2023 ENVIRONMENTAL REPORTING

EXTRACT FROM 2023 UNIVERSAL REGISTRATION DOCUMENT

3.5 ENVIRONMENTAL INFORMATION

ENGIE faces the main environmental challenges: climate change, the quality and availability of natural resources (air, water, soil and energy) and the protection of biodiversity and ecosystems. Although its activities have an impact on ecosystems and natural resources, the Group seeks to measure and reduce this via the environmental management of its activities.

ENGIE's challenges and ambitions in this area are reflected in the Group's environmental policy (available on the following webpage: https://www.engie.com/en/group/social-responsibility/csr-goals) and in the performance indicators deployed across all its activities. The challenges also include the risks identified in the environmental vigilance plan. A team in charge of analysis and coordination is specifically dedicated to environmental responsibility and reports to the Group CSR Department. It has environmental coordinators in each region or country who lead their own networks of coordinators, organize actions, supplement corporate expertise with their knowledge of operations, and implement environmental reporting.

The Corporate Social Responsibility Department produces an annual report which is sent to the Executive Committee and then presented to the Board of Directors' Ethics, Environment and Sustainable Development Committee.

The 2021 to 2023 indicators detailed in this Section are presented excluding EQUANS.

3.5.1 LEGAL AND REGULATORY FRAMEWORK

The Group actively monitors regulatory developments (set out in Chapter 2 "Risk factors and internal controls"), stating its positions while they are being prepared and applying the new rules as soon as they are published. In particular, the Group has been calling for the harmonization of international regulations and greater integration between the various environmental and energy policies. In view of regulatory developments, particularly European ones with the entry into force of the Corporate Sustainability Reporting Directive (CSRD), ENGIE will develop its processes and environmental reporting system in 2024.

3.5.2 ENVIRONMENTAL MANAGEMENT

At the end of 2023, the entities that had implemented an Environmental Management System (EMS) accounted for 75% of relevant revenues(1). The need to obtain external EMS certification is assessed locally with regard to local economic conditions and benefits.

Percentage of relevant revenues covered

Indicator title	ENGIE 2023	ENGIE 2022	ENGIE 2021
By an EMAS certification	8.92%	8.86%	5.00%
By an ISO 14001 (non-EMAS) certification	55.60%	59.11%	55.61%
By another external EMS certification	0.20%	0.03%	2.40%
TOTAL EXTERNAL CERTIFICATIONS	**64.73%**	**67.99%**	**63.01%**
By an internal certification (but not by a certified EMS)	10.15%	7.59%	11.23%
TOTAL INTERNAL AND EXTERNAL EMS	**74.9%**	**75.6%**	**74.2%**

When the implementation of a certified or registered management system is not economically justified, entities are encouraged to define an internal management system ensuring concern for the environment in carrying out their activities. As a result, some Group entities have defined their own management system standard. When an internal or external EMS is implemented, employees take part in awareness and training sessions relating to the environmental issues they encounter at their sites so that they adopt the EMS methodology and make it their own.

(1) Revenues generated after excluding activities not considered pertinent in terms of environmental impact: services, trading, sales, activities, etc.

3.5.3 PERFORMANCE CONTROL AND MEASUREMENT SYSTEMS, A PREREQUISITE FOR ENVIRONMENTAL RESPONSIBILITY

To monitor the implementation of its environmental policy, control environmental risks and encourage the communication of its environmental performance to stakeholders, ENGIE implements a specific reporting system which takes into account the Global Reporting Initiative (GRI) recommendations.

Environmental reporting is closely tied to operational performance reporting, thus becoming a management tool. The Group's Executive Committee transmits this goal of making environmental concerns an integral part of management responsibilities.

3.5.3.1 Methodology elements

Organization and scope

ENGIE conducts its environmental reporting using a dedicated tool that allows data to be reported following a defined methodology. This tool, called EARTH, is an environmental reporting IT solution used to manage the network of environmental correspondents and coordinators; to handle the management and documentation of the scope of environmental reporting; to manage data entry, monitoring and consolidation of indicators; to draft reports; and to provide the documentation necessary for producing and collecting data (reporting procedures and instructions). EARTH covers the entire ENGIE Group.

