlawful, filed applications for its annulment before the Italian Court of Cassation, the Italian Council of State and the European Court of Human Rights (ECHR). The application before the Council of State has been rejected, while the case before the ECHR is still in process.

Edison has nonetheless begun work to make the site safe in agreement with the competent Public Administrations. In particular, Edison has completed the prevention measures (covering) of the polluted areas, reactivated the pump and stock system for the shallow waters and conducted further deep inspections on the soils. Furthermore, the Company has recently submitted a plan to the Ministry for the Environment for the first phase of environmental remediation relating to the disposal and management of waste.

On 11 June 2021 the Council of State published a ruling rejecting the appeal by the Ministry for the Environment against the decision of the Abruzzo regional administrative court concerning annulment of the award of the integrated contract for remediation work in these areas to the Belgian company Dec Deme.

Edison, which had already started the aforementioned work to make these areas safe and clean following the decision of the Council of State of April 2020, is currently discussing the cleanup and waste removal operations under its responsibility with the relevant bodies.

- › In an announcement of 18 December 2019, the Province of Pescara ordered Edison SpA to clean up the land located inside the industrial complex. Edison challenged this order before the Pescara regional administrative court and the proceedings are ongoing. While awaiting the court's decision, Edison has signed a transitional agreement with the current owners to define the practicalities for the transfer and management of existing power plants and the environmental remediation activities;
- one arbitration case: in 2012, arbitration proceedings were launched by Solvay SA and Solvay Specialty Polymers Italy SpA (the purchaser of Ausimont) for violation by Edison of the representations and warranties in environmental matters concerning the Bussi and Spinetta Marengo sites contained in the sale agreement.

At the end of June 2021, the Arbitral Tribunal issued a partial award, largely accepting the claims by Solvay Specialty Polymers Italy in relation to the environmental warranties given by Montedison under the Ausimont sale agreement signed in 2001. The Tribunal ordered Edison to pay compensation of €91 million for the period from May 2002 (closing date) to December 2016. This sentence was issued with one dissenting opinion by a member of the Arbitral Tribunal.

Edison's appeal against this award to the Swiss federal court of Lausanne was rejected in January 2022. The enforcement proceedings before the Milan Court of Appel ended on 24 January 2023 when Edison's action was dismissed, making the Arbitral Tribunal award enforceable. Edison intends to appeal to the Court of Cassation.

The Arbitral Tribunal postponed quantification of the damages suffered by Solvay Specialty Polymers Italy in the period after December 2016 and the legal fees incurred by the parties to a further phase of the arbitration, unless the parties reach an agreement in this respect.

- one civil case: on 8 April 2019, the Italian Ministry for the Environment brought a civil action against Edison, claiming damages for environmental disaster. These proceedings are ongoing and are currently in the provisional investigation phase.

Mantua - criminal and environmental proceedings

Criminal proceedings

The Public Prosecutor's Office of Mantua has decided to initiate criminal proceedings against some executive directors working or having worked for Edison since 2015 and some of Edison's representatives, due to alleged environmental offences, also on the basis of Legislative Decree 231 of 2001, which allegedly occurred in certain areas of the Mantua petrochemical plant. Such orders of the Province of Mantua were confirmed by the Council of State's ruling of April 2020 as described below. These proceedings are ongoing.

The Mantua petrochemical plant - which Edison (as the successor of Montedison) has not owned or managed since 1990 - is subject to a large-scale and complex program of environmental clean-up and restoration activities which also regarded all of the areas targeted by the procedure initiated by the Public Prosecutor. The ENI group has initiated these activities. After the transfer of the clean-up projects to Edison in June of last year, following the previously mentioned ruling of the Council of State, Edison is carrying out large part of the activities.

Environmental procedure

Over the past few years, the Italian province of Mantua notified Edison of eight orders to rehabilitate the land and the whole Mantua petrochemical site sold by Montedison to the ENI group in 1990, despite two settlement agreements concerning these environmental issues signed by ENI and the Italian Ministry for the Environment.

Edison appealed against all these rulings before the Brescia Division of the Lombardy regional administrative court, but lost its appeal in August 2018. Edison then took the matter to the Italian Council of State, which rejected Edison's appeal in a ruling of 1 April 2020

confirming the first-instance decisions. Edison pursued its appeal before the ECHR, and the proceedings are ongoing.

However, as mentioned above, Edison has already begun cleanup work on the site, taking over from the previous operators and conducting a series of tenders.

17.3.6 Investigations by France's Competition Authority ("ADLC")

At 31 December 2021 France's Competition Authority (the ADLC) was investigating the EDF group in relation to four separate matters (the ENGIE complaint, the referral concerning heat networks, the Plüm complaint, the Xélan complaint), which are described in the notes to the consolidated financial statements at 31 December 2021.

- There were significant developments in the first half of 2022 in the investigation that which followed a complaint filed by ENGIE on 19 June 2017 relating to EDF's commercial practices regarding retail electricity and gas sales, and specifically the circumstances in which EDF gave electricity suppliers, upon request, access to its file of customers paying the regulated "Green" and "Yellow" tariffs from the end of 2015, when these tariffs were about to be discontinued. Documents collected during search and seizure operations in November 2016 were used in the ENGIE proceedings. On 27 May 2021 EDF, Dalkia, Dalkia Smart Building, Citelum and Cham were notified of the ADLC's objections concerning the markets for retail electricity and gas supply, multi-technique management/maintenance and energy optimisation services, and energy control measures leading to issuance of energy savings certificates.

On February 22, 2022, the ADLC fined the EDF Group €300 million for dominant position abuse practices that allegedly enabled it to maintain its market shares in the electricity supply sector and strengthen its position in the associated gas supply and energy services markets. EDF benefited from the settlement procedure in this case and made two commitments: firstly, to make its file of customers on the "blue" regulated tariff available to alternative electricity suppliers upon request, and secondly, to separate the telephone subscription process for existing and prospective "blue" tariff customers from the process for existing and prospective customers on market-price contracts. A related provision was recognised at 31 December 2021. It was reversed when the expense, which was disbursed in July 2022, was recognised (see note 17.2).

- In the investigation following an ex-officio referral to the ADLC on 4 November 2019 concerning the formation of a partnership for heat network operations, EDF, Dalkia, Électricité de Strasbourg, ES Services Energétiques and EDEV received initial notification of the ADLC's objections on 3 May 2021, and an additional notification of objections on 8 July 2022. These notifications were the first step in a procedure that allows both sides to present their arguments. On 15 February 2023 the Rapporteur of the ADLC sent EDF her report in response to the observations made by the parties. The parties now have two months to make their observations on this report. The procedure will continue in 2023 and there is no indication as yet of the final outcome.

There were no significant developments in the other two ADLC investigations.

Finally, in a decision of 18 January 2022 the ADLC dismissed a complaint and application for interim measures made against EDF by ANODE (the national association of retail energy operators). This complaint concerned EDF's refusal to provide access to the database of non-residential customers concerned by discontinuation of the "blue" regulated sales tariffs, who were switched automatically to a follow-on market-price contract at 31 December 2020. However, the ADLC considered that ANODE's arguments were not backed up by sufficient evidence proving the existence of the alleged practices. ANODE filed an appeal against this decision on 1 March 2022 before the Paris Court of Appeal and in parallel, EDF made a declaration of voluntary intervention on 30 March 2022. The Court of Appeal ruled on 3 November 2022 that EDF's declaration of voluntary intervention was inadmissible, considering that the ADLC should not have informed EDF of its decision to dismiss ANODE's complaint. On 30 November 2022 EDF filed an appeal against this inadmissibility ruling. The appeal proceedings concerning the merits of the ADLC's decision of 18 January 2022 are still ongoing.

Note 18 Financial assets and liabilities

Accounting principles and methods

Financial assets comprise equity instruments (particularly non-consolidated investments), debt securities, loans and receivables at amortised cost, derivative assets (see note 18.7) and cash and cash equivalents (see note 18.2).

The classification and measurement of financial instruments depend on the business model and the instruments' contractual characteristics. They are carried at amortised cost, fair value through other comprehensive income (OCI), or fair value through profit and loss.

Financial liabilities comprise loans and other financial liabilities, bank credit and derivative liabilities (see note 18.7).

Financial assets and liabilities are recorded in the balance sheet as current if they mature within one year and non-current if they mature after one year, apart from derivatives held for trading, which are all classified as current.

Derecognition of financial assets and liabilities

The Group derecognises a financial asset when:

- the contractual rights to the cash flows generated by the asset expire, or
- the Group transfers the rights to receive contractual cash flows related to the financial asset through the transfer of substantially all of the risks and rewards associated with ownership of the asset.

Any interest created or retained by the Group in transferred financial assets is recorded as a separate asset or liability.

The Group derecognises a financial liability when its contractual obligations are extinguished, cancelled or expire. When a debt is renegotiated with a lender the Group derecognises the debt and recognises a new liability when the new terms are substantially different; otherwise, the book value is recalculated. In either case, the impacts of the debt renegotiation are recorded in profit and loss.

18.1 Financial assets

Accounting principles and methods

Financial assets comprise debt and equity securities. The accounting treatment applied depends on their contractual characteristics and business model

Financial assets carried at fair value through OCI with or without recycling

Financial assets carried at fair value through OCI comprise:

- non-consolidated investments for which the Group has irrevocably opted to recognise subsequent fair value changes in OCI, with no recycling to profit and loss in the event of sale. Only dividends received from these investments are recognised in the income statement, under "Other financial income";
- debt securities (such as bonds) invested under a mixed "collect and sell" business model for which contractual cash flows consist entirely of principal and interest payments reflecting the time value of money and the credit risk associated with the instrument (the IFRS 9 "SPPI" test – Solely Payment of Principal and Interest). Changes in fair value are recorded directly in OCI with recycling and transferred to profit and loss when the securities are sold. For these debt securities, interest income is calculated at the effective interest rate and credited to the income statement under the heading "Other financial income".

Upon **initial recognition**, these financial assets are recorded at fair value plus transaction costs attributable to their acquisition.

At each reporting date, they are adjusted to fair value based on quoted prices where possible, or using the discounted future cash flow method or by reference to external sources otherwise. Changes in the fair value of these instruments are recorded directly in OCI with recycling (for debt securities) or OCI with no recycling (for equity instruments) in the income statement.

Financial assets carried at fair value through profit and loss

Financial assets carried at fair value through profit and loss comprise:

- assets acquired from inception with the intention of resale in the short term;
- derivatives not classified as hedges (derivatives held for trading) (see note 18.7);
- equity instruments (non-consolidated investments) which the Group has not irrevocably opted to classify as at fair value through OCI with no recycling;
- debt securities that do not meet the requirements of the SPPI test, regardless of their business model. This chiefly concerns shares in investment funds.

These assets are recorded **at the transaction date** at fair value, which is generally equal to the amount of cash paid out. Transaction costs directly attributable to the acquisition are recorded in the income statement.

At each reporting date, they are adjusted to fair value based on quoted prices where possible, or using recognised valuation techniques such as the discounted cash flow method or reference to external sources otherwise. Changes in the fair value of these instruments are recorded in the income statement under the heading "Other financial income and expenses".

Financial assets carried at amortised cost

Loans and financial receivables are carried at amortised cost if the business model involves holding the instrument in order to collect contractual cash flows which consist entirely of principal and interest.

The interest received is calculated under the effective interest rate method and recorded in "Other financial income" in the income statement.

Loans and financial receivables that are not eligible for classification at amortised cost are carried at fair value through profit and loss, and recorded in "Other financial income and expenses" in the income statement.

Impairment model

The impairment model is based on expected credit loss (ECL). The Group applies a rating-based approach for counterparties with low credit risk. In application of the risk management policy, the Group's bond portfolio consists almost entirely of instruments issued by low-risk counterparties rated "Investment Grade".

In this situation, the ECL is estimated over a 12-month horizon following the year-end.

The threshold indicating a significant increase in credit risk is reached when the counterparty ceases to be rated "Investment Grade". The significant increase in the default risk may lead to reassessment of the ECL over the instrument's residual life.

For loans and receivables, the Group has chosen an approach based on the probability of default by the counterparty and assessment of changes in the credit risk.

18.1.1 Breakdown between current and non-current financial assets

Current and non-current financial assets break down as follows:

| (in millions of euros) | 31/12/2022 | | | 31/12/2021 | | |
|---|---------------|---------------|----------------|---------------|---------------|---------------|
| | Current | Non-current | Total | Current | Non-current | Total |
| Instruments at fair value through OCI with recycling | 17,014 | 4,982 | 21,996 | 10,519 | 5,810 | 16,329 |
| Instruments at fair value through OCI with no recycling | 36 | 207 | 243 | 37 | 253 | 290 |
| Instruments at fair value through profit and loss | 1,409 | 23,490 | 24,899 | 2,855 | 25,369 | 28,224 |
| Debt and equity securities | 18,459 | 28,679 | 47,138 | 13,411 | 31,432 | 44,843 |
| Trading derivatives – Positive fair value | 30,566 | - | 30,566 | 20,061 | - | 20,061 |
| Hedging derivatives – Positive fair value | 6,903 | 5,376 | 12,279 | 4,522 | 5,388 | 9,910 |
| Loans and financial receivables ⁽¹⁾ | 2,105 | 14,457 | 16,562 | 1,943 | 18,789 | 20,732 |
| CURRENT AND NON-CURRENT FINANCIAL ASSETS | 58,033 | 48,512 | 106,545 | 39,937 | 55,609 | 95,546 |

⁽¹⁾Including impairment of €(386) million at 31 December 2022 (€(299) million at 31 December 2021).

The increase in the positive fair value of trading derivatives (+€10.5 billion) is explained by an increase in the value of derivatives used in the trading activity, principally associated with commodity market price movements observed in 2022, and to a lesser extent the higher volumes contracted.

18.1.2 Debt and equity securities

Details of debt and equity securities

Financial assets are monitored and managed by the Group with two main objectives:

- **dedicated assets set aside in France for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste, as required by article L. 594 of France's Environment Code.** These assets consist of diversified investments in bonds, monetary and equity investment funds, and equity investments held by EDF Invest. The general management policy for dedicated assets and a breakdown of the portfolio is presented in note 15.1.2;
- **assets managed according to a liquidity-oriented policy** ("liquid assets"). These are financial assets consisting of funds or interest rate instruments with initial maturity of over three months that are readily convertible into cash. EDF's monetary investment funds included in liquid assets amount to €1,115 million at 31 December 2022 (€2,597 million at 31 December 2021).

Details of debt and equity securities are shown in the table below:

| (in millions of euros) | 31/12/2022 | | | | 31/12/2021 |
|-----------------------------------|--|---|---------------------------------------|---------------|---------------|
| | At fair value through OCI with recycling | At fair value through OCI with no recycling | At fair value through profit and loss | Total | Total |
| Debt and equity securities | | | | | |
| EDF dedicated assets | 4,627 | - | 22,742 | 27,369 | 31,013 |
| Liquid assets | 17,148 | - | 1,359 | 18,507 | 12,737 |
| Other assets ⁽¹⁾ | 221 | 243 | 798 | 1,262 | 1,093 |
| TOTAL | 21,996 | 243 | 24,899 | 47,138 | 44,843 |

⁽¹⁾Investments in non-consolidated companies.

