



ASSESSMENT OF GREENHOUSE GAS EMISSIONS

EDF group 2019

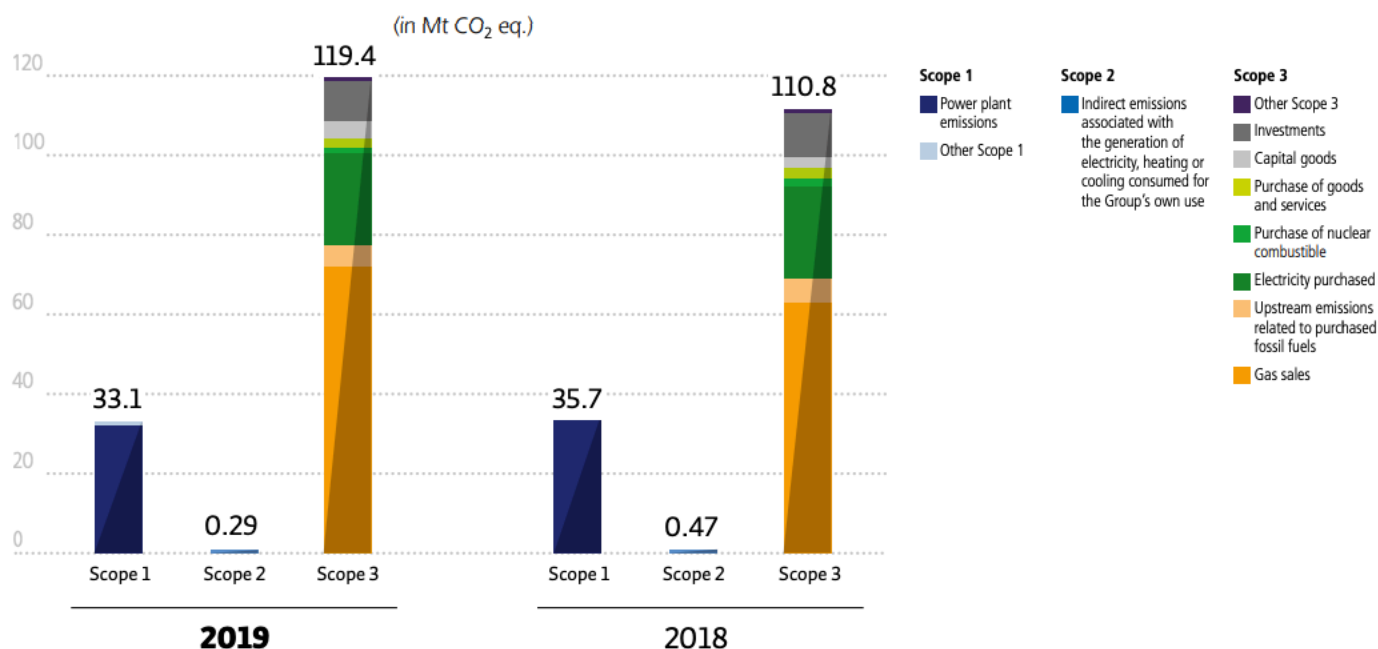
INTRODUCTION

EDF¹ publishes an Assessment of greenhouse gas emissions covering the entire EDF group² and all the main emissions sources defined by the GHG Protocol³. It is making progress every year in analysing its emissions to produce information that is as accurate and exhaustive as possible. EDF goes beyond the legal requirements and requests a verification by a third party of more than 70% of its emissions – of which 98% Scope 1, 73% Scope 2 and 66% Scope 3.

The analysis focuses on Scopes 1, 2 and 3 of the GHG Protocol, covering the greenhouse gases listed in the Kyoto Protocol (CO₂, CH₄, N₂O, HFC, PFC, SF₆, NF₃), and ranging from fuel manufacturing to employees' office activities. The data is presented in CO₂ equivalent, other gases being converted based on their global warming potential (GWP).