The legal entities included in the **reporting scope** are those whose operations are relevant in terms of environmental impact and that are consolidated fully or proportionately under the rules of financial consolidation (IFRS). Legal entities whose sole business is energy trading, financial activity or engineering are therefore excluded from the scope, as are legal entities consolidated using the equity method. The entities included in the reporting report on the performance and impacts of the industrial facilities over which they have technical operational control, including facilities operated on behalf of third parties. Nevertheless, ENGIE is rolling out its comprehensive survey of the entities consolidated by the equity method of the GBU Energy Solutions and the GBU Networks to acquire environmental-based information from a wider scope. For the entities consolidated by the equity method of the GBU Renewables, the GBU FlexGen and Nuclear, ENGIE includes primary energy data on the Group's operational performance (Perform tool). The data of entities consolidated by the equity method is only presented in the Scope 3 reporting of the Group's greenhouse gas emissions report. It should be noted, however, that the electricity capacities of entities consolidated by the equity method are also taken into account at 100% in the objective relating to the percentage of renewable energy in the electricity production capacity mix presented in Section 1.5.2.

Thus, in accordance with the rules of **financial consolidation**, 100% of the impact data collected is consolidated when the entities are fully consolidated. For joint venture entities, the environmental impact data are consolidated in proportion to the Group's consolidation rate provided that it has 100% technical operational control or that, as a minimum, this is shared with other shareholders.

For **disposals** occurring during the year, the entities concerned complete the environmental questionnaire with the data available as of the last day of the month preceding the disposal. If it is not possible to collect all the environmental indicators, they are extrapolated on the basis of the main activity (for example, energy production for a power plant) and historical data. For **acquisitions** made during the year, it may happen that their environmental management system is not sufficiently mature to meet all the environmental indicators. In this case, the missing indicators are extrapolated on the basis of the main activity and indicators available in entities with a similar technical profile. A correction of these extrapolated values can be made a posteriori the following year, at the end of the first full fiscal year.

To **calculate environmental management indicators** such as the "share of relevant revenues covered by an environmental certification, an environmental crisis management plan, etc.," the relevant revenues is estimated for each legal entity. To obtain the relevant revenues, operations regarded as "not relevant in terms of environmental impact" (e.g. trading, finance and engineering) are stripped out of the consolidated revenues figure for each legal entity.

Procedures and guidelines are rolled out Group-wide via a network of environmental contacts and coordinators. These procedures and guidelines at Group and regional or country level describe in detail the environmental data collection, control, consolidation, validation and transmission phases at the different levels of the organization, as well as the rules for defining the scope of consolidation. They include technical documents that provide methodological guidelines for the calculation of some specific indicators. Depending on its activities, each entity is assigned a profile that determines the indicators to answer. The list of the entities included in the scope of environmental reporting is approved by each region or country.

The **definitions of the indicators** used to measure the environmental performance of Group businesses have been revised based on comments made by the Statutory Auditors. They also take into account the comments by line managers represented in dedicated work groups. All the documentation is available from the Group upon request (CSR Department).

Until 2016, ENGIE would provide a "**coverage rate**" for each indicator published, corresponding to the response rate obtained from all the entities surveyed. Since 2017, with the implementation of the EARTH reporting tool, the coverage rate has been 100% for all indicators.

A certain number of methodological choices have been made to carry out the environmental reporting. These are described in the following paragraphs.

Reliability of the scope of environmental reporting, environmental impact of subcontractors and ENGIE's commitment to water conservation

- The **reliability of the scope** of environmental reporting is a priority for ENGIE, which is evolving in an international context of business disposals and acquisitions. Before every reporting campaign, the financial scope for consolidation is compared against the information fed back by each regional hub's environmental managers in order to check which industrial entities contributing to EARTH report to which financial entities. Moreover, reconciliations site by site are carried out using the Perform tool, ENGIE's database which is dedicated to the operating performance of energy production facilities, to carry out an additional verification of the comprehensive nature of the scope. Reporting is also requested from correspondents to verify and report the number of sites belonging to each contributing entity.