Changes in debt and equity securities

| (in millions of euros) | 31/12/2021 | Net increases | Changes in fair value | Changes in scope | Translation adjustments | Other | 31/12/2022 |
|---|---------------|---------------|-----------------------|------------------|-------------------------|------------|---------------|
| Instruments at fair value through OCI with recycling | 16,329 | 7,416 | (2,007) | 3 | 139 | 116 | 21,996 |
| Instruments at fair value through OCI with no recycling | 290 | 322 | (15) | (353) | - | (1) | 243 |
| Instruments at fair value through profit and loss | 28,224 | (770) | (2,814) | 55 | (6) | 210 | 24,899 |
| TOTAL DEBT AND EQUITY SECURITIES | 44,843 | 6,968 | (4,836) | (295) | 133 | 325 | 47,138 |

Changes in fair value recorded in equity

Changes in the fair value of debt and equity securities were recorded in equity (EDF share) over the period as follows:

| (in millions of euros) | 2022 | | | 2021 | | |
|---|---|--|--|---|--|--|
| | Gross changes in fair value recorded in OCI with recycling ⁽¹⁾ | Gross changes in fair value recorded in OCI with no recycling ⁽¹⁾ | Gross changes in fair value recycled to profit and loss ⁽²⁾ | Gross changes in fair value recorded in OCI with recycling ⁽¹⁾ | Gross changes in fair value recorded in OCI with no recycling ⁽¹⁾ | Gross changes in fair value recycled to profit and loss ⁽²⁾ |
| EDF dedicated assets | (1,081) | - | (206) | (202) | - | 42 |
| Liquid assets | (850) | - | (65) | (81) | - | 21 |
| Other assets | - | (16) | - | - | 15 | - |
| DEBT AND EQUITY SECURITIES⁽³⁾ | (1,931) | (16) | (271) | (283) | 15 | 63 |

⁽¹⁾+ / (-): increase / (decrease) in equity (EDF share).

⁽²⁾+ / (-): increase / (decrease) in income (EDF share).

⁽³⁾Excluding associates and joint ventures.

In 2022, gross changes in fair value recorded in OCI with recycling principally concern EDF (€(1,660) million, including €(875) million for dedicated assets). In 2021, gross changes in fair value recorded in OCI with recycling principally concern EDF (€(346) million, including €(244) million for dedicated assets).

No significant impairment was recorded in 2022.

18.1.3 Loans and financial receivables

Loans and financial receivables consist of the following:

| (in millions of euros) | 31/12/2022 | 31/12/2021 |
|---|---------------|---------------|
| Amounts receivable from the NLF | 14,000 | 15,986 |
| Loans and financial receivables – other | 2,562 | 4,746 |
| LOANS AND FINANCIAL RECEIVABLES | 16,562 | 20,732 |

At 31 December 2022 loans and financial receivables mainly include:

- amounts representing reimbursements receivable from the Nuclear Liabilities Fund (NLF) and the British government for coverage of long-term nuclear obligations, totalling €14,000 million at 31 December 2022 (€15,986 million at 31 December 2021), discounted at the same rate as the provisions they finance (see note 15.2);
- other loans and financial receivables notably include:
 - › the overfunding of EDF Energy's EDFG (EDF Group of the ESPS) pension scheme by €658 million at 31 December 2022, compared to €2,733 million at 31 December 2021 (see note 16.1.1),
 - › an amount of €253 million representing the advance payments made by Luminus to Synatom to cover long-term nuclear obligations (€282 million at 31 December 2021 and see note 15.3). In Luminus' financial statements these amounts are discounted at the same rate as the provisions they fund. This receivable is equal to the fair value of the amounts held by Synatom on behalf of Luminus as fund assets,
 - › loans made by EDF Renewables in the course of its project development activity, mainly in connection with wind farms in France, the United Kingdom and North America, amounting to €823 million at 31 December 2022 compared to €525 million at 31 December 2021.

Changes in loans and financial receivables

| <i>(in millions of euros)</i> | 31/12/2021 | Net increases | Discount effect | Changes in scope | Translation adjustments | Other | 31/12/2022 |
|---------------------------------|------------|---------------|-----------------|------------------|-------------------------|---------|------------|
| Loans and financial receivables | 20,732 | (581) | - | 4 | (920) | (2,673) | 16,562 |

Other changes in loans and financial receivables principally correspond to the changes in the receivable representing amounts reimbursable by the Nuclear Liabilities Fund (NLF) and the British government, and the surplus funding of EDF Energy's EDFG pension scheme, reflecting the higher discount rates used.

18.2 Cash and cash equivalents

Accounting principles and methods

Cash and cash equivalents comprise immediately available liquidities and very short-term investments that are readily convertible (e.g. in monetary funds) into a known amount of cash, usually maturing within three months or less of the acquisition date, and with negligible risk of fluctuation in value. These items are held to cover short-term obligations rather than for short-term investments or other purposes. When they mature in more than 3 months, they are included in Liquid assets in Debt and equity securities (see note 18.1.2).

"Cash equivalents" are recorded at fair value, with changes in fair value included in the heading "Other financial income and expenses".

Cash and cash equivalents include the following amounts recorded in the balance sheet:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|----------------------------------|---------------|--------------|
| Cash | 10,261 | 9,178 |
| Cash equivalents | 687 | 741 |
| CASH AND CASH EQUIVALENTS | 10,948 | 9,919 |

Cash restrictions

Cash and cash equivalents include €566 million of cash subject to restrictions at 31 December 2022 (€198 million at 31 December 2021) (see note 1.3.5).

18.3 Financial liabilities

Accounting principles and methods

Loans and other financial liabilities are carried at amortised cost, adjusted for changes in the value of the risks hedged when they are covered by a fair value hedge (see note 18.7). Interest expenses are calculated at the effective interest rate and recorded in the income statement in "Cost of gross financial indebtedness" over the duration of the loan or financial liability.

18.3.1 Breakdown between current and non-current financial liabilities

Current and non-current financial liabilities break down as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | | | 31/12/2021 | | |
|--|---------------|---------------|----------------|---------------|---------------|----------------|
| | Non-current | Current | Total | Non-current | Current | Total |
| Loans and other financial liabilities | 67,340 | 28,713 | 96,053 | 54,334 | 15,072 | 69,406 |
| Trading derivatives - negative fair value ⁽¹⁾ | - | 28,884 | 28,884 | - | 22,027 | 22,027 |
| Hedging derivatives - negative fair value ⁽¹⁾ | 3,718 | 14,247 | 17,965 | 2,209 | 7,915 | 10,124 |
| FINANCIAL LIABILITIES | 71,058 | 71,844 | 142,902 | 56,543 | 45,014 | 101,557 |

⁽¹⁾See note 18.7.

The increase in the negative fair value of trading derivatives (+€6.9 billion) is explained by the increase in prices observed on the commodity markets in 2022, and to a lesser extent the increase in volumes contracted.

18.3.2 Loans and other financial liabilities

18.3.2.1 Changes in loans and other financial liabilities

| <i>(in millions of euros)</i> | Bonds | Loans from financial institutions | Other financial liabilities | Lease liability | Accrued Interest | Total |
|-----------------------------------|---------------|-----------------------------------|-----------------------------|-----------------|------------------|---------------|
| Balances at 31/12/2021 | 49,242 | 3,690 | 10,992 | 4,337 | 1,145 | 69,406 |
| Increases | 2,971 | 17,126 | 14,108 | 353 | 204 | 34,762 |
| Decreases | (2,833) | (476) | (1,942) | (702) | (104) | (6,057) |
| Translation adjustments | (237) | 21 | (145) | (6) | 5 | (362) |
| Changes in scope of consolidation | (10) | (82) | 2 | (19) | - | (109) |
| Changes in fair value | (3,983) | 3 | (9) | - | - | (3,989) |
| Other changes ⁽¹⁾ | - | (4) | 2,109 | 306 | (9) | 2,402 |
| BALANCES AT 31/12/2022 | 45,150 | 20,278 | 25,115 | 4,269 | 1,241 | 96,053 |

⁽¹⁾ Other changes include €2,2021 millions corresponding to reclassification of perpetual subordinated bonds as Other financial liabilities in view of the commitment to redeem those bonds at 29 January 2023 (see note 14.4.1).

The principal **bond**-related operations of 2022 were:

- senior bond issues in October 2022 with gross value of €3.0 billion (see note 18.3.2.2);
- bond redemptions of €2.8 billion during the year, comprising €2 billion in January 2022, €0.3 billion in June 2022, and €0.5 billion in December 2022.
- The principal operations in 2022 relating to **loans from financial institutions** were the conclusion of bilateral 3-year credit lines with a group of 18 banks for €13.1 billion, US\$2.2 billion and ¥38 billion (a total of €15.4 billion), and new drawings on the European Investment bank financing amounting to €0.8 billion, maturing in 2032. Drawings were made on all these credit facilities in 2022.

At 31 December 2022, EDF's **other financial liabilities** include negotiable debt instruments amounting to €10,638 million, and an amount of €9,265 million recognised in respect of the cash received for debt securities transferred to several banks under repurchase agreements. These operations do not affect the net indebtedness.

A breakdown of the issuance and repayments of borrowings as presented in the cash flow statement is presented below:

| <i>(in millions of euros)</i> | Bonds | Loans from financial institutions | Other financial liabilities | Lease liability | Termination of hedging derivatives | 31/12/2022 |
|-------------------------------|---------|-----------------------------------|-----------------------------|-----------------|------------------------------------|------------|
| Issuance of borrowings | 2,971 | 17,126 | 14,108 | | (40) | 34,165 |
| Repayments of borrowings | (2,833) | (476) | (1,942) | (702) | 77 | (5,876) |

18.3.2.2 Principal borrowings of the Group

The Group's principal borrowings (excluding Green Bonds and OCEANes) at 31 December 2022 are as follows:

| Type of borrowing (in millions of currencies) | Entity | Issue date ⁽¹⁾ | Maturity | Issue amount | Currency | Rate |
|--|--------|---------------------------|----------|--------------|----------|-------|
| Euro MTN | EDF | 09/2012 | 03/2023 | 2,000 | EUR | 2.75% |
| Euro MTN | EDF | 09/2009 | 09/2024 | 2,500 | EUR | 4.63% |
| Euro MTN | EDF | 11/2010 | 11/2025 | 750 | EUR | 4.00% |
| Bond | EDF | 10/2022 | 12/2026 | 750 | EUR | 3.88% |
| Bond | EDF | 01/2017 | 01/2027 | 107,900 | JPY | 1.09% |
| Euro MTN | EDF | 03/2012 | 03/2027 | 1,000 | EUR | 4.13% |
| Bond | EDF | 09/2018 | 09/2028 | 1,800 | USD | 4.50% |
| Bond | EDF | 10/2022 | 10/2029 | 1,000 | EUR | 4.38% |
| Euro MTN | EDF | 04/2010 | 04/2030 | 1,500 | EUR | 4.63% |
| Euro MTN | EDF | 10/2018 | 10/2030 | 1,000 | EUR | 2.00% |
| Euro MTN | EDF | 07/2001 | 07/2031 | 650 | GBP | 5.88% |
| Euro MTN | EDF | 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% |
| Bond | EDF | 01/2010 | 01/2040 | 850 | USD | 5.60% |
| 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 | 12/2019 | 12/2049 | 1,250 | EUR | 2.00% |
| Euro MTN | EDF | 09/2010 | 09/2050 | 1,000 | GBP | 5.13% |
| Euro MTN | EDF | 10/2016 | 10/2056 | 2,164 | USD | 4.99% |
| Euro MTN | EDF | 11/2019 | 12/2069 | 2,000 | USD | 4.50% |
| Bond | EDF | 01/2014 | 01/2114 | 700 | USD | 6.00% |
| Bond | EDF | 01/2014 | 01/2114 | 1,350 | GBP | 6.00% |

⁽¹⁾ Date funds were received.

On 5 October 2022 EDF launched a senior bond issue in 3 tranches for a nominal amount of €3 billion euros:

- a €750 million bond, with 4-year maturity and a 3.875% fixed coupon;
- a €1 billion bond, with a 7-year maturity and a 4.375% fixed coupon;
- a €1.25 billion Green bond, with a 12-year maturity and a 4.75% fixed coupon (see below).

At 31 December 2022, the Group's principal Green Bonds (see note 20.3.1) are as follows:

| Type of borrowing (in millions of currency units) | Entity | Issue date | Maturity | Issue amount | Currency | Rate |
|--|--------|------------|----------|--------------|----------|-------|
| Bond (Green Bond) | EDF | 10/2015 | 10/2025 | 1,250 | USD | 3.63% |
| Euro MTN (Green Bond) | EDF | 10/2016 | 10/2026 | 1,750 | EUR | 1.00% |
| Euro MTN (Green Bond) | EDF | 11/2021 | 11/2033 | 1,850 | EUR | 1.00% |
| Bond (Green Bond) | EDF | 10/2022 | 10/2034 | 1,250 | EUR | 4.75% |

On 8 September 2020, EDF made an offering of Green Bonds convertible into new shares and/or exchangeable for existing shares (OCEANes Vertes). The key features of this issue are as follows:

| Type of borrowing (in millions of currency units) | Entity | Issue | Maturity | Issue amount | Currency | Rate |
|--|--------|---------|----------|--------------|----------|------|
| OCEANes Green Bonds | EDF | 09/2020 | 09/2024 | 2,400 | EUR | 0% |

Holders of these bonds have the right to convert them into new EDF shares and/or exchange them for existing EDF shares.

The conversion and/or exchange ratio was set at one share per bond, subject to the standard adjustments including anti-dilution and dividend protections as described in the terms of the issue. For the 2020 dividend distribution to EDF shareholders, the conversion/exchange rate was raised to 1.018 EDF share per bond from 7 June 2021, and when the interim dividend for 2021 was paid, the conversion/exchange ratio was raised to 1.042 EDF share per bond from 2 December 2021.

In 2022, the conversion/exchange ratio was raised to 1.087 EDF share per bond after the capital increase of 7 April 2022, then 1.124 EDF share per bond from 13 June 2022 when the dividend for 2021 was paid. Finally, as a result of the simplified public buyout offer launched by the French government on 23 November 2022, the conversion/exchange ratio was raised to 1.289 EDF share per OCEANE bond.