2019 GREENHOUSE GAS EMISSIONS

The Group's direct and indirect emissions for 2019 amount to 152.7 million tonnes of CO₂ equivalent. Two sources of emissions account for more than 70% of the Group's total environmental footprint: direct CO₂ emissions due to electricity and heat generation (most of Scope 1) and indirect GHG emissions associated with the combustion of gas sold to end customers.



EDF group's direct and indirect CO₂ emissions in 2018 and 2019

¹ The term "EDF" refers to EDF SA, the parent company. The terms "Group" or "EDF group" refer to EDF and its subsidiaries and shareholdings.

² See section on Group Perimeter

³ The Greenhouse Gas Protocol Initiative, more commonly known as the GHG Protocol, is the most internationally recognised GHG accounting method. Introduced in 1998 by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), it was developed in partnership with companies, NGOs and governments. It provides a set of resources, tools and data for carbon footprint calculation (<http://www.ghgprotocol.org/>).

Scope 1

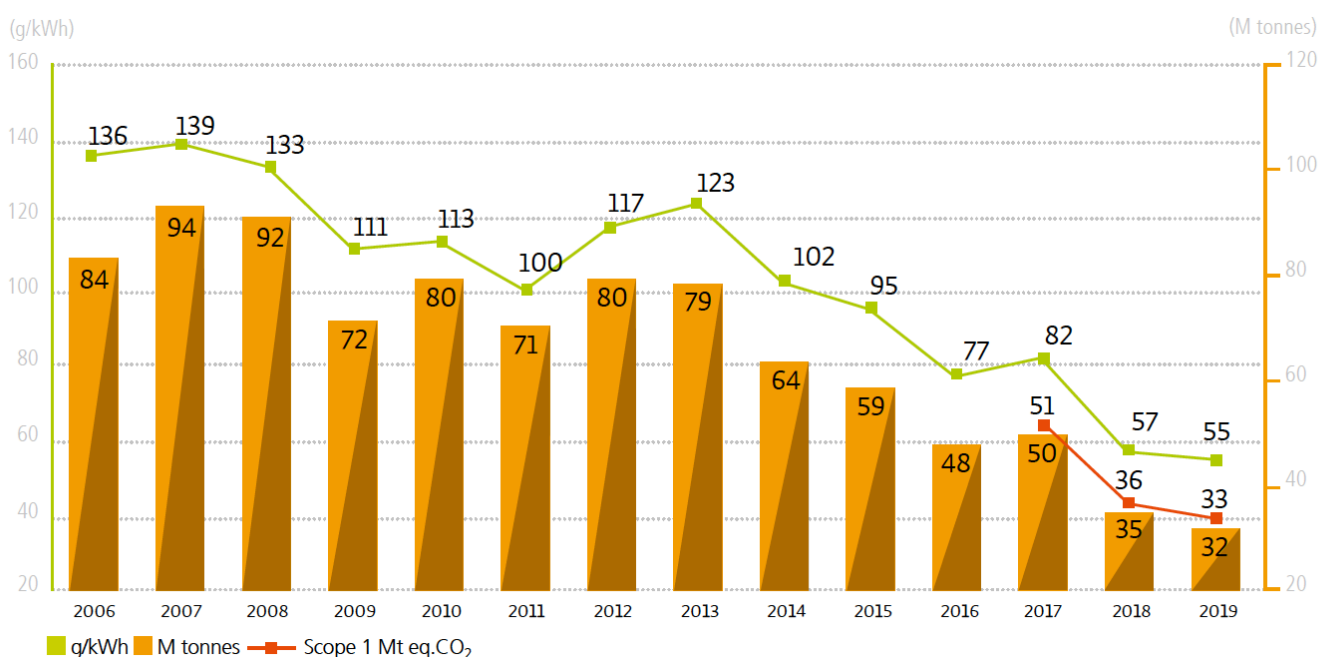
For several years, EDF group has published data on direct CO₂ emissions from heat and power generation plants, which represent over 97% of all Scope 1 emissions. These emissions and total Scope 1 emissions fell 7% between 2018 and 2019.