- Significant **environmental impacts** resulting from subcontractors during services performed at one of the Group's facilities must be included in the Group's impacts except when a specific contractual clause provides that a subcontractor is liable for impacts generated at the site while providing the service. Data provided by subcontractors is not subject to systematic internal verification before being included in Group data and is the responsibility of the subcontractors alone. Regulations and legal obligations related to the environment may differ from one country to another, and certain data may thus be sometimes more difficult to gather.
- Since 2007, ENGIE has been a signatory to the CEO Water Mandate, thus demonstrating its commitment to the **preservation of water resources**. The water indicators are consistent with the GRI indicators and fall into four categories: withdrawal, discharge, consumption, reuse / recycling. Since 2015, the materiality of the water indicators published has been reviewed and the Statutory Auditors verify the inputs, outputs and consumption of fresh and non-fresh water as well as total consumption.

3.5.3.2 Indicators

Non-GHG indicators

- NOx, SOx and fine particulate matters emissions are calculated locally on the basis of measurements. If discontinuous measurements are taken on a site, an average of the measurements over the last five years is taken where possible to avoid inconsistencies related to one-off measurements. For facilities burning natural gas that do not have automated measurement systems, a calculation method is provided for NOx emissions and a default emission factor for SOx (0.281 g / GJ LHV) and an other for fine particle emissions (0.9 g / GJ LHV) have been set up, both factors are recommended by the European Monitoring and Evaluation Programme – EMEP.
- As it is concerned about what becomes of the waste generated by its activities, the Group has indicators on the production and recovery of the waste generated by its activities. These are based on definitions of waste and recovery established by local regulations. To avoid erroneous data about stock, only the tonnages taken away and weighed on site are reported as disposed of. The tonnages that must be reported are wet or dry, depending on the way they are disposed of: if the waste disposed of was wet, the reported tonnages are wet and the converse for dry waste. As an exception, if the waste is permanently stored on site, the associated dry tonnages must also be reported as disposed of. In the latter case, the waste is never recovered. Waste generated by the construction or dismantling of facilities, by the repowering or upgrading of facilities, and by soil rehabilitation, are not covered by the indicators for waste generated by activities.
- ENGIE operates hydraulic installations, some of which have water tanks. Given the difficulties in modeling the evaporation of each site, the evaporated water is not yet included in environmental reporting.
- Since 2022, pumping storage stations have been recognized in the same way as batteries, as recommended by the European taxonomy. In this regard, electricity consumption corresponds to the difference between electricity supplied by the network and that returned to the network. The latter, as a result, is no longer accounted for under ENGIE's electricity production. This modification was applied with retroactive effect as from 2015 for the sake of consistency.
- For the sake of consistency, the factor for converting thermal power produced (GWhth) into electric power (GWhe) is set at 0.25 for incinerators and at 0.61 for all of the Group's procurement and energy production activities. This last factor was updated with retroactive effect as of 2015 on the basis of European Commission Delegated Regulation 2015/2402.
- The energy efficiency indicator covers fossil fuel and biofuel power plants. It also includes heat supplied by third parties as well as steel gases (see the note on heat and that on steel gases below). For sites supplied with heat, both the input and output are taken into account when calculating efficiency.
- For open-loop energy production sites without a cooling tower, cooling water outflows are considered equal to cooling water inflows, corresponding to zero cooling water consumption due to the proximity of the river source or sea. For closed-loop energy production sites (heat networks), water make-up is considered a form of water consumption, thus maximizing the measurement of their water consumption.