On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023 (see notes 2 and 14.1). Consequently, in accordance with paragraph 2.6.3 (public offerings) of the terms of the offer, the share allocation ratio adjustment period in the event of a tender offer will expire on 1 March 2023, *i.e.* 15 business days after the AMF's publication of the result of the Offer. After the adjustment period in the event of a tender offer, the share allocation ratio will be adjusted to 1.124 share per OCEANE bond, the same as the share allocation ratio that applied before the adjustment period in the event of a tender offer. Due to the French government's undertakings pending the Paris Court of Appeal ruling on the action seeking annulment of the AMF's approval of the Offer, if the Court confirms the AMF's approval and the Offer is reopened, the share allocation ratio will be adjusted again, to 1.289 share per OCEANE bond, respecting a new adjustment period in the event of a tender offer, on terms that will be announced by EDF.

The bonds may be redeemed prior to maturity at the option of the Company, subject to certain conditions.

Unless previously converted, exchanged, redeemed or repurchased and cancelled, the bonds will be redeemed at nominal value when they reach maturity.

18.3.3 Loans and financial liabilities by maturity, currency and interest rate

18.3.3.1 Maturity of loans and financial liabilities

| (in millions of euros) | Bonds | Loans from financial institutions | Other financial liabilities | Lease liability | Accrued Interest | Total |
|--|---------------|-----------------------------------|-----------------------------|-----------------|------------------|---------------|
| Less than one year | 2,021 | 482 | 24,637 | 688 | 885 | 28,713 |
| From one to five years | 11,496 | 17,141 | 106 | 2,042 | 94 | 30,879 |
| More than five years | 31,633 | 2,655 | 372 | 1,539 | 262 | 36,461 |
| LOANS AND OTHER FINANCIAL LIABILITIES AT 31/12/2022 | 45,150 | 20,278 | 25,115 | 4,269 | 1,241 | 96,053 |

The non-discounted lease liability matures as follows:

| (in millions of euros) | 31/12/2022 | | | | 31/12/2021 |
|--|--------------|------------|--------------|--------------|--------------|
| | Total | < 1 year | 1-5 years | > 5 years | Total |
| NON-DISCOUNTED CONTRACTUAL CASH FLOWS | 4,844 | 756 | 2,214 | 1,874 | 4,899 |

18.3.3.2 Breakdown of loans and other financial liabilities by currency

The breakdown of loans and other financial liabilities by currency includes the effect of derivatives classified as hedges (of debts in foreign currencies and net investments in foreign subsidiaries) under IFRS 9.

At 31 December 2022

| <i>(in millions of euros)</i> | 31/12/2022 | | | | |
|--|------------------------|-------------|-------------------------------|------------------------------|-------------|
| | Initial debt structure | | Impact of hedging instruments | Debt structure after hedging | |
| | amount | % of debt | amount | amount | % of debt |
| Euro (EUR) | 62,269 | 65% | 13,789 | 76,058 | 79% |
| American dollar (USD) | 21,465 | 22% | (15,813) | 5,652 | 6% |
| Pound sterling (GBP) | 8,149 | 9% | 3,284 | 11,433 | 12% |
| Other | 4,170 | 4% | (1,260) | 2,910 | 3% |
| LOANS AND OTHER FINANCIAL LIABILITIES | 96,053 | 100% | - | 96,053 | 100% |

At 31 December 2021

| <i>(in millions of euros)</i> | 31/12/2021 | | | | |
|--|------------------------|-------------|-------------------------------|------------------------------|-------------|
| | Initial debt structure | | Impact of hedging instruments | Debt structure after hedging | |
| | amount | % of debt | amount | amount | % of debt |
| Euro (EUR) | 38,003 | 55% | 11,119 | 49,122 | 71% |
| American dollar (USD) | 18,128 | 26% | (12,910) | 5,218 | 7% |
| Pound sterling (GBP) | 10,018 | 14% | 2,410 | 12,428 | 18% |
| Other | 3,257 | 5% | (619) | 2,638 | 4% |
| LOANS AND OTHER FINANCIAL LIABILITIES | 69,406 | 100% | - | 69,406 | 100% |

18.3.3.3 Breakdown of loans and other financial liabilities by type of interest rate

The breakdown of loans and other financial liabilities by type of interest rate includes the effect of derivatives classified as hedges under IFRS 9.

Floating-rate loans indexed on the LIBOR USD that have not yet been "switched" to the interbank interest rate benchmark reform (see note 1.2.3) amount to a total €219 million before derivatives (€224 million in 2021), and €18 million including the effect of derivatives (€17 million in 2021).

At 31 December 2022

| <i>(in millions of euros)</i> | 31/12/2022 | | | | |
|--|------------------------|-------------|-------------------------------|------------------------------|-------------|
| | Initial debt structure | | Impact of hedging instruments | Debt structure after hedging | |
| | amount | % of debt | amount | amount | % of debt |
| Fixed rates | 69,748 | 73% | (13,784) | 55,964 | 58% |
| Floating rates | 26,305 | 27% | 13,784 | 40,089 | 42% |
| LOANS AND OTHER FINANCIAL LIABILITIES | 96,053 | 100% | - | 96,053 | 100% |

At 31 December 2021

| <i>(in millions of euros)</i> | 31/12/2021 | | | | |
|--|------------------------|-------------|-------------------------------|------------------------------|-------------|
| | Initial debt structure | | Impact of hedging instruments | Debt structure after hedging | |
| | amount | % of debt | amount | amount | % of debt |
| Fixed rates | 64,335 | 93% | (15,434) | 48,901 | 70% |
| Floating rates | 5,071 | 7% | 15,434 | 20,505 | 30% |
| LOANS AND OTHER FINANCIAL LIABILITIES | 69,406 | 100% | - | 69,406 | 100% |

A large portion of the EDF group's fixed-rate loans is swapped to variable rates.

18.3.4 Early repayment clauses

Project financing loans from non-Group parties to SPV-type project companies owned by EDF Renewables may include early repayment clauses that principally apply when the project company concerned fails to respect certain covenants, particularly a minimum Debt Service Coverage Ratio (DSCR). In general, early repayment clauses are activated when this ratio falls below 1.

In other Group entities, certain clauses contained in contracts for financing or other commitments may make reference to Group credit ratings but are not classified as covenants.

Seven loans with a combined total of €2,042 million contain a rendez-vous clause requiring contact between the borrower and lender if the borrower's credit rating falls below a specified level, possibly leading to renegotiation of the terms of the loan.

No early repayment took place in 2022 as a result of any Group entity's failure to comply with contractual clauses concerning loans.

18.4 Unused credit lines

In 2022, EDF concluded four new credit lines with a combined total of €2,600 million, including €2,000 million with BNP. Four other credit lines totalling €900 million matured, and the available balance of the EIB credit line (€400 million) was fully drawn.

At 31 December 2022, the Group has unused credit lines with various banks totalling €14,051 million (€13,039 million at 31 December 2021), including €10,053 million of credit lines indexed on ESG criteria.

| | 31/12/2022 | | | | 31/12/2021 |
|-------------------------------|---------------|--------------|---------------|-----------|---------------|
| | Total | Maturity | | | Total |
| (in millions of euros) | | < 1 year | 1-5 years | > 5 years | |
| CONFIRMED CREDIT LINES | 14,051 | 2,617 | 11,412 | 22 | 13,039 |

18.5 Fair value of financial instruments

Accounting principles and methods

Financial instruments are stated at fair value, which corresponds to the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction on the principal or most advantageous market at the measurement date. The valuation methods for each level are generally as follows:

- level 1 (unadjusted quoted prices): prices accessible to the entity at the measurement date on active markets, for identical assets or liabilities;
- level 2 (observable data): data concerning the asset or liability, other than the market prices included in initial level 1 input, which are directly observable (such as a price) or indirectly observable (i.e. deduced from observable prices);
- level 3 (non-observable data): data that are not observable on a market, including observable data that have been significantly adjusted.

The distribution of financial assets and liabilities in the balance sheet by level is as follows:

At 31 December 2022

| <i>(in millions of euros)</i> | Balance sheet value | Fair value | Level 1 Unadjusted quoted prices | Level 2 Observable data | Level 3 Non-observable data |
|--|---------------------|---------------|--|----------------------------|-----------------------------------|
| Equity securities | 2,597 | 2,597 | - | 2,093 | 504 |
| Debt securities | 44,541 | 44,541 | 2,849 | 41,542 | 150 |
| Hedging derivatives | 12,279 | 12,279 | 188 | 12,091 | - |
| Trading derivatives | 30,566 | 30,566 | 882 | 28,378 | 1,306 |
| Cash equivalents | 687 | 687 | 64 | 623 | - |
| FINANCIAL ASSETS CARRIED AT FAIR VALUE | 90,670 | 90,670 | 3,983 | 84,727 | 1,960 |
| Receivables from the NLF | 14,000 | 14,000 | - | 14,000 | - |
| Other loans and financial receivables | 2,562 | 2,562 | - | 2,562 | - |
| FINANCIAL ASSETS CARRIED AT AMORTISED COST | 16,562 | 16,562 | - | 16,562 | - |
| Hedging derivatives | 17,965 | 17,965 | 9 | 17,913 | 43 |
| Trading derivatives | 28,884 | 28,884 | 773 | 27,447 | 664 |
| FINANCIAL LIABILITIES CARRIED AT FAIR VALUE | 46,849 | 46,849 | 782 | 45,360 | 707 |
| Loans and other financial liabilities | 96,053 | 93,264 | - | 93,264 | - |
| FINANCIAL LIABILITIES CARRIED AT AMORTISED COST | 96,053 | 93,264 | - | 93,264 | - |

Level 3 debt and equity securities are principally non-consolidated investments carried at historical value.

At 31 December 2021

| <i>(in millions of euros)</i> | Balance sheet value | Fair value | Level 1 Unadjusted quoted prices | Level 2 Observable data | Level 3 Non-observable data |
|--|---------------------|---------------|--|----------------------------|-----------------------------------|
| Equity securities | 1,889 | 1,889 | 3 | 1,413 | 473 |
| Debt securities | 42,954 | 42,954 | 2,607 | 40,225 | 122 |
| Hedging derivatives | 9,910 | 9,910 | 153 | 9,757 | - |
| Trading derivatives | 20,061 | 20,061 | 249 | 19,349 | 463 |
| Cash equivalents | 741 | 741 | 34 | 707 | - |
| FINANCIAL ASSETS CARRIED AT FAIR VALUE | 75,555 | 75,555 | 3,046 | 71,451 | 1,058 |
| Receivables from the NLF | 15,986 | 15,986 | - | 15,986 | - |
| Other loans and financial receivables | 4,746 | 4,746 | - | 4,746 | - |
| FINANCIAL ASSETS CARRIED AT AMORTISED COST | 20,732 | 20,732 | - | 20,732 | - |
| Hedging derivatives | 10,124 | 10,124 | 4 | 10,120 | - |
| Trading derivatives | 22,027 | 22,027 | 322 | 21,216 | 489 |
| FINANCIAL LIABILITIES CARRIED AT FAIR VALUE | 32,151 | 32,151 | 326 | 31,336 | 489 |
| Loans and other financial liabilities | 69,406 | 78,114 | - | 78,114 | - |
| FINANCIAL LIABILITIES CARRIED AT AMORTISED COST | 69,406 | 78,114 | - | 78,114 | - |

Level 3 debt and equity securities are principally non-consolidated investments carried at historical value.

18.6 Market and counterparty risks

As an operator in the energy sector worldwide, the EDF group is exposed to financial market risks, energy market risks and counterparty risks. All these risks could generate volatility in the financial statements.

A more detailed description of these risks and the sensitivity analyses required by IFRS 7 can be found in section 7 "Management and control of market risks" of the management report.

Financial market risks

The main financial market risks to which the Group is exposed are the liquidity risk, the foreign exchange risk, the interest rate risk and the equity risk.

The objective of the Group's liquidity risk management is to seek resources at optimum cost and ensure their constant accessibility.

The foreign exchange risk relates to the diversification of the Group's businesses and geographical locations, and results from exposure to the risk of exchange rate fluctuations. These fluctuations can affect the Group's translation differences, balance sheet items, financial

expenses, equity and net income.

The interest rate risk results from exposure to the risk of fluctuations in interest rates that can affect the value of assets invested by the Group, the value of the liabilities covered by provision, or its financial expenses.

The Group is exposed to equity risks, particularly through its dedicated asset portfolio held for secure financing of long-term nuclear commitments, through external pension funds, and to a lesser extent through its cash assets and directly-held investments.

Energy market risks

The EDF group operates on deregulated energy markets, mainly in Europe, through its generation, supply and trading activities. This exposes the Group to price variations on the wholesale markets for energy (electricity, gas, coal, oil products) and the CO₂ emissions quota market, with a potentially significant impact on the financial statements.

Counterparty risks

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

Regarding the customer risk, which is another component of the counterparty risk, a statement of receivables not yet due and overdue is shown in note 13.3.1.

18.7 Derivatives and hedge accounting

Accounting principles and methods

The Group uses derivatives such as swaps and forward contracts to hedge its interest rate, foreign exchange, energy and commodity risks.

In accordance with IFRS 9, hedge accounting can be applied to derivatives when they meet certain eligibility criteria. Some derivatives classified as "own use" are excluded from application of IFRS 9.

Derivatives not covered by IFRS 9: "own use" contracts

Forward purchase and sale contracts for physical delivery of energy or commodities are considered to fall outside the scope of application of IFRS 9 when they are entered into as part of the Group's normal business activity ("own use"). This is demonstrated to be the case when all the following conditions are fulfilled:

- a physical delivery takes place under all such contracts;
- the volumes purchased or sold under these contracts correspond to the Group's operating requirements;
- the contracts cannot be considered as options as defined by the standard. In the specific case of electricity sale contracts, the contract is equivalent to a firm forward sale or can be considered as a capacity sale.

The Group considers that transactions negotiated with a view to balancing the volumes between electricity purchase and sale commitments are part of its normal business as an integrated electricity operator, and are thus outside the scope of IFRS 9.

Measurement and recognition of derivatives

Derivatives are initially recorded at fair value, based on quoted prices and market data available from external sources. If no quoted prices are available, the Group may refer to recent comparable transactions or, if no such transactions exist, base its valuation on internal models that are recognised by market participants, giving priority to information directly derived from observable data such as over-the-counter listings.

In application of IFRS 13, the fair value of derivatives incorporates the counterparty credit risk for derivative assets and the own credit risk for derivative liabilities.

Derivatives classified as hedges

The EDF group uses derivatives to hedge its foreign exchange and interest rate risks, as well as risks related to certain commodity contracts.

The Group applies the criteria defined by IFRS 9 to identify operations subject to hedge accounting, particularly regarding the existence of formal documentation from their inception and compliance with hedge effectiveness requirements.

The hedging relationship ends when it ceases to satisfy the above criteria. This includes situations in which the hedging instrument expires or is sold, terminated or exercised, or when the risk management objectives initially defined are no longer met.

Only derivatives external to the Group, and internal derivatives that are matched with similar transactions external to the Group, qualify for hedge accounting.

The Group uses the following categories for hedges:

- fair value hedge;
- cash flow hedge;
- net foreign investment hedge.