EDF group – Scope 1 – Direct CO ₂ emissions due to electricity and heat generation	2018	2019
Direct CO ₂ emissions from power plants (million tonnes of CO ₂ equivalent)	35.1	32.4 ✓✓
Total Scope 1 emissions (million tonnes of CO ₂ equivalent)	35.7	33.1 ✓✓

✓✓ Data audited for reasonable assurance by the Statutory Auditors, KPMG SA, appointed as an independent third party.

This fall is the result of less use of fossil-fired plants in France, due to a mild winter. Also, the rise in the price of CO₂ emission quotas along with low prices for coal and natural gas resulted in less market demand for coal generation and more use of gas generation.

It is important to underline the high level of variability in annual emissions for EDF group, due to the very low proportion of fossil-fired electricity generation in EDF's total output. Annual variations in temperatures and rainfall, as well as the availability of the nuclear facilities, can have a significant impact on how much use is made of EDF's fossil-fired plants and lead to considerable differences in annual emissions. However, the trend towards lower emissions has been entrenched since 2007, as shown in the following graph of direct CO₂ emissions (output from heat and power generation plants).



Evolution of direct CO₂ emissions from EDF group powerplants in absolute and specific values from 2006 to 2019 and total Scope 1 emissions from 2017 to 2019

Scope 2

Scope 2 emissions, which include electricity, heating and cooling purchased for EDF group's own use, are very limited compared with the rest of the assessment. Due to the Group's business activities as an electricity generator, most emissions connected to the Group's own use are reported under Scope 1. Furthermore, following the GHG Protocol's Scope 2 Guidance, the Group's Scope 2 emissions are calculated based both on the average content of the network and on supplier content. Taking a conservative reporting approach, EDF decided to report Scope 2 emissions based on the average content of the network.

Between 2018 and 2019, the Group's Scope 2 emissions fell 38%. This decrease is explained by the transition to Scope 3 of emissions linked to Dalkia's purchases of heat, which is not subject to transformation.

EDF group – Scope 2 – Indirect CO ₂ emissions	2018	2019
Indirect CO ₂ emissions (million tonnes of CO ₂ equivalent)	0.47	0.29 ✓
✓ Data audited for limited assurance by the Statutory Auditors, KPMG SA, appointed as an independent third party.		

Scope 3

Emissions associated with the combustion of gas sold to end customers account for the largest share of indirect emissions: 60.1 million tonnes of CO₂ equivalents, representing 50% of the Group's Scope 3 indirect emissions in 2019.

On top of these emissions are those from upstream operations of gas sold, estimated at 11.9 million tonnes of CO₂ equivalent. Together, these two sources of emissions total 72 million tonnes of CO₂ equivalent, or 60% of Group Scope 3 emissions.

Indirect emissions associated with the generation of electricity purchased for resale to end customers account for 22.3 million tonnes of CO₂ equivalent, or 19% of Group Scope 3 emissions.

Scope 1 and 2 emissions from power plants of companies accounted for under the equity method⁴ are reported, based on the Group's financial control approach, pro rata to its share ownership. These emissions are estimated at 10.0 million tonnes of CO₂ equivalent, i.e. about 8% of Group Scope 3 emissions (emissions from organisations reported as investments).

Upstream emissions from fossil and nuclear fuels used at the Group's power plants fell 4%, accounting for 5.4 million tonnes of CO₂ equivalent, or 5% of Group Scope 3 emissions.

Other sources of emissions account for about 8% of the Group's Scope 3 emissions.

EDF group – Scope 3 – Indirect CO ₂ emissions	2018	2019
Indirect CO ₂ emissions (million tonnes of CO ₂ equivalent)	110.8	119.4 ✓
✓ Data audited for limited assurance by the Statutory Auditors, KPMG SA, appointed as an independent third party.		