GHG indicators: direct emissions (Scope 1)

- CO_2 emissions from the combustion of fossil fuels were calculated based on the most recent emission factors published by the IPCC (IPCC Guidelines for National GHG Inventories, Vol. 2 Energy – 2006). However, the emission factors for coal can vary greatly depending on the provenance. For this reason, each reporting entity consuming coal provides a locally calculated emissions factor. This also holds for alternative fuels for which it is not possible to use standard emission factors.
- The biomass and biogas consumed by ENGIE in its facilities generates energy that is counted as ENGIE production and, in accordance with conventions in this area, ENGIE counts CH_4 and N_2O emissions associated with their combustion when these fuels are used to produce energy but does not count CO_2 emissions.
- The Global Warming Potential (GWP) compares the warming capacity of the various greenhouse gases to CO_2. The GWP used to convert the Group's greenhouse gas (GHG) emissions to CO_2 equivalent are the latest GWP published by the IPCC (sixth IPCC Assessment Report – 2022), considered on a 100-year scale.
- ENGIE carries out residual gas recovery services for its steel producing customer ArcelorMittal. This service allows ArcelorMittal to meet the majority of its electricity needs and thus reduce its GHG emissions by avoiding a high level of energy use by the network. When analyzing the GHG emissions relating to these services, ENGIE has noted that 100% of the emissions relate to the steel manufacturing process. At the end of this process, regulations require that steel producers burn residual gases, generally through flaring. ENGIE only intervenes in this process to extract energy that would otherwise have been lost to flaring, by taking over for ArcelorMittal in the burning of the residual gases, but without generating additional GHG emissions. This is why ArcelorMittal's reporting methodology includes direct emissions from the external plants to which the residual gases are delivered for recovery. This state of affairs is confirmed by Law No.2019-1147 of November 8, 2019 on climate and energy and the related decrees which set the greenhouse gas emissions ceiling for fossil-fueled power plants. Decree No. 2019-1467 of December 26, 2019 states that "Emissions from waste gases used in electricity production facilities are not recognized." Consequently, ENGIE now excludes these GHG emissions from its Scope 1 and the DK6 power plants in France and the Knippegroen and Rodenhuize power plants in Belgium no longer report emissions associated with steel gases. As these are residual gases and not fuel with a supply chain, ENGIE does not include emissions from an upstream fuel chain in its Scope 3. with the exception of GHG emissions related to the

combustion of steel gases, all environmental indicators for these entities are included in the consolidated data, as well as their energy production which is included in the calculation of the Group's specific emissions.

GHG indicators: indirect emissions (Scopes 2 and 3)