Hedge categories

Fair value hedge

This is a hedge of exposure to changes in the fair value of an asset or liability recorded in the balance sheet, or a firm commitment to purchase or sell an asset. Changes in the fair value of the hedged item attributable to the hedged component of that item are recorded in profit and loss and offset by corresponding variations in the fair value of the hedging instrument. Only the ineffective portion of the hedge has an impact on profit and loss.

Some loans and financial liabilities, and some commodity contracts, are covered by a fair value hedge. In such cases their balance sheet value is adjusted for changes in fair value attributable to the hedged risks (foreign exchange, interest rate and price risks).

Cash flow hedge

This is a hedge of exposure to variability in cash flows associated with an asset or liability or a highly probable future transaction for which variations in cash flows generated by the hedged item are offset by changes in the value of the hedging instrument.

The effective portion of accumulated changes in the hedging instrument's fair value is recorded in equity, and the ineffective portion (i.e. changes in the fair value of the hedging instrument in excess of changes in the fair value of the hedged item) is recorded in profit and loss.

When the hedged cash flows materialise, the amounts previously recognised in equity are recycled to profit and loss in the same way as for the hedged item, or are treated as an adjustment to the value of the non-financial asset acquired.

Net foreign investment hedge

This is a hedge of exposure to the foreign exchange risk related to a net investment in an entity which does not have the same functional currency as the Group. The effective portion of accumulated changes in the hedging instrument's fair value is recorded in equity until the disposal or liquidation of the net investment, when it is included in the gain or loss on disposal. The ineffective portion (defined in the same way as for cash flow hedges) is recorded directly in profit and loss.

This risk is hedged in the EDF Group level either by matching it with debts in the same currency, or by using derivatives.

Hedging costs: foreign currency basis spread on cross-currency swaps

Hedging costs include the foreign currency basis spread on cross-currency swaps. Fair value variations are included in equity with recycling, and subsequently transferred to interest expenses on financing operations, which are included in the cost of gross financial indebtedness in the income statement.

Trading derivatives

Trading derivatives comprise:

- derivatives subscribed for economic hedging that do not qualify as hedges for accounting purposes; changes in the value of these instruments are reported in profit and loss. When the derivatives are used for economic hedging of negotiable debt instruments and purchased bonds, they are included in "Other financial income and expenses". When the derivatives are used for economic hedging of generation and supply operations, they are included in "Net changes in fair value on Energy and Commodity derivatives, excluding trading activities" (see note 6);
- derivatives used in trading activities; changes in the fair value of these instruments are included in sales (see note 5.1).

18.7.1 Breakdown of hedging and trading derivatives

The fair value of hedging and trading derivatives reported in the balance sheet breaks down as follows:

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | 31/12/2021 |
|--|--------|----------------|----------------|
| Positive fair value of hedging derivatives | 18.1.1 | 12,279 | 9,910 |
| Negative fair value of hedging derivatives | 18.3.1 | (17,965) | (10,124) |
| FAIR VALUE OF HEDGING DERIVATIVES | | (5,686) | (214) |
| Positive fair value of trading derivatives | 18.1.1 | 30,566 | 20,061 |
| Negative fair value of trading derivatives | 18.3.1 | (28,884) | (22,027) |
| FAIR VALUE OF TRADING DERIVATIVES | | 1,682 | (1,966) |

The fair value of hedging and trading derivatives by type of risk hedged is shown below:

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | 31/12/2021 |
|---|--------|----------------|----------------|
| Hedging derivatives - interest rate risk | 18.7.2 | 1,138 | 3,613 |
| Hedging derivatives - foreign exchange risk | 18.7.3 | 1,638 | 407 |
| Hedging derivatives - commodity risks | 18.7.4 | (8,462) | (4,234) |
| FAIR VALUE OF HEDGING DERIVATIVES | | (5,686) | (214) |
| Trading derivatives - interest rate risk | 18.7.2 | (28) | (27) |
| Trading derivatives - foreign exchange risk | 18.7.3 | (217) | (45) |
| Trading derivatives - commodity risk | 18.7.4 | 1,927 | (1,894) |
| FAIR VALUE OF TRADING DERIVATIVES | | 1,682 | (1,966) |

The fair value of hedging derivatives by type and purpose of hedge is shown below:

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | 31/12/2021 |
|--|-------------|----------------|----------------|
| Fair value hedges of loans and liabilities | | (1,385) | 3,148 |
| Cash flow hedges of loans and liabilities | | 3,409 | 614 |
| Sub-total | 19.2 | 2,024 | 3,762 |
| Fair value hedges of commodity contracts | | (1,091) | (492) |
| Cash flow hedges of commodity contracts | | (6,959) | (3,564) |
| Sub-total | | (8,050) | (4,056) |
| Net foreign investment hedges | | 173 | 94 |
| Fair value hedges of dedicated assets | | 93 | (14) |
| Fair value hedges of liquid assets | | 74 | - |
| FAIR VALUE OF HEDGING DERIVATIVES | | (5,686) | (214) |

18.7.2 Interest rate derivatives

The Group is exposed to the risk of fluctuations in interest rates that can affect the value of its loans and financial liabilities, its assets (liquid assets and dedicated assets), and its future financial expenses.

The Group hedges its exposure to changes in the fair value of fixed-rate debts, many of which are converted to floating rates. The derivatives used for these hedges are fixed/floating interest rate swaps and cross-currency swaps, with changes in fair value recorded in profit and loss symmetrically to changes in the value of the hedged debts.

The Group also hedges its floating-rate debt against future changes in interest rates by using floating/fixed interest rate swaps for cash flow hedges.

Details of interest rate derivatives used in a hedging relationship or designated as trading derivatives are shown below:

| <i>(in millions of euros)</i> | Notional at 31/12/2022 | | | | Notional at 31/12/2021 | Fair Value | |
|--|------------------------|---------------|---------------|---------------|------------------------|--------------|--------------|
| | < 1 year | 1-5 years | > 5 years | Total | Total | 31/12/2022 | 31/12/2021 |
| Purchases of Caps | 8 | 30 | 35 | 73 | - | 10 | - |
| Interest rate transactions | 8 | 30 | 35 | 73 | - | 10 | - |
| Fixed rate payer/floating rate receiver | 515 | 5,059 | 5,704 | 11,278 | 5,904 | 1,807 | 264 |
| Floating rate payer/fixed rate receiver | 779 | 6,536 | 14,732 | 22,047 | 20,989 | (1,713) | 2,976 |
| Floating rate/floating rate | 800 | 604 | 1,266 | 2,670 | 2,434 | 76 | 69 |
| Fixed rate/fixed rate | - | 1,921 | 7,271 | 9,192 | 9,366 | 958 | 304 |
| Interest rate swaps | 2,094 | 14,120 | 28,973 | 45,187 | 38,693 | 1,128 | 3,613 |
| INTEREST RATE DERIVATIVES - HEDGING | 2,102 | 14,150 | 29,008 | 45,260 | 38,693 | 1,138 | 3,613 |
| Purchase of options | - | - | 552 | 552 | 518 | (22) | - |
| Interest rate swaps | 3,407 | 5,172 | 970 | 9,549 | 1,006 | (6) | (27) |
| INTEREST RATE DERIVATIVES - TRADING | 3,407 | 5,172 | 1,522 | 10,101 | 1,524 | (28) | (27) |

The fair value of interest rate/exchange rate cross-currency swaps comprises the interest rate effect only.

The notional value of cross-currency swaps is included both in this note and the note on currency derivatives (see note 18.7.3).

18.7.3 Currency derivatives

The Group is exposed to the risk of exchange rate fluctuations due to the diversification of its businesses, supply contracts in foreign currencies for goods and services, and its geographical locations. These fluctuations can affect the Group's translation differences

recognised in equity, balance sheet items, financial expenses, equity and net income.

There are several types of hedged item:

- Liabilities in foreign currencies, for which cross-currency swaps are used in cash flow hedge;
- Financial assets subscribed in foreign currencies;
- Purchases of commodities and fuels, for which the Group hedges the associated foreign exchange risk;
- Net investments in subsidiaries in foreign currencies.

Details of currency derivatives used in a hedging relationship or designated as trading derivatives are shown in the following tables. The notional value of cross-currency swaps is included both in this note and the note on interest rate hedging derivatives (see note 18.7.2).

At 31 December 2022

| <i>(in millions of euros)</i> | Notional amount to be received at 31/12/2022 | | | | Notional amount to be given at 31/12/2022 | | | | Fair value 31/12/2022 |
|---------------------------------------|--|---------------|---------------|---------------|---|---------------|---------------|---------------|--------------------------|
| | < 1 year | 1-5 years | > 5 years | Total | < 1 year | 1-5 years | > 5 years | Total | |
| Forward exchange transactions | 4,451 | 1,010 | - | 5,461 | 4,405 | 964 | - | 5,369 | 87 |
| Swaps | 25,682 | 9,303 | 15,647 | 50,632 | 25,257 | 8,992 | 14,720 | 48,969 | 1,531 |
| Options | - | 1,693 | - | 1,693 | - | 1,828 | - | 1,828 | 20 |
| CURRENCY DERIVATIVES - HEDGING | 30,133 | 12,006 | 15,647 | 57,786 | 29,662 | 11,784 | 14,720 | 56,166 | 1,638 |
| Forward transactions | 9,979 | 6,281 | 25 | 16,285 | 9,940 | 6,131 | 23 | 16,094 | 149 |
| Swaps | 22,274 | 7,457 | 231 | 29,962 | 22,484 | 7,694 | 225 | 30,403 | (366) |
| Options | - | - | - | - | - | - | - | - | - |
| CURRENCY DERIVATIVES - TRADING | 32,253 | 13,738 | 256 | 46,247 | 32,424 | 13,825 | 248 | 46,497 | (217) |

At 31 December 2021

| <i>(in millions of euros)</i> | Notional amount to be received at 31/12/2021 | | | | Notional amount to be given at 31/12/2021 | | | | Fair value 31/12/2021 |
|---------------------------------------|--|---------------|---------------|---------------|---|---------------|---------------|---------------|--------------------------|
| | < 1 year | 1-5 years | > 5 years | Total | < 1 year | 1-5 years | > 5 years | Total | |
| Forward exchange transactions | 3,251 | 652 | - | 3,903 | 3,273 | 629 | - | 3,902 | - |
| Swaps | 23,421 | 6,506 | 17,195 | 47,122 | 23,362 | 6,311 | 16,921 | 46,594 | 406 |
| Options | 553 | 119 | - | 672 | 556 | 113 | - | 669 | 1 |
| CURRENCY DERIVATIVES - HEDGING | 27,225 | 7,277 | 17,195 | 51,697 | 27,191 | 7,053 | 16,921 | 51,165 | 407 |
| Forward transactions | 7,003 | 7,872 | - | 14,875 | 6,982 | 7,772 | - | 14,754 | 84 |
| Swaps | 24,729 | 4,018 | 263 | 29,010 | 24,810 | 4,048 | 257 | 29,115 | (128) |
| Options | - | - | - | - | - | - | - | - | - |
| CURRENCY DERIVATIVES - TRADING | 31,732 | 11,890 | 263 | 43,885 | 31,792 | 11,820 | 257 | 43,869 | (44) |

The notional value of cross-currency swaps shown in this note is also included in the note on interest rate derivatives (see note 18.7.2).

18.7.4 Commodity derivatives

The Group is exposed to price variations on the wholesale markets for energy (electricity, gas, coal, oil products) and the CO₂ emissions quota market with a potentially significant impact on the financial statements.

The Group hedges its forecast sales and purchases of electricity, gas, and coal using futures, forwards, options and swaps, essentially through cash flow hedges.

Details of commodity derivatives used for hedging are as follows:

| (in millions of euros) | Units of measure | 31/12/2022 | | | | | 31/12/2021 | |
|--|----------------------|------------|-----------|-----------|--------------------|----------------|--------------|----------------|
| | | < 1 year | 1-5 years | > 5 years | Net notional Total | Fair value | Net notional | Fair value |
| Electricity | TWh | (1) | 17 | - | 16 | (3,619) | (31) | (3,808) |
| Gas | Millions of therms | 1,137 | (864) | - | 273 | (4,999) | 943 | (925) |
| Oil products | Thousands of barrels | 5,263 | 6,781 | - | 12,044 | 96 | 14,097 | 166 |
| CO ₂ | Thousands of tonnes | 2,490 | 1,646 | - | 4,136 | 60 | 7,224 | 333 |
| Other commodities | | - | - | - | - | - | - | - |
| COMMODITY DERIVATIVES - HEDGING | | | | | | (8,462) | - | (4,234) |

The negative fair value of commodity derivatives used for hedging at 31 December 2022 (€8.5 billion) is mainly explained by the wider contractual market price/exercise price spread on electricity and gas hedging instruments, due to the rise in commodity prices in 2022.

These factors also explain the difference in the fair value between 2022 and 2021, essentially concerning hedges undertaken for the France – Generation and Supply, United Kingdom and Italy segments.

Details of commodity derivatives used for trading are as follows:

| (in millions of euros) | Units of measure | 31/12/2022 | | 31/12/2021 | |
|--|----------------------|--------------|--------------|--------------|----------------|
| | | Net notional | Fair value | Net notional | Fair value |
| Electricity | TWh | (13) | (1,090) | (111) | (1,719) |
| Gas | Millions of therms | (2,497) | 2,990 | 47,423 | 630 |
| Oil products | Thousands of barrels | 4,065 | 46 | 6,812 | 17 |
| CO ₂ | Thousands of tonnes | (1,417) | (28) | (7,880) | (628) |
| Coal and freight | Millions of tonnes | (1) | 15 | - | (48) |
| Other commodities | | - | (6) | - | (146) |
| COMMODITY DERIVATIVES - TRADING | | | 1,927 | | (1,894) |

These instruments mainly include contracts included in EDF Trading's portfolio.

18.7.5 Impact of hedging derivatives on comprehensive income

Changes in the fair value of hedging derivatives included in equity (EDF share) and profit and loss are detailed below:

| (in millions of euros) | 2022 | | | 2021 | | |
|--|---|--|---|---|--|---|
| | Gross changes in fair value recorded in equity ⁽¹⁾ | Gross changes in fair value transferred to income - Recycling ⁽²⁾ | Gross changes in fair value transferred to income - Ineffectiveness | Gross changes in fair value recorded in equity ⁽¹⁾ | Gross changes in fair value transferred to income - Recycling ⁽²⁾ | Gross changes in fair value transferred to income - Ineffectiveness |
| Interest rate hedging ⁽⁴⁾ | 392 | - | (1) | (98) | - | - |
| Exchange rate hedging | 2,653 | 598 | 92 | 2 684 | 720 | (38) |
| Net foreign investment hedging | 308 | - | - | (1,078) | (405) | - |
| Commodity hedging | (9,002) | (3,131) | (2) | (7,356) | (2,198) | (2) |
| HEDGING DERIVATIVES⁽³⁾ | (5,649) | (2,533) | 89 | (5,848) | (1,883) | (40) |

⁽¹⁾ +/(): increase/(decrease) in equity (EDF share).