Between 2018 and 2019, the most significant emissions associated with gas sold to end customers rose 11% to 7.3 million tonnes of CO₂ equivalent. This is due to an increase in sales, mainly in the United States.

Indirect emissions associated with electricity purchased for resale to end customers saw a slight fall of 0.2 million tonnes (4%); this was due to changes in the average carbon content of the electricity in the country's concerned.

Lastly, there was a slight increase (1%) in emissions from companies accounted for under the equity method.

EDF is pursuing its efforts to provide an ever more accurate and exhaustive analysis of its indirect emissions.

GROUP PERIMETER

EDF made the choice to consolidate its greenhouse gas emissions according to the "Financial Control" approach of the GHG Protocol. The Group perimeter is determined by the consolidation method applied to companies, in line with financial standards (IAS-IFRS). Full consolidation covers all companies that the Group controls. Companies that EDF group does not control are accounted for under the equity method.

However, criteria linked to the relevance of the subsidiaries' activities in terms of environmental impact are also taken into account. As such, the assessment may not cover some subsidiaries included in the financial reporting scope if their business activity or size is deemed insignificant with regard to environmental issues. Conversely, some companies deemed to have a significant impact may be included in the environmental scope but do not appear in the financial reporting scope.

⁴ See section on Group Perimeter.

The scope defined for the assessment of GHG emissions covers the following companies and their subsidiaries: EDF SA, EDF PEI, Dalkia, Edison, Enedis, Électricité de Strasbourg, EDF Energy Services (including EDF Trading NA), EDF Energy, Framatome, EDF Renewables, Norte Fluminense, MECO, Luminus, EDF China. The subsidiaries included under the financial consolidation approach but excluded from this assessment are not significant as their emissions represent less than 5% of the Group's total environmental footprint.

The companies accounted for under the equity method and factored into the assessment (Scope 3, under investments) are: Shandong Zhonghua, Datang San Men Xia, Fuzhou, Sloe, Nam Theun, Sinop, Enercal, Électricité de Mayotte, Metropolitana, Elpedison and Ibiritermo. Scope 1 and Scope 2 emissions from these companies are calculated pro rata based on its share of ownership. Other companies that are accounted for under the equity method but excluded from this assessment represent less than 5% of emissions in this category.

BREAKDOWN OF GHG PROTOCOL EMISSIONS FOR EDF GROUP

Scope 1 Direct emissions:

- Produced by stationary combustion sources:
 - CO₂, CH₄ and N₂O emissions from fossil-fired power plants
 - consumption of fossil fuels for heating in office buildings
- Produced by mobile combustion sources:
 - Fuel consumption by fleet vehicles and worksite equipment
- Fugitive emissions:
 - fugitive emissions from hydro reservoirs
 - fugitive emissions of SF₆ and coolant leaks

Scope 2 Indirect emissions associated with the generation of electricity, heating or cooling consumed for own use:

- electricity consumption for own use (office buildings and data centres)
- consumption of heating and cooling systems for own use

Scope 3 Indirect emissions from operations not included in Scopes 1 and 2:

- purchases of goods and services
 - upstream operations of fuel used in power plants (nuclear and fossil-fired), for heating in office buildings and for fleet vehicles and equipment: extraction, refining, enrichment, transport
 - upstream operation and losses of electricity, heating and cooling systems consumed for own use
 - amortisation of emissions from the production of fixed assets (power plants, electricity networks, buildings, vehicles and equipment)
 - generation of electricity purchased for resale to end customers
 - power transmission and distribution of electricity (upstream operations and losses)
 - upstream activities and combustion of gas purchased for resale to end customers
 - other: waste management, employees work-related travel, leased assets, downstream transportation of by-products, production of consumables.
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DETAILS ON METHODOLOGY

The reporting period for the data included runs from 1 January of year Y to 31 December of year Y.

Unless otherwise indicated, the emission factors used are from the Base Carbone®, a database of emission factors administered by France's environment and energy management agency (Ademe), dating from January 2019. The GWP⁵ data used is that set out in the fifth report of the IPCC³.