- The nature of heating purchases accounted for under scope 2 changed since 2022. Heating from Energy Recovery Units (ERU) or non-ERU is no longer included in the calculation of Scope 2 emissions. ENGIE is therefore in line with French practices in this area, as set out in the methodology of the Syndicat National du Chauffage Urbain (the French national district heating syndicate – SNCU) in response to the annual survey on Heating and Cooling Networks. This survey serves as national statistics for the Ministry of Energy Transition and the basis of calculation for CO_2 content and the EnRR rate of each network published in the energy performance diagnosis decree. Heating purchases taken into account only relate to heating produced excluding ERU. Based on MWh purchased, an average loss rate of 16.5% supplied by the SNCU is used to recognize MWh of heat lost during transmission and calculate scope 2. In 2022, heating purchased generated excluding ERU represented 8.11% of all heating acquired. In the absence of historical data to distinguish between ERU heating and non-ERU heating, the same percentage has been applied retrospectively since 2015 for the sake of consistency.
- Two methodological changes have occurred since 2022 on Scope 2, with retroactive effect from 2015. These include the exclusion of recovered heat from ERU and the transition of pumped storage stations from the status of electricity production facilities to that of batteries.
- In 2023, two methodological changes were made to Scope 2. The first was the taking into account of losses on electricity transmission networks. The second was the addition of market-based Scope 2 in the reporting (in addition to the information related to location-based electricity networks). For market-based, a green emission factor is applied to electricity consumption for which the Group has certificates or guarantees of renewable origin. The country-specific electricity network emission factors for the calculation of "location-based" emissions and "green" emission factors are taken from the ENERDATA database and data from the European Network of Transmission System Operators for Electricity (ENTSO-E). Residual emission factors were calculated by our marketer, GEMS (Global Energy Management & Sales), based on AIB (*Association of Issuing Bodies*) data. The data used are the composition of the residual mix and its percentage in relation to the network mix, as well as Group internal data on the annual volumes of electricity consumed by country. For other countries, residual values which are often unavailable are taken from network factors. These elements have been added in the 2023 reporting but the total GHG emissions (Scopes 1 + 2 + 3) are still presented under location-based.
- In the "Use of sold products (fuels sold to end-consumers, off market)" indirect emissions category, the term "end-consumer" refers to customers who use the natural gas purchased themselves. Volumes sold to trading platforms, resellers, Local Distribution Companies or other intermediaries not owned by ENGIE are, therefore, excluded.
- For Scope 3, the category "indirect GHG emissions associated with energy" includes GHG emissions from the upstream fuel chain, the upstream chain of electricity and heat consumed and, since 2022, those from the upstream electricity chain purchased for resale. To calculate the latter emissions, emissions of the TWh sold are determined by first calculating the emissions from ENGIE's production. The emission factors used for this include the complete LCA, including the construction of the installations, except for combustion installations for which the factors are applied to their actual fuel consumption. This method is more precise than the calculation based on the LCA for this type of installation. These production emissions are then deducted from ENGIE's total sales in the countries concerned, calculated on the basis of European average factors including the complete LCA.
- Emissions in the "Investment" category correspond to direct emissions from energy production and those from other activities such as gas networks. In 2023, following the extension of the environmental data collection to the entities consolidated by the equity method of the GBU Energy Solutions and the GBU Networks, the "investments" category includes indirect emissions due to the purchase and consumption of electricity and heat. The emissions reported in this category of Scope 3 are the emissions of entities at the Group's ownership rate.
- For the category "uses of sold products," in addition to non-renewable fuels, sales of biomass and biomethane to end-users are now collected by calculating biogenic emissions. This last addition also makes it possible to supplement the emissions from the upstream chain of the two fuels biomass and biomethane.
- Although less significant CO2 emissions calculated on the basis of Ways of Working are now integrated into Scopes 1, 2 and 3. Some categories are available over the three years presented in this chapter, others only for 2023.

3.5.4 GROUP ACTIONS

3.5.4.1 Climate change

Direct emissions

Information presented in this Section and in Section 2.2.2 "Climate change" reflects the financial risks associated with the effects of climate change and the measures taken by the company to mitigate them by implementing a low carbon strategy in all areas of its business as required by Article L.225-37 of the French Commercial Code.

By developing a low carbon [(1)] energy mix and through its energy efficiency activities, the Group has put energy transition and the fight against climate change at the heart of its strategic focus. Thus the carbon intensity of energy production in 2023 was 131.4 $gCO_2eq.$ / kWh, down 13.4% from 2022 and 70.3% from 2012. The Group's absolute direct $CO_2eq.$ emissions, known as "Scope 1 emissions," fell by more than 5.5 million tons in one year, from 30 tons to 24.5 million tons, a 18.2% reduction.

(1) The share of energy production from non-fossil sources has increased by 121% in nine years, from 28.6% in 2015 to 63.2% in 2023.

These results reflect the Group's desire to follow an emissions trajectory compatible with the Paris Agreement: total disengagement from coal and growth in green energy (renewable electricity and biogas).

In addition, the Group supports TCFD's (Task Force on Climate-related Financial Disclosures) recommendations for greater transparency on the risks and opportunities related to the impacts of climate change and produces a TCFD report when it publishes its Climate Notebook. The Group publishes its Scope 1, 2 and 3 (main items) emissions and answers the CDP's Climate Change questionnaire each year.

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Total direct GHG emissions – Scope 1 □□	t CO_2 eq.	24,496,514	29,943,790	36,703,290
of which emissions from energy production	t CO_2 eq.	22,243,521	27,918,015	34,376,035
of which emissions from Networks	t CO_2 eq.	1,962,875	1,712,245	1,954,553
- Proportion due to CH4 in Gas distribution	t CO_2 eq.	1,068,498	947,586	1,197,204
- Proportion due to CH4 in Gas transmission	t CO_2 eq.	176,880	192,740	247,550
- Proportion due to CH4 in Gas storage	