⁽²⁾ +/(): increase/(decrease) in net income (EDF share).

⁽³⁾ Excluding associates and joint ventures.

⁽⁴⁾ Gross changes in fair value recorded in equity in 2022 include +€155 million of changes in the fair value of hedging costs resulting from the foreign currency basis spread on and cross-currency swaps. These changes are transferred to profit and loss via interest expenses on financing operations, which are included in the cost of gross indebtedness in the income statement (see note 8.1).

The gross change in the fair value of hedging instruments recognised in equity (EDF share), including recycling, is €(3,116) million in 2022 (€(3,965) million in 2021).

In 2022 this change is explained by the gross fair value changes in net foreign investment hedges, amounting to +€308 million (€(673) million in 2021), interest rate, exchange rate and commodity hedges, amounting to €(3,579) million (€(3,292) million in 2021) and hedging costs resulting from the foreign currency basis spread on and cross-currency swaps, amounting to +€155 million in 2022 – see the consolidated statement of comprehensive income.

The amount transferred to operating profit before depreciation and amortisation in 2022 is €(3,131) million in respect of commodity hedges comprises:

- €(1,794) million for gas hedging contracts, concerning the France - Generation and supply and United Kingdom segments,
- €(1,218) million for electricity hedging contracts, concerning the France - Generation and supply and United Kingdom segments,
- €(119) million for other hedging contracts.

18.7.6 Offsetting of financial assets and liabilities

Accounting principles and methods

A financial asset and financial liability must be netted if the entity currently has a legally enforceable right to do so and intends either to settle the net amount or to realise the asset and settle the liability simultaneously.

At 31 December 2022

| (in millions of euros) | As reported in balance sheet | Balance without offsetting | Balance with offsetting under IAS 32 | | | Amounts covered by a general offsetting agreement but not offset under IAS 32 | | |
|---|------------------------------|----------------------------|---|----------------------------------|---|---|------------------------------------|------------|
| | | | Gross amount recognised (before offsetting) | Gross amount offset under IAS 32 | Net amount recognised after offsetting under IAS 32 | Financial instruments | Fair value of financial collateral | Net amount |
| Fair value of derivatives – assets | 42,845 | 4,493 | 76,159 | (37,807) | 38,352 | (3,548) | (7,289) | 27,515 |
| Fair value of derivatives – liabilities | (46,849) | (5,533) | (79,123) | 37,807 | (41,316) | 3,548 | 7,503 | (30,265) |

At 31 December 2021

| (in millions of euros) | As reported in balance sheet | Balance Without offsetting | Balance with offsetting under IAS 32 | | | Amounts covered by a general offsetting agreement but not offset under IAS 32 | | |
|---|------------------------------|----------------------------|---|----------------------------------|---|---|------------------------------------|------------|
| | | | Gross amount recognised (before offsetting) | Gross amount offset under IAS 32 | Net amount recognised after offsetting under IAS 32 | Financial instruments | Fair value of financial collateral | Net amount |
| Fair value of derivatives – assets | 29,971 | 3,948 | 70,140 | (44,117) | 26,023 | (1,645) | (8,309) | 16,069 |
| Fair value of derivatives – liabilities | (32,151) | (5,316) | (70,952) | 44,117 | (26,835) | 1,645 | 5,996 | (19,194) |

Note 19 Financial indicators

The financial indicators are not defined by the accounting standards and are not directly visible in the Group's financial statements. The principal financial indicators are the following.

19.1 Net income excluding non-recurring items

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

The following tables show the transition from EDF net income to net income excluding non-recurring items:

At 31 December 2022

| (in millions of euros) | Notes | | | | 2022 |
|--|-------------------|-------------|--------------|---------------------------|-----------------|
| | | Gross value | Income taxes | Non-controlling interests | EDF net income |
| Net income | | | | | (17,940) |
| Changes in the fair value of debt and equity instruments⁽¹⁾ | 8.3 | 3,160 | (822) | (12) | 2,326 |
| Net changes in fair value on Energy and Commodity derivatives, excluding trading activities | 6 | 849 | (227) | - | 622 |
| Impairment | | 1,905 | (132) | (478) | 1,295 |
| - impairment of fixed assets ⁽²⁾ | 10.8.1 and 10.8.2 | 1,762 | (121) | (478) | 1,163 |
| - impairment of investments in associates and joint ventures ⁽³⁾ | 12.3 | 143 | (11) | - | 132 |
| Other items | | 858 | 181 | (4) | 1,035 |
| - other operating income and expenses | 7 | 687 | (141) | (4) | 542 |
| - provisions for financial risks on equity investments | | 187 | - | - | 187 |
| - expenses related to tax litigation | | - | 322 | - | 322 |
| - other | | (16) | - | - | (16) |
| NET INCOME EXCLUDING NON-RECURRING ITEMS | | | | | (12,662) |

⁽¹⁾ Including fair value hedges of dedicated assets.

⁽²⁾ In 2022, this impairment notably concerns goodwill at EDF Energy (€(1,176) million), wind farms in the United States and Mexico (€(129) million) and impairment of land in the United Kingdom (€(120) million).

⁽³⁾ In 2022, this impairment principally concerns wind farms in the United States (€(139) million).

The net income excluding non-recurring items amounts to €(12,662) million at 31 December 2022, down by €(17,379) million compared to 2021.

At 31 December 2021

| (in millions of euros) | Notes | | | | 2021 |
|--|-------------------|-------------|--------------|---------------------------|----------------|
| | | Gross value | Income taxes | Non-controlling interests | EDF net income |
| Net income | | | | | 5,113 |
| Changes in the fair value of debt and equity instruments⁽¹⁾ | 8.3 | (2,804) | 776 | 3 | (2,025) |
| Net changes in fair value on Energy and Commodity derivatives, excluding trading activities | 6 | 215 | (66) | - | 149 |
| Impairment⁽²⁾ | | 872 | (177) | (87) | 608 |
| - impairment of fixed assets | 10.8.1 and 10.8.2 | 653 | (177) | (87) | 389 |
| - impairment of investments in associates and joint ventures | 12.3 | 219 | - | - | 219 |
| Other items | | 1,054 | (152) | (30) | 872 |
| - other operating income and expenses | 7 | 1,123 | (220) | (30) | 873 |
| - tax revaluation of assets in Italy | | - | (103) | - | (103) |
| - increase in the income tax rate in the UK | 9.2 | - | 359 | - | 359 |
| - recognition of deferred tax assets in the United States | 9.2 | - | (191) | - | (191) |
| - other | | (69) | 3 | - | (66) |
| NET INCOME EXCLUDING NON-RECURRING ITEMS | | | | | 4,717 |

⁽¹⁾ Including fair value hedges of dedicated assets and changes in the fair value of debt and equity instruments comprised in investments in associates and joint ventures.

⁽²⁾ In 2021, impairment includes €(445) million concerning assets of the Dungeness power plant.

19.2 Net indebtedness

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

Net indebtedness are as follows:

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | 31/12/2021 |
|--|--------|---------------|---------------|
| Loans and other financial liabilities | 18.3.2 | 96,053 | 69,406 |
| Derivatives used to hedge liabilities | 18.7.1 | (2,024) | (3,762) |
| Cash and cash equivalents | 18.2 | (10,948) | (9,919) |
| Debt and equity securities – liquid assets | 18.1.2 | (18,507) | (12,737) |
| Derivatives hedging liquid assets | 18.7.1 | (74) | - |
| NET INDEBTEDNESS | | 64,500 | 42,988 |

The Group's net indebtedness amounts to €64,500 million at 31 December 2022 (€42,988 million at 31 December 2021).

Note 20 Climate-related matters relevant to the financial statements

Introduction and background

In accordance with EDF's *raison d'être*: **"To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development"** and its CAP 2030 strategy, the Group has defined 16 Corporate Social Responsibility (CSR) commitments focusing on four issues - Carbon neutrality and the climate, Preserving the planet's resources, Well-being and solidarity, and Responsible development. The commitments are transposed into the functions and investment projects with the help of an assessment grid.

These commitments and their implementation in the Group are also managed and monitored by several governance bodies, under the supervision of the Board of Directors (see section 3.5.2 of the 2022 Universal Registration Document "CSR governance bodies").

On 10 December 2021 the European Union adopted article 8 of European regulation 2020 - 852 which aims to classify economic activities based on their contribution to the achievement of environmental objectives. This **"Taxonomy regulation"** is part of the European strategy to promote emergence of sustainable finance that contributes to attainment of carbon neutrality by 2050, particularly by encouraging capital inflows into sustainable investments. It was supplemented by a specific Delegated Act for nuclear and gas activities, published on 2 February 2022 and applicable from 2022. The information and indicators contained in this regulation (proportion of sales, capital expenditure and operating expenditure associated with eligible activities and aligned with the European taxonomy) are described in section 3.8.4 of the 2022 Universal Registration Document, "Details on the taxonomy". See note 20.4 below presents the amount of taxonomy-aligned CAPEX.

The **Group's financial statements** incorporate issues relating to climate change and sustainable development at different levels, as summarised below. Those issues are taken into consideration through the Group's investment and divestment strategy, introduction of sustainable financing, specific expenditure incurred in response to environmental challenges, particularly under applicable laws and regulations, and also through the valuation methods used for the Group's assets and liabilities.

| Themes | Notes | Content |
|---|--|---|
| Regulatory mechanisms related to greenhouse gas emission rights, Energy Savings Certificates, Renewable Energy Certificates - see note 20.1 | Note 5.5.4 "Other items" Note 10.2 "Other intangible assets" Note 17.2 "Other provisions" | Climate and environmental issues are addressed in compliance with the regulatory systems existing in different countries for greenhouse gas emission rights, renewable energy certificates and energy savings certificates. These systems have an impact on the Group's financial statements at several levels: the income statement and the balance sheet. |
| Nuclear provisions and provisions for contingencies and losses incorporating environmental risks - see note 20.2.1 | Note 15 "Provisions related to nuclear generation and dedicated assets" Note 17 "Other provisions and contingent liabilities" | These are provisions relating to: - nuclear generation, comprising provisions for the back-end of the cycle (spent fuel management and long-term radioactive waste management), provisions for plant decommissioning, and provisions for last cores; - environmental measures; - environmental litigations. |
| Valuation of assets – see note 20.2.2 | Note 10.8 "Impairment/reversals" | Climate issues are addressed in impairment tests, notably through the long-term scenarios applied for electricity prices in line with the trajectories of European decarbonisation objectives |
| Sustainable finance – see note 20.3 | Note 18.3.2 "Loans and other financial liabilities" Note 14.4 "Perpetual subordinated bonds" Note 18.4 "Unused credit lines" | The Group has made several finance issues indexed on environmental indicators or to advance CSR projects: <i>Green bonds</i> , <i>Social bonds</i> and credit lines indexed on ESG criteria |
| Expenses for protection of the environment and the climate - see notes 20.4 and 20.5 | Note 10.2 "Other intangible assets" | The Group devotes a significant portion of its research and development budget to decarbonisation and the energy system transition, and undertakes other expenses for the environment or to adapt its installations to changes in the climate. The accounting policies applicable to research and development expenses are described in note 10.2. |

20.1 Regulatory expenses

20.1.1 Greenhouse gas emission rights

EU Emissions Trading System (EU ETS)

The European Union's Emissions Trading System (SEQE-UE or EU ETS) exists to fight climate change and reduce greenhouse gas emissions.

This system, which applies in all EU countries, sets an annual cap on emissions. Businesses (including EDF) receive or buy emission quotas, then the following year surrender to the European Commission a number of greenhouse gas emission rights corresponding to their Scope 1 emissions for the year elapsed, such as direct greenhouse gas emissions from production of the goods sold (e.g. electricity, heat, steel, paper, etc.). Fines are payable if there is a shortfall (€100 per tonne of CO₂ not covered by quotas, and an obligation to cover these amounts by quota the following year).

The cap is being progressively reduced in order to bring down the total emissions in Europe.

The legislative framework of the EU-ETS for the fourth trading period (2021 - 2030) has been tightened up to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015 (which set a general target of a 40% cut in emissions compared to 1990 levels for the whole EU)⁽¹⁾. One key step was accelerating annual quota reductions to 43 million tonnes per year (2.2% below the allocations for 2010).

The European Commission also presented a package of proposals on July 2021 entitled "Fit for 55", intended to bring the European Union closer to the augmented target of cutting CO₂ emissions by at least 55% (compared to 1990 levels) by 2030.

The European "trilogue negotiation", finalised in December 2022, raised the initial targets set by the European Commission in its legislative proposals in July 2021. The quotas for the sectors concerned by the ETS will be reduced by 62% (compared to 2005) by 2030.

In the EDF group, the entities concerned by application of these European regulations are EDF, Edison, Dalkia, PEI and Luminus.

The volume of emissions at 31 December 2022 stood at 18 million tonnes (17 million tonnes for 2021).

Actual greenhouse gas emissions amounted to €799 million at 31 December 2022 (€380 million at 31 December 2021) and are included in provisions.

In 2022, the Group surrendered 17 million tonnes in respect of emissions generated in 2021 under the EU ETS (in 2021 it surrendered 16 million tonnes in respect of emissions generated in 2020).

(1) The current EU ETS allocations trajectory does not yet include changes to be made in application of the Fit for 55 package.

British Emissions Trading Scheme (UK ETS)

Since Brexit, the United Kingdom has set up its own system (UK ETS - Emissions Trading Scheme). The UK ETS, which uses a bidding system, covers the same sectors as the EU ETS and operates under generally similar rules, with comparable accounting treatment.

The volume of emissions by EDF Energy in 2022 stood at 0.1 million tonnes (2 million tonnes for 2021). Actual impacts of greenhouse gas emissions amounted to €9 million (€36 million in 2021) and are included in provisions.

In 2022, EDF Energy surrendered 2 million tonnes in respect of emissions generated in 2021 (in 2021 it surrendered 3 million tonnes in respect of emissions generated in 2020).

Accounting treatment of CO₂ quotas

Emission rights held to comply with the regulatory requirements on greenhouse gas emissions are recorded in intangible assets as "Greenhouse gas emission rights – green certificates" at acquisition cost when they are purchased on the market.

At the year-end a provision corresponding to the emissions is established, equal to the acquisition cost up to the amount of rights acquired on the spot or forward markets, and to market prices for the balance. This provision is cancelled when the rights are surrendered to the State.

20.1.2 Renewable energy certificates (green certificates)

In application of EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources, every EU member state has set national targets for consumption of electricity from renewable sources. The United Kingdom has its own equivalent system.

Guarantee of Origin certificates prove the renewable origins of this electricity, which transits through the grid. They are sold by operators of renewable energy plants and bought by customers who want to use renewable-source electricity.