Details on Scope 1

Direct emissions from fossil-fired power plants (CO₂, CH₄ and N₂O) are measured or calculated based on fuel measurements or standard emission factors, and cover all electricity generation phases, including unit commissioning and shutdown phases.

CO₂ emissions also include emissions from processes, such as flue gas desulphurisation.

⁵ GWP: Global Warming Potential.

CH₄ and N₂O emissions are then converted into tonnes of CO₂ equivalent.

Emissions due to fuel consumption by back-up power systems at nuclear power plants are calculated based on amounts of fuels purchased over the year from the Group's main supplier, as they are representative of real consumption.

Emissions associated with filling hydro reservoirs with water: these CO₂ and CH₄ emissions are calculated using an IPCC method for reservoirs of more than 1 hectare. N₂O emissions cannot be assessed using this method.

Details on Scope 2

In compliance with GHG Protocol Guidance, Scope 2 emissions are calculated based both on the average content of the network and on supplier content. Taking a conservative reporting approach, EDF decided to report Scope 2 emissions based on the average content of the network.

Electricity consumption is converted into emissions (excluding upstream operations and network losses), all uses combined, by applying the emission factor of the average mix recommended by Ademe for the first case, and the content of the company's generation mix for the second calculation method.

These emissions also include generation of electricity consumed in office buildings (heat, cooling, processes, lighting, IT systems, various equipment, etc.) and in the two main data centres.

Emissions from electricity use in office buildings are calculated by taking the average electricity use per unit of surface area from a representative sample of occupied buildings. This average use is then applied to the total surface area of office buildings.

Details on Scope 3

Emissions from upstream activities in the nuclear fuel cycle include purchases of nuclear fuel (extraction, enrichment and MOX, transportation), calculated based on the amount of nuclear fuel load over the year. An emission factor from the Ecoinvent 2.2. database is applied for MOX fuel and extraction and enrichment activities.

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**Assurance report by one of the Statutory Auditors on the Scope 1,
Scope 2 and Scope 3 totals in the Greenhouse Gas Statement for EDF
Group activities, replacing the report of 29 April 2020**

For the year ended 31 December 2019
EDF
22-30 avenue Wagram
75008 Paris
This report contains 5 pages

EDF

Assurance report by one of the Statutory Auditors on the Scope 1, Scope 2 and Scope 3 totals in the Greenhouse Gas Statement for EDF Group activities, replacing the report of 29 April 2020

This is a free translation into English of the limited assurance report issued in French and is provided solely for the convenience of English-speaking readers. This report should be read in conjunction with, and construed in accordance with, French law and professional standards applicable in France.

For the year ended 31 December 2019

For the attention of the Board,

In compliance with the engagement entrusted to us, in our capacity as Statutory Auditor of Electricité de France (hereinafter “**EDF Group**”), we hereby provide reasonable assurance on the total greenhouse gas emissions of Scope 1 and limited assurance on the total greenhouse gas emissions of Scope 2 and Scope 3, respectively.

These emissions, selected by EDF Group (hereinafter "the Data"), identified by the sign ✓ for Data covered by limited assurance and ✓✓ for Data covered by reasonable assurance, are presented in EDF Group's Greenhouse Gas Statement for 2019 annexed hereto.

The conclusion set out below relates solely to these Data and not to all the information presented.

Responsibility of EDF Group

EDF Group's Sustainable Development Department is responsible for preparing information on Scope 1, Scope 2 and Scope 3 greenhouse gas emissions, including the Data, in accordance with collection and calculation procedures (hereinafter the “**Reporting Criteria**”). The main data points are presented in EDF Group's Greenhouse Gas Statement for 2019 and available from the Sustainable Development Department upon request.

As explained in the Reporting Criteria, there is inherent uncertainty in the quantification of GHGs due to the incomplete scientific knowledge used to determine the emission factors and values needed to combine emissions of various gases.