There are two systems for States to meet their targets:

- setting a specific sales tariff for renewable energies (this is the approach taken in France);
- setting an obligation for electricity producers to surrender a certain volume of renewable energy certificates (as is the case in the United Kingdom, Italy and Belgium).

The renewable energy certificate system may apply to:

- non-obligated electricity producers when the obligation applies to sales (EDF Renewables);
- obligated electricity producers when the obligation applies to generation;
- electricity producers who are also sellers of electricity when the obligation applies to energy sales (EDF Energy, Edison and Luminus).

A provision of €1,117 million was recognised, essentially by EDF Energy (United Kingdom) and Luminus (Belgium), at 31 December 2022 (€1,156 million in 2021) concerning the obligations for renewable energy certificates to be surrendered at that date. A large portion of these obligations is covered by purchased certificates recorded in intangible assets.

Accounting treatment of green certificates

For the entities that produce and sell electricity:

- certificates earned through energy generation are not recognised, since their cost is nil;
- certificates purchased are recognised as intangible assets in the line "Greenhouse gas emission rights – green certificates".

A provision is also established to reflect the obligation to surrender certificates. It is based on the cost of certificates earned (with nil value) and purchased (on the spot or forward market), the market price of the certificates still to be purchased, and where relevant the market price or penalty price for the balance. This provision is cancelled when the certificates are surrendered to the State.

20.1.3 Energy savings certificates

In all its subsidiaries, the Group is engaged in a process to control its energy consumption through various legislative measures in application of European Union Directives and national laws.

In France, the Law of 13 July 2005 introduced a system of energy savings certificates, imposing energy savings obligations on suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level. At the end of the period concerned, obligated actors are required to present energy savings certificates that correspond to their obligatory energy savings, otherwise sanctions apply. These certificates are obtained in return for energy savings operations conducted directly or indirectly, or purchased from other obligated or "eligible" economic actors.

After meeting its energy savings obligation for the fourth period of the scheme (2018 - 2021), EDF has entered its fifth period, which began on 1 January 2022 and will end on 31 December 2025. The obligation is significantly higher in this fifth period.

To meet this obligation, three sources are available to the EDF group: supporting consumers in energy efficiency operations (in 2022, for example, 192,000 renovation projects were completed), funding State-approved energy savings programmes, and purchasing certificates from eligible actors.

In the United Kingdom, EDF Energy voluntarily helps companies explore and develop solutions by enabling them to save energy, carbon and costs, particularly through its Powershift flexibility platform.

Accounting treatment of energy savings certificates

Expenses incurred for energy savings certificates are recorded in expenses of the year concerned, in "Other operating income and expenses". Expenses in excess of the accumulated obligation at the year-end are included in inventories and the stocks of energy savings certificates may be used to cover the obligation in later years.

A provision is recognised if the volume of certificates earned is lower than the accumulated energy savings obligation at the year-end. The amount of the provision is equal to the cost of actions still to be taken to extinguish the obligations related to the energy sales made.

20.2 Valuation of assets and liabilities

20.2.1 Provisions relating to environmental issues

Most of these provisions are provisions related to nuclear generation, which comprise provisions for back-end nuclear cycle expenses (management of spent fuel and radioactive waste), provisions for plant decommissioning and provisions for last cores. Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved. Details of these provisions are provided in note 15 concerning EDF SA and EDF Energy.

They also include provisions for environmental schemes including provisions for greenhouse gas emission rights, renewable energy certificates and energy savings certificates. At 31 December 2022, these provisions totalled €1,926 million (€1,572 million in 2021, see note 17.2).

Contingent liabilities also exist in connection with environmental litigation, described in note 17.3.5, such as the litigation following the sale of Ausimont (the Bussi site) to Solvay 3 by Edison in 2002.

20.2.2 Valuation of assets

In valuing the Group's long-term assets, climate issues are taken into account through impairment testing. The long-term scenarios used for electricity prices in countries where the Group does business are consistent with the trajectories of European decarbonisation targets, particularly as set in the Paris climate agreement. As explained in note 10.8, in constructing long-term electricity prices, the impact of climate contingencies is incorporated into assumptions concerning demand (particularly energy requirements for heating, and summer comfort), generation of renewable energies (onshore and offshore wind power, solar power) for all European countries, the contribution of hydropower, and environmental tax cuts for nuclear power generation in France. Climate time series analyses are based on the European EUROCORDEX model and include the impact of climate change. A deliberately prudent approach is adopted to avoid any bias towards underestimation of the practical effects of climate change on the relevant physical quantities (temperatures, cloud coverage, wind speeds) and ultimately on the European electricity system between 2027 and 2050. Scenarios also take account of the objectives of public energy and climate policies such as the Paris Agreement at worldwide level, Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie Nationale Bas Carbone*) in France. The scenarios used mainly include high CO₂ prices supporting carbon-free electricity production in Europe, and a lower-carbon economy more generally through electrification of uses.

The Group controls and operates thermal (gas-fired, coal-fired, oil-fired) electricity generation plants principally in France and Italy, to a smaller extent in Brazil, in Laos and Belgium, and to a now marginal degree in England (since the sale of West Burton B in 2021, see note 3.1.2). The net book value of the assets concerned is €5 billion at 31 December 2022 (unchanged from at 31 December 2021), including €3.6 billion for assets in France and €1.0 billion for assets in Italy.

In **mainland France**, the electricity generated by EDF's fleet of thermal power plants (CCGT, CT, and coal), with net book value of €1.8 billion at 31 December 2022 (€1.9 billion at 31 December 2021) accounted for around 3.57% of EDF's total electricity output in 2022. These plants operate in semi-baseload and peak periods and are used to variable degrees throughout the year, playing a significant role in system security when there are tensions in the supply-demand balance, which was the case during the winter of 2022.

With the end of coal-fired generation in application of the Multi-year energy programme, the coal-fired plant at Le Havre (0.6GW) was closed at 1 April 2021 and the Cordemais plant is due to cease operations in 2026 at the latest.

EDF is modernising its fleet of natural gas CCGT plants (Blénod, Martigues, Bouchain) to reduce air emissions of CO₂, NO_x and SO₂. The Bouchain plant in particular produces CO₂ emissions of around 360g/kWh on average.

In the **island territories**, electricity is principally generated by an oil-fired fleet (with net book value of €1.8 billion at 31 December 2022), and to a smaller degree hydroelectric plants and other renewable energy plants. Where required by the Multi-year energy programme, EDF intends to operate new plants running on liquid biomass, or to convert its existing plants to run on bioliquid.

In **Italy**, Edison's thermal fleet consists of CCG plants. In keeping with the "National plan for energy and the climate" supporting development of gas-based electricity generation and its integration with renewable energy generation, Edison began construction in 2019 of the first new-generation CCG plant at the Marghera Levante site (780MW), and in 2020 of a 760MW greenfield project at Presenzano (in Campania), using the same technology, for low environmental impact (CO₂ emissions 40% below the national average, and a 70% reduction in NO_x emissions). Both plants should be commissioned in 2023.

20.3 Sustainable financing

20.3.1 Green Bonds

Since 2013 the Group has made seven Green Bond issues for a value equivalent to €9.96 billion. These issues were made under its Green Bond Framework and were intended to finance construction of new wind and solar power projects, investments to renovate and modernise its hydropower assets in mainland France and internationally, energy efficiency projects, and biodiversity protection projects.

In July 2022, the Group produced the fourth edition of its Green Bond Framework, which is now a Green Financing Framework covering all its green financing operations. Eligible projects must meet the European Taxonomy criteria. Two new eligible categories have been added to the scope of application: distribution networks and nuclear generation assets. EDF has also made a commitment to inform investors before every bond issue if the proceeds of the issue will be used to finance nuclear activities. On 5 October 2022 the Group issued a €1.25 billion bond to finance distribution network activities.

The Green Financing Framework was also reviewed by an independent body which confirmed that it respects best practices on the Green Loan market (the Green Loan Principles published by the Loan Syndications and Trading Association).

Allocation of the funds raised by EDF's Green Bond issues is certified by one of the statutory auditors (see section 6.7 of the Universal Registration Document). This certification can be consulted on the EDF website's sustainable development page.

20.3.2 Social bonds (social hybrid notes)

On 26 May 2021 EDF launched an issue of Euro-denominated perpetual social hybrid notes with total nominal value of €1.25 billion.

The funds raised were used to finance eligible projects, as defined in the EDF group's Social Bond Framework. These projects include investment expenditure by EDF in Small and Medium-Sized Enterprises (SMEs) that contribute to the development and maintenance of electricity generation and distribution assets in Europe (including the United Kingdom).

The Social Bond Framework's compliance with the Social Bond Principles published by the International Capital Markets Association (ICMA) has been validated by an independent body.

20.3.3 Bilateral green loan

On 18 November 2022 EDF and Crédit Agricole CIB signed a €1 billion bilateral green loan that complies with EDF's Green Financing Framework. This loan will contribute to the *Grand Carénage* programme to enhance safety and extend the operating lifetime of French nuclear reactors beyond 40 years. The funds will be entirely dedicated to maintenance of French power plants, in order to continue production of very low-carbon energy (4g CO₂ equivalent per kWh over the life cycle⁽¹⁾).

20.3.4 Credit lines indexed on ESG criteria

The EDG group has 18 renewable bilateral credit lines and two syndicated credit facilities indexed on the Group's sustainable development performance (incorporating a cost adjustment mechanism for financing costs):

- a €4 billion 5 - year "green" syndicated credit line with more than 20 banks. The margin is adjusted based on the Group's performance on three environmental KPIs;
- a €1.5 billion 5 - year "social" credit facility with 9 banks. The margin is adjusted based on the Group's performance on four KPIs focusing on EDF's Fair and Inclusive Transition principles;
- 18 renewable bilateral credit lines indexed on ESG criteria. The margins are adjusted based on the Group's performance on KPIs selected with the banks.

At 31 December 2022, undrawn ESG-indexed renewable credit lines (including syndicated credit facilities) totalled over €10.05 billion, or 72% of the EDF group's total undrawn credit lines (see note 18.4). In 2022, the Group respected the required indicators.

20.4 Carbon-free investments

In 2022 the Group continued its programme of gross operating investments, which amounted to €19.2 billion and included €18.3 billion of gross investments in intangible assets and property, plant and equipment (see notes 4 and 10.7) and €0.9 billion of gross financial investments.

In 2022, nearly 94% of the Group's investments were in line with its net-zero trajectory (94% in 2021), with 50% of investments concerning the nuclear sector (50% in 2021). 66% of the Group's investments were aligned with the current European Taxonomy at 31 December 2022 (compared to 44% in the published figures for 2021 and 63% in proforma figures for 2021 including the effects of the complementary delegated act on nuclear and gas activities). This notably covered investments in nuclear activities in France, networks, renewable energy generation facilities (solar power, wind power), hydropower facilities and certain energy services (see section 3.8.4 of the 2022 Universal Registration Document, "Details on the taxonomy").

EDF promotes innovation to contribute to achievement of the net zero objective, by investing in startups and venture capital funds dedicated to innovation (the EDF Pulse Ventures programme), and by developing intrapreneurial projects (the EDF Pulse Incubation programme). The Group has formed several subsidiaries for these purposes, such as Hynamics, a company that produces and sells low-

(1) Source : *Analyse Cycle de Vie du kWh nucléaire d'EDF* published by EDF in 2022 and reviewed by independent experts https://www.edf.fr/sites/groupe/files/2022-11/edfgroup_acv-4_plaquette_2022111_en.pdf

carbon hydrogen produced by water electrolysis to meet the needs of the heavy-duty transport industry.

The Group's raison d'être is also expressed in the management policy for its portfolio of dedicated assets held to finance long-term nuclear expenses in France (realisable value of €33.9 billion at 31 December 2022), and its responsible investor's charter introduced in 2020, which has three focal points (compliance with the United Nations' Principles for Responsible Investment; respect of the major international agreements on human rights; and annual reporting on responsible investments). This charter is applicable both to assets managed directly and assets managed by specialist companies under delegated management arrangements.

In 2022, a review was conducted of these delegated management companies' compliance with the United Nations' Principles for Responsible Investment and the major international agreements, and for climate risks, a carbon emission assessment was established for listed and unlisted assets. The climate scenarios incorporated into risk/return studies of dedicated assets were analysed in accordance with the recommendations of the NGFS (Network for Greening the Financial System), to assess the risk of nuclear provisions being underfunded in the event of a climate stress scenario that could affect the value of dedicated assets, depending on different time horizons.

For unlisted assets, EDF is committed to integrating environmental, social and governance (ESG) considerations as effectively as possible into its decisions for investments and management of investments, notably by requiring the companies in its portfolio to carry out a carbon review and monitor their environmental footprint.

20.5 Expenses for protection of the environment and the climate, and to adapt installations to climate change

The Group is continuing its commitments to address environmental issues, for example through the following actions.

20.5.1 Research and development (R&D)

Given the goal of carbon neutrality by 2050, and the fact that electricity is a major lever in action to decarbonise the French economy, R&D has a crucial role to play in the electricity, climate, digital and societal transition.

In 2022, the EDF group's total R&D budget amounted to €649 million, comprising €473 million for EDF's R&D, and separate R&D by certain subsidiaries, principally Framatome, EDF Energy and Edison.

In France, 99% of EDF's R&D budget is dedicated to achieving the net zero goal, and the energy system transition.

The R&D budget is particularly channelled into research into energy efficiency, uses of electricity as a substitute for fossil fuel-based energies, renewable energies and their insertion into the grid, energy storage and production, carbon-free hydrogen and its applications for decarbonising the economy, sustainable cities, the local impacts of climate change and other environmental issues such as biodiversity, water quality, and the mitigation of all forms of pollution.

Research concerning electricity storage, enhancement of energy performance diagnosis methods, improvement of techniques for urban heating and cooling networks, platforms for sharing studies relevant to the ecological transition, and increasing safety at nuclear power plants is supported by public subsidies, notably from the European Union.

The CAP 2030 Decarbonised Thermal Project, launched in March 2021, aims to give each of the Group's thermal fleets a decarbonisation strategy for existing assets and a development strategy for new decarbonised assets, with a roadmap to guarantee the availability of such decarbonised thermal generation facilities at the appropriate time, for good control of the related technologies and skills. All the EDF Group's gas activities thus follow carbon trajectories (covering both direct and indirect emissions) set for each entity in line with the Group's 2030 objectives.

20.5.2 Other expenses for protection of the environment and climate

Accounting principles and methods

Other expenses for protection of the environment and climate are identifiable expenses incurred to prevent, reduce or repair damage that has been or may be caused by the Group as a result of its activities. These expenses are treated as follows:

- they are capitalised if they are incurred to prevent or reduce future damage or protect resources (e.g. expenses for structures to facilitate the passage of migrating fish, effluent treatment installations, etc.);
- they are booked as environmental liabilities and increases to provisions for environmental risks if they correspond to an obligation that exists at the year-end and it is probable or certain at the reporting date that they will lead to an outflow of resources;
- they are recognised as expenses if they are operating expenses for the units in charge of environmental concerns, environmental supervision, environmental duties and taxes, processing of liquid and gas effluents and non-radioactive waste, or research unrelated to an investment.

All of the Group's functions, employees, activities and projects are mobilised to fulfil EDF's objective of being an environmentally responsible company. Some of the actions concerned are presented below.

Action for biodiversity

The EDF group has been committed to action for biodiversity since 2006 with a dedicated policy, and today its biodiversity ambitions are reflected in formal commitments made through two initiatives, *Entreprises engagées pour la nature* (Committed companies for nature) and "Act4nature international". These voluntary commitments cover some twenty actions to reduce contributions to major pressure points on

biodiversity (as identified by IPBES, the biodiversity equivalent of the IPCC), recreate biodiversity-friendly spaces and conditions, further improve and share knowledge, strengthen biodiversity governance and raise employee awareness.

In addition to these commitments, between 2013 and 2022, the Group undertook more than 66 operations through EDF hydro and its hydropower activities for a cumulative total investment of €107 million (excluding subsidies received), to facilitate fish migration at ecologically sensitive sites in mainland France ("list 2" sites for the purposes of the "national law on water and aquatic environments"), installing fish passes and fish ladders and removing river weirs.

Action for employees and vehicle fleet electrification

Consistent with its ambitions for the environment and the climate, the Group works to raise awareness among its employees and educate them about environmental and sustainable development issues. In 2022 its "Environment and sustainable development" training offering comprising courses on environmental management, standards and regulations, and environmental analysis, provided 1,755 employees with 19,061 hours of training.

In addition, the rollout at Group level of the "Climate Collage" collaborative workshop, led in person or online by volunteer employees after internal training, gave 66,000 employees greater awareness of the issues of climate disruption.

Based on a concept similar to the "Climate Collage", the "Biodiversity Collage" raises awareness of the causes of biodiversity erosion. The goal of providing biodiversity training and awareness-raising for 1,000 employees by the end of 2022 has been exceeded.

As the first French Group to sign the EV100 initiative, EDF made a commitment to have a fully-electric light vehicle fleet by 2030. By the end of 2022 the worldwide fleet numbered more than 45,000 light vehicles (especially in Europe) and more than 22.6% were already electric (over 10,300 electric vehicles, an increase of more than 2,500 from 2020). Joining the EV100 initiative is also an encouragement for Group employees to control their energy consumption and reduce their carbon footprint, as it gives them access to competitive offers from car suppliers and offers for recharging services sold by EDF group subsidiaries.

For 2022, the vehicle fleet electrification indicator accounts for 10% of EDF SA's and Enedis' profit-sharing criteria.

20.5.3 Expenses to adapt the Group's assets to climate change

To adapt France's current and future nuclear power plants, in addition to work on safety and security in compliance with regulations and safety authority recommendations, EDF has established a plan to adapt its facilities and their operations. The ADAPT project is part of a systemic approach for analysing the resilience of all ecosystems, natural or socio-economic, which are decisive for generation capacity.

This project sees climate change as systemic and changing. Among other things, these analyses are a basis for:

- imagining the climate futures of different areas and regions over different time horizons;
- improving the level of protection for the group's installations against unforeseeable natural events, through better quantification of their extreme versions;
- reducing the environmental impact of the Group's facilities;
- identifying innovative solutions, for example for recovering evaporated water from cooling towers, and testing the most promising ideas on site in the near future.

The increasing pace of climate change is also leading the Group to reinforce its R&D and engineering capacities, by increasing the number of people hired with key skills in all the related areas: climatology, hydrogeology, environmental matters, and of course technical engineering.

Note 21 Off-balance sheet commitments

This note presents off-balance sheet commitments given and received by the Group at 31 December 2022. The amounts of commitments correspond to non-discounted contractual values.

21.1 Commitments given

The table below shows off-balance sheet commitments given by the Group that have been valued. Other commitments are described separately in the detailed notes.

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | 31/12/2021 |
|--------------------------------|--------|---------------|---------------|
| Operating commitments given | 21.1.1 | 61,990 | 54,268 |
| Investment commitments given | 21.1.2 | 16,900 | 16,996 |
| Financing commitments given | 21.1.3 | 6,345 | 5,837 |
| TOTAL COMMITMENTS GIVEN | | 85,235 | 77,101 |

In almost all cases, these are reciprocal commitments, and the third parties concerned are under a contractual obligation to supply the Group with assets or services related to operating, investment and financing activities.

21.1.1 Operating commitments given

Operating commitments given by the Group are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|---|---------------|---------------|
| Fuel and energy purchase commitments ⁽¹⁾ | 43,863 | 37,908 |
| Operating contract performance commitments given | 17,456 | 16,047 |
| Operating lease commitments as lessee | 671 | 313 |
| TOTAL OPERATING COMMITMENTS GIVEN | 61,990 | 54,268 |

⁽¹⁾ Excluding gas purchases and related services

21.1.1.1 Fuel and energy purchase commitments

In the course of its ordinary generation and supply activities, the Group has entered into long-term contracts for purchases of electricity, gas, other energies and commodities and nuclear fuel, for periods of up to 20 years.

The Group has also entered into long-term purchase contracts with a certain number of electricity producers, by contributing to the financing of power plants.

At 31 December 2022, fuel and energy purchase commitments mature as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | | | | | 31/12/2021 |
|---|---------------|--------------|---------------|---------------|---------------------|---------------|
| | Total | < 1 year | 1 to 5 years | 5 to 10 years | Maturity > 10 years | Total |
| Electricity purchases and related services ⁽¹⁾ | 30,085 | 5,702 | 9,626 | 5,815 | 8,942 | 24,557 |
| Other energy and commodity purchases ⁽²⁾ | 362 | 118 | 132 | 112 | - | 346 |
| Nuclear fuel purchases | 13,416 | 1,944 | 5,710 | 4,771 | 991 | 13,005 |
| FUEL AND ENERGY PURCHASE COMMITMENTS | 43,863 | 7,764 | 15,468 | 10,698 | 9,933 | 37,908 |

⁽¹⁾ There are no remaining commitments by controlled entities to joint ventures at 31 December 2022 (€487 million at 31 December 2021).

⁽²⁾ Excluding gas purchases and related services (see note 21.1.1.1.4).

21.1.1.1.1 Electricity purchases and related services

Electricity purchase commitments at 31 December 2022 mainly concern EDF and EDF Energy. In the case of EDF many of these commitments are borne by the Island Energy Systems (SEI), which have made commitments to purchase the electricity generated using bagasse and coal.

The change over the year is mainly explained by the €3 billion increase in EDF Energy's purchase commitments due to the higher electricity price projections for the next 10 years. The €2 billion increase in purchase commitments by EDF, Enedis and Luminus is explained by the extension of certain contracts and the significant rise in energy prices.

In addition to the obligations reported above and under Article 10 of the Law of 10 February 2000, in mainland France, EDF is obliged, at the producer's request and subject to compliance with certain technical features, to purchase the power produced by co-generation plants and renewable energy generation units (wind turbines, small hydro-electric plants, photovoltaic power, etc.). The additional costs generated by this obligation are offset, after validation by the CRE, by the CSPE. These purchase obligations total 50TWh for 2022 (54TWh for 2021), including 6TWh for co-generation (7TWh for 2021), 22TWh for wind power (25TWh for 2021), 13TWh for photovoltaic power (11TWh for 2021) and 3TWh for hydropower (4TWh for 2021).

21.1.1.2 Other energy and commodity purchases

Purchase commitments for other energies and commodities mainly concern purchases of biomass fuel used by Dalkia in the course of its business.

21.1.1.3 Nuclear fuel purchases

Commitments for purchases of nuclear fuel arise from supply contracts for the nuclear plants intended to cover the EDF group's needs for uranium and fluorination, enrichment and fuel assembly production services.

21.1.1.4 Gas purchases and related services

Gas purchase commitments are principally undertaken by Edison and EDF. The volumes concerned for both entities at 31 December 2022 are as follows:

| (in billions of m ³) | 31/12/2022 | | | | 31/12/2021 |
|----------------------------------|------------|----------|--------------|--------------------|------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| Edison | 124 | 12 | 48 | 64 | 137 |
| EDF | 56 | 4 | 12 | 40 | 23 |

Gas purchase contracts

Edison has entered into agreements to import natural gas from Libya, Algeria, Azerbaijan and Qatar, for a total maximum volume of 11.9 billion m³ per year. The residual terms of these contracts vary between 5 and 22 years.

In 2020, EDF signed a 5-year purchase contract for 3 billion m³ of gas per year from Norway.

In 2017 Edison signed a purchase contract for LNG from the United States (1 million tonnes per year, i.e. 1.4 billion m³ of natural gas, for a 20 - year term). Deliveries under this contract will not begin until 2023.

In 2014, EDF signed a contract for LNG imports from the United States, for an annual supply of 0.7 million tonnes of LNG (1 billion m³ of natural gas per year) over a 20-year period starting from May 2020. In 2020 EDF also signed a 20-year purchase contract for LNG from the United States (1 million tonnes per year, i.e. 1.4 billion m³ of natural gas). Deliveries under this contract are due to begin in 2026.

Some of these contracts contain "take-or-pay" clauses committing the buyer to pay for a minimum volume of gas every year, whether or not it actually takes delivery of that volume.

Gas-related service contracts

Under the contract with Terminale GNL Adriatico, Edison also benefits from approximately 80% of the terminal's regasification capacities until 2034.

Under the contract with the Dunkerque LNG methane terminal, EDF benefits from approximately 61% of the terminal's regasification capacities until 2037, in return for payment of an annual premium of approximately €150 million. A provision for onerous contracts has been recorded in connection with this contract since 2018.

21.1.1.2 Operating contract performance commitments given

At 31 December 2022, these commitments mature as follows:

| (in millions of euros) | 31/12/2022 | | | | 31/12/2021 |
|---|---------------|--------------|--------------|--------------------|---------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| Operating guarantees given | 9,648 | 3,259 | 3,711 | 2,678 | 8,693 |
| Operating purchase commitments ⁽¹⁾ | 7,611 | 4,294 | 2,685 | 632 | 7,173 |
| Other operating commitments | 197 | 67 | 100 | 30 | 181 |
| OPERATING CONTRACT PERFORMANCE COMMITMENTS GIVEN⁽²⁾ | 17,456 | 7,620 | 6,496 | 3,340 | 16,047 |

⁽¹⁾Excluding fuel and energy

⁽²⁾Including commitments given by controlled entities to joint ventures, amounting to €1,912 million at 31 December 2022 (€1,928 million at 31 December 2021).

In the course of its business, the Group provides contract performance guarantees, generally through the intermediary of banks.

Operating guarantees given at 31 December 2022 mainly consist of guarantees given by EDF Renewables in connection with its development projects, Edison and EDF.

The change in these guarantees is essentially explained by new EDF Renewables projects in development (particularly in the United States) and arrangement of new guarantees by Edison in the course of their activities.

21.1.1.2.1 Operating guarantees given

Operating guarantees given are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|-------------------------------|--------------|--------------|
| EDF Renewables | 3,252 | 3,024 |
| Edison | 2,373 | 1,882 |
| EDF | 1,314 | 1,228 |
| Framatome | 1,111 | 1,087 |
| EDF Energy | 622 | 571 |
| Other entities | 976 | 901 |
| TOTAL | 9,648 | 8,693 |

21.1.1.2.2 Operating purchase commitments

Operating purchase commitments are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|-------------------------------|--------------|--------------|
| EDF | 3,399 | 3,360 |
| Framatome | 1,493 | 1,399 |
| Enedis | 896 | 794 |
| EDF Renewables | 450 | 544 |
| EDF Energy | 317 | 381 |
| Other entities | 1,056 | 695 |
| TOTAL | 7,611 | 7,173 |

21.1.1.2.3 Lease commitments as lessee

At 31 December 2022, lease commitments as lessee break down as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | | | | 31/12/2021 |
|------------------------------------|------------|-----------|--------------|-----------------------|------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| LEASE COMMITMENTS AS LESSEE | 671 | 49 | 248 | 374 | 313 |

The only remaining off-balance sheet lease commitments are:

- Leases that are exempt from recognition in application of IFRS 16. The total amount concerned at 31 December 2022 is €83 million (€204 million at 31 December 2021);
- Leases of assets that have not yet been made available to the Group (principally real estate and LNG tankers under construction). The right-of-use assets and the lease liability will be recognised in the balance sheet when the leased asset is made available. The total amount concerned at 31 December 2022 is €588 million (€109 million at 31 December 2021).

21.1.2 Investment commitments given

At 31 December 2022, details of investment commitments are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | | | | 31/12/2021 |
|--|---------------|---------------|--------------|-----------------------|---------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| Commitments related to acquisition of tangible and intangible assets | 15,867 | 10,411 | 5,013 | 443 | 15,905 |
| Commitments related to acquisition of financial assets | 864 | 12 | 751 | 101 | 929 |
| Other commitments related to investments | 169 | 165 | 4 | - | 162 |
| TOTAL INVESTMENT COMMITMENTS GIVEN⁽¹⁾ | 16,900 | 10,588 | 5,768 | 544 | 16,996 |

⁽¹⁾Including commitments given by controlled entities to joint ventures, amounting to €183 million at 31 December 2022 (€194 million at 31 December 2021).

21.1.2.1 Commitments related to acquisition of tangible and intangible fixed assets

The commitments related to acquisition of tangible and intangible fixed assets are as follows:

| <i>(in millions of euros)</i> | 31/12/2022 | 31/12/2021 |
|-------------------------------|-------------------|-------------------|
| EDF | 4,041 | 4,109 |
| EDF Energy | 5,179 | 6,346 |
| Enedis | 2,956 | 2,568 |
| EDF Renewables | 2,050 | 1,431 |
| Framatome | 666 | 520 |
| Other entities | 975 | 931 |
| TOTAL | 15,867 | 15,905 |

Commitments given related to acquisition of tangible and intangible fixed assets remained stable. The rise in commitments by EDF Renewables (an increase in orders, principally in the United States and Brazil, partly offset by progress and commissioning of solar and wind power plants, notably in Canada), and to a lesser degree by Enedis (higher purchase commitments for electric equipment, and lower commitments associated with the end of the national Linky meter rollout) was offset by the decrease in commitments given by EDF Energy (due to progress on the HPC project, combined with the effect of the pound sterling's fall against the euro).

21.1.2.2 Commitments related to acquisition of financial assets

The decrease in commitments related to acquisition of financial assets is principally due to Framatome's acquisition of the captive insurance company Foyer during the first half of 2022.

The main share purchase commitments that cannot be valued concern Luminus.

Luminus signed an amendment to the shareholder pact on 26 October 2015 defining a liquidity clause for the investments held by its minority shareholders, which could, in certain conditions under the control of EDF, result in sale of their shares through an IPO, or purchase of their shares by the Group at market value. This liquidity clause is valid at all times from 1 July 2018 to 31 December 2025.