Independence and quality control

Our independence is defined by the requirements of Article L.822-11-3 of the French Commercial Code (*Code de commerce*) and the French Code of Ethics (*Code de déontologie*) of our profession. In addition, we have implemented a quality control system including documented policies and procedures to ensure compliance with applicable laws and regulations, ethical requirements and French professional guidance.

Our responsibility

It is our responsibility, based on the work performed, to express:

- a limited assurance conclusion that the total greenhouse gas emissions of Scope 2 and Scope 3, respectively, identified by the sign ✓ are presented, in all material respects, in accordance with the Reporting Criteria.
- a reasonable assurance conclusion that the greenhouse gas emissions of Scope 1 identified by the sign ✓✓ are presented, in all material respects, in accordance with the Reporting Criteria.

We performed our work in accordance with the professional guidance of the French Institute of Statutory Auditors (*Compagnie Nationale des Commissaires aux Comptes*) and the International Standard on Assurance Engagements (ISAE) 3410¹.

An assurance engagement to deliver limited assurance in accordance with ISAE 3410 includes evaluating the suitability of the Reporting Criteria used to prepare the Data, assessing the risks of material misstatement of the Data, whether due to fraud or error, and responding to the risk assessment to the extent necessary in the circumstances.

Nature and scope of our work

The scope of an assurance engagement designed to deliver limited assurance is significantly less than that of an engagement designed to deliver reasonable assurance, both with respect to the risk assessment procedures, including the understanding of internal control, and the procedures performed in response to the risk assessment. The procedures we performed are based on our professional judgment and include making

¹ ISAE 3410 - *Assurance Engagements on Greenhouse Gas Statements* - standard that explains how to apply *ISAE 3000 - Assurance Engagements other than audits or reviews of historical financial information* - to assurance engagements for the issuance of a report on an entity's greenhouse gas balance sheet.

inquiries, observing the processes followed, inspecting documents, performing analytical procedures, evaluating the appropriateness of quantification methodologies and reporting policies, and performing reconciliations or cross-references to underlying documentation.

Our work involved the following:

- We obtained an understanding of all entities in the consolidation scope;
- We assessed the suitability of the Reporting Criteria with regard to their relevance, completeness, reliability, neutrality and understandability, with due consideration of industry best practices, where appropriate;
- With regard to the Data:
 - We performed analytical procedures to verify that the data collected were properly consolidated and that changes to the data were consistent;
 - We performed tests of details, using sampling techniques, in order to verify that the definitions and procedures were properly applied and to reconcile the data with the supporting documents. This work was carried out on a selection of contributing entities² and covers between 66% and 73% of the Data selected and identified by the sign ✓.

We believe that the work carried out, based on our professional judgment, is sufficient to provide a basis for our limited assurance conclusion; a higher level of assurance would have required us to carry out more extensive procedures.

Means and resources

Our work was carried out by a team of six people.

We were assisted in our work by our specialists in sustainable development and corporate social responsibility.

Conclusion

Based on our work, nothing has come to our attention that causes us to believe that the Data identified by the sign ✓ are not presented, in all material respects, in accordance with the Reporting Criteria.

² Sustainable Development Department, Direction SoDATA, Direction Immobilier Groupe

Reasonable assurance report on the total greenhouse gas emissions of Scope 1

Nature and scope of work

With regards to the Data selected by the company and identified by the sign ✓✓, we conducted the same procedures as those described in the paragraph "Nature and scope of work" above, but these procedures were more in-depth, particularly regarding the number of tests.

The selected sample represents 68% of the Data selected and identified by the sign ✓✓.

We believe that this work enables us to express reasonable assurance on the Data selected by the company and identified by the sign ✓✓.

Conclusion

In our opinion, the Data selected by the company and identified by the sign ✓✓ have been prepared, in all material respects, in accordance with the Reporting Criteria.

Paris-La Défense, on 19 June 2020

KPMG S.A.

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