Regarding the investment in EDF Investissements Groupe (EIG), C3 (a fully-owned EDF subsidiary) has a call option to buy the EIG shares held by NBI (Natixis Belgique Investissement, a subsidiary of the Natixis group) at a fixed price, exercisable at any time until May 2026. Meanwhile, NBI has a cash-settled put option to sell EDF all of its EIG shares for a fixed price, exercisable subject to certain conditions between February 2024 and May 2025.

Due to their features, in compliance with IAS 32, NBI's put option and C3's call option are considered as derivatives and their net value is included in the positive or negative fair value of trading derivatives. At 31 December 2022, the fair value of these trading derivatives is low.

21.1.2.3 Other commitments related to investments

Other commitments given related to investments at 31 December 2022 mainly comprise guarantees given by EDF Norte Fluminense in connection with its 51% investment in CES, the operator of a hydroelectric dam on the Teles Pires river in Brazil.

21.1.3 Financing commitments given

Financing commitments given by the Group at 31 December 2022 comprise the following:

| <i>(in millions of euros)</i> | 31/12/2022 | | | | 31/12/2021 |
|--|-------------------|--------------------|---------------------|------------------------------|-------------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| Security interests in real property | 3,616 | 1,321 | 421 | 1,874 | 3,986 |
| Guarantees related to borrowings | 1,587 | 33 | 996 | 558 | 1,265 |
| Other financing commitments | 1,142 | 1,034 | 28 | 80 | 586 |
| TOTAL FINANCING COMMITMENTS GIVEN⁽¹⁾ | 6,345 | 2,388 | 1,445 | 2,512 | 5,837 |

⁽¹⁾ Including commitments given by controlled entities to joint ventures, amounting to €2,609 million at 31 December 2022 (€1,597 million at 31 December 2021). These financing commitments to joint ventures mainly concern EDF Renewables and Jera.

Security interests and assets provided as guarantees mainly concern pledges or mortgages of tangible assets and shares representing investments in consolidated subsidiaries which own property, plant and equipment, for EDF Renewables.

The guarantees given for borrowings are essentially guarantees provided by EDF Renewables for its project financing.

21.2 Commitments received

The table below shows off-balance sheet commitments received by the Group that have been valued. Other commitments received are described separately in the detailed notes.

| <i>(in millions of euros)</i> | Notes | 31/12/2022 | 31/12/2021 |
|---|--------|--------------|--------------|
| Operating commitments received ⁽¹⁾ | 21.2.1 | 8,916 | 9,065 |
| Investment commitments received | 21.2.2 | 317 | 609 |
| Financing commitments received ⁽²⁾ | 21.2.3 | 22 | 18 |
| TOTAL COMMITMENTS RECEIVED | | 9,255 | 9,692 |

⁽¹⁾Excluding commitments related to supplies of energy and related services (see note 21.2.1.4).

⁽²⁾Excluding commitments related to credit lines, which are described in note 18.4.

21.2.1 Operating commitments received

Operating commitments received by the Group at 31 December 2022 comprise the following:

| <i>(in millions of euros)</i> | 31/12/2022 | | | | 31/12/2021 |
|---------------------------------------|--------------|--------------|--------------|-----------------------|--------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| Operating lease commitments as lessor | 509 | 100 | 202 | 207 | 661 |
| Operating sale commitments | 6,348 | 1,743 | 3,298 | 1,307 | 6,360 |
| Operating guarantees received | 1,998 | 1,241 | 230 | 527 | 1,991 |
| Other operating commitments received | 61 | 19 | 27 | 15 | 53 |
| OPERATING COMMITMENTS RECEIVED | 8,916 | 3,103 | 3,757 | 2,056 | 9,065 |

21.2.1.1 Operating lease commitments as lessor

In 2022, the Group benefits from commitments as lessor in operating leases amounting to €509 million. These commitments mainly concern the Independent Power Projects (IPPs) and real estate leases.

21.2.1.2 Operating sale commitments

Operating sale commitments received exclude energy deliveries and principally concern firm orders made through contracts recorded on a percentage-of-completion basis at Framatome (construction and engineering contracts) and EDF Renewables (agreements for operation services, maintenance services, and development and sale of structured assets).

21.2.1.3 Operating guarantees received

Operating guarantees received principally concern Framatome, and relate to supply and technical assistance contracts for EDF's nuclear power plants with guarantees received from suppliers, particularly in connection with ARENH deliveries.

21.2.1.4 Electricity supply commitments

In the course of its business, the EDF group has signed long-term contracts to supply electricity as follows:

- long-term contracts with a number of European electricity operators, for a specific plant or a defined group of plants in the French nuclear generation fleet, corresponding to installed power capacity of 3.5GW;
- in execution of France's "NOME" Law on organisation of the French electricity market, EDF has a commitment to sell some of the energy generated by its existing nuclear power plants to other suppliers, until 31 December 2025. This has concerned a maximum volume of 150TWh each year since 1 January 2020 (see note 5.1.1).

21.2.2 Investment commitments received

| <i>(in millions of euros)</i> | 31/12/2022 | | | | 31/12/2021 |
|--|------------|------------|--------------|-----------------------|------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| INVESTMENT COMMITMENTS RECEIVED | 317 | 235 | 35 | 47 | 609 |

The decrease in investment and/or divestment commitments received is explained by the expiry in early 2022 of a guarantee received in connection with a repurchase agreement concerning securities held by EDF.

21.2.3 Financing commitments received

| (in millions of euros) | 31/12/2022 | | | | 31/12/2021 |
|---------------------------------------|------------|----------|--------------|--------------------|------------|
| | Total | < 1 year | 1 to 5 years | Maturity > 5 years | Total |
| FINANCING COMMITMENTS RECEIVED | 22 | 3 | 13 | 6 | 18 |

Note 22 Related parties

Accounting principles and methods

Related parties include the French State, companies in which the State holds majority ownership and certain of their subsidiaries, and companies in which the EDF group exercises joint control or significant influence. They also include members of the Group's management and governance bodies.

Details of transactions with related parties are as follows:

| (in millions of euros) | Associates and joint ventures | | Joint operations | | French State or State-owned entities ⁽¹⁾ | | Group Total | |
|------------------------|-------------------------------|------------|------------------|------------|---|------------|-------------|------------|
| | 31/12/2022 | 31/12/2021 | 31/12/2022 | 31/12/2021 | 31/12/2022 | 31/12/2021 | 31/12/2022 | 31/12/2021 |
| Sales | 933 | 797 | - | - | 2,709 | 2,501 | 3,642 | 3,298 |
| Energy purchases | 2,279 | 4,196 | 2 | 2 | 2,895 | 2,441 | 5,176 | 6,639 |
| External purchases | 13 | 16 | 7 | 7 | 206 | 343 | 226 | 366 |
| Financial assets | 135 | 160 | - | - | - | - | 135 | 160 |
| Other assets | 2,195 | 844 | - | - | 560 | 630 | 2,755 | 1,474 |
| Financial liabilities | - | - | - | - | - | - | - | - |
| Other liabilities | 441 | 1,367 | 1 | 1 | 558 | 623 | 1,000 | 1,991 |

⁽¹⁾ Excluding tax and social liabilities and the CSPE receivable.

22.1 Transactions with entities included in the scope of consolidation

Transactions with the principal associates (CTE (the company that owns RTE) and Taishan) are presented in note 12.

Transactions with other associates, joint ventures, and partner entities in joint arrangements with the Group mainly consist of sales and purchases of energy.

22.2 Relations with the French State and State-owned entities

22.2.1 Relations with the French State

The French State holds 89,01% of the capital of EDF at 31 December 2022, and is thus entitled in the same way as any majority shareholder to control decisions that require approval by the shareholders. On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023. Following completion of the Offer, the French State will own 95.82% of the share capital with at least 96.53% of voting rights, and 99.96% of the outstanding OCEANE bonds (see note 2). This fulfils the conditions for proceeding to a compulsory squeeze-out for EDF shares and OCEANEs. As indicated in an AMF notice of 25 January 2023, while awaiting the Paris Court of Appeal's ruling on the action brought by the employee shareholding fund Actions EDF and the shareholders' associations *Energie En Actions* and *Association pour la Défense des Actionnaires Minoritaires* seeking annulment of the AMF's approval of the Offer, the French government has made an undertaking that it will not proceed with the compulsory squeeze-out until the Court of Appeal has issued its decision on the merits of the case.

In accordance with the legislation applicable to all companies having the French State as their majority shareholder, the EDF group is subject to certain inspection procedures, in particular economic and financial inspections by the State, audits by the French Court of Auditors (*Cour des Comptes*) or Parliament, and verifications by the French General Finance Inspectorate (*Inspection générale des finances*).

The public service contract between the French State and EDF was signed on 24 October 2005. This contract is intended to form the framework for public service missions assigned to EDF by the lawmaker for an unlimited period. The Law of 9 August 2004 does not stipulate the duration of the contract.

22.2.2 Relations with ENGIE

Enedis and GRDF's common service function, defined by Article L. 111 - 71 of the French Energy Code, is not a legal entity in its own right. Enedis and GRDF are bound by an agreement that defines their relations within this common service function, its competences, and the resulting division of costs. The agreement has an unlimited term and can be terminated at any time subject to 18 months' notice: in such a

case, the parties undertake to renegotiate the agreement during the notice period. It is updated regularly. In 2019, the Enedis-GRDF governance agreements were entirely reviewed.

Concerning the common service of LPG distribution and supply in the cities of Ajaccio and Bastia in Corsica, ENGIE informed EDF in October 2020 that it was considering terminating its LPG activities in Corsica.

Article 96 of France's Finance Law for 2022 allows the State to bear part of the costs associated with conversion of the LPG networks to electricity or renewable energies, for a maximum period of twenty years to be set by official order.

This measure currently has no impact for EDF. Ultimately, the prospect of ending LPG distribution operations and converting uses to electricity will need investments to reinforce the electricity distribution networks.

ENGIE has made a formal demand to the cities of Bastia and Ajaccio to notify attribution of concessions by 31 July 2023 at the latest, otherwise it will terminate its LPG operations in Corsica.

22.2.3 Relations with public sector entities

The EDF group's relations with public sector entities mainly concern Orano.

Transactions with Orano concern:

- the front-end of the nuclear fuel cycle (uranium supplies, conversion and enrichment services);
- the back-end of the nuclear fuel cycle (transportation, storage, processing and recycling services for spent fuel).

Front-end of the cycle

Several important agreements were negotiated between EDF and Orano:

- for supplies of natural uranium: Orano Mining contracts;
- for fluorination and enrichment of natural uranium into uranium 235: an Orano Chimie-Enrichissement contract (formerly Orano cycle contract).

Back-end of the cycle

Relations between EDF and Orano Recyclage (formerly Orano Cycle) concerning transportation, processing and recycling of spent fuels are described in note 15.1.1.1.

22.3 Management compensation

The Company's key management and governance personnel are the Chairman and CEO, the members of the COMEX (Executive Committee) throughout 2022 or since their date of appointment if they joined the COMEX during the year, and the Directors. Directors representing the employees receive no remuneration for their services.

The total compensation paid by EDF and controlled companies to the Group's key management and governance personnel amounted to €12.5 million in 2022 (€18.6 million in 2021, including long-term bonuses that were conditional on meeting performance criteria for 2019 - 2021). This amount covered short-term benefits (basic salaries, performance-related salary, profit share and benefits in kind), special IEG post-employment benefits where relevant, and the corresponding employer contributions, plus any director's fees.

EDF's key management and governance personnel benefit from no special pension system, starting bonus or severance payment entitlement except by contractual negotiation.

Note 23 Subsequent events

No event has arisen subsequent to the year-end apart from those presented in note 2 to the consolidated financial statements.

Note 24 Statutory auditors' fees

The following table sets forth the fees paid for work done by the Statutory Auditors and their network during 2022:

(in thousands of euros)

| | Deloitte network | | KPMG network | |
|---|-----------------------------|-------------|-----------------------------|-------------|
| | Amount (excluding taxes) | % | Amount (excluding taxes) | % |
| Audit –Statutory audit, certification, review of company and consolidated accounts | | | | |
| EDF | 3,022 | 26.7 | 2,928 | 14.2 |
| Controlled entities ⁽¹⁾ | 6,531 | 57.7 | 15,464 | 75.2 |
| Sub-total | 9,553 | 84.4 | 18,392 | 89.4 |
| Non-audit services⁽²⁾ | | | | |
| EDF | 1,480 | 13.0 | 678 | 3.3 |
| Controlled entities ⁽¹⁾ | 292 | 2.6 | 1,508 | 7.3 |
| Sub-total | 1,772 | 15.6 | 2,187 | 10.6 |
| TOTAL | 11,325 | 100 | 20,579 | 100 |

⁽¹⁾ Fully consolidated subsidiaries and jointly controlled entities whose auditors' fees are included in the consolidated income statement.

⁽²⁾ Services required by laws and regulations, and services supplied at the request of the Group. Non-audit services mainly correspond to (i) certifications of financial and accounting information or Independent Reports on social, environmental and societal information required under Article L. 225 - 102 - 1 of the French Commercial Code, (ii) services relating to disposals of entities, (iii) tax services authorised by local legislation, and (iv) operating process reviews and information system consulting services that are unrelated to the production of accounting and financial information.

Statutory Auditors' fees for 2021

The following table sets forth the fees paid for work done by the Statutory Auditors and their network during 2021:

(in thousands of euros)

| | Deloitte network | | KPMG network | |
|---|-----------------------------|-------------|-----------------------------|-------------|
| | Amount (excluding taxes) | % | Amount (excluding taxes) | % |
| Audit –Statutory audit, certification, review of company and consolidated accounts | | | | |
| EDF | 2,840 | 27.9 | 2,942 | 15.9 |
| Controlled entities ⁽¹⁾ | 5,033 | 49.4 | 14,276 | 77.3 |
| Sub-total | 7,873 | 77.2 | 17,218 | 93.2 |
| Non-audit services⁽²⁾ | | | | |
| EDF | 832 | 8.2 | 520 | 2.8 |
| Controlled entities ⁽¹⁾ | 1,493 | 14.6 | 735 | 4.0 |
| Sub-total | 2,325 | 22.8 | 1,255 | 6.8 |
| TOTAL | 10,198 | 100 | 18,473 | 100 |

⁽¹⁾ Fully consolidated subsidiaries and jointly controlled entities whose auditors' fees are included in the consolidated income statement.

⁽²⁾ Services required by laws and regulations, and services supplied at the request of the Group. Non-audit services mainly correspond to (i) certifications of financial and accounting information or Independent Reports on social, environmental and societal information required under Article L. 225 - 102 - 1 of the French Commercial Code, (ii) services relating to disposals of entities, (iii) tax services authorised by local legislation, and (iv) operating process reviews and information system consulting services that are unrelated to the production of accounting and financial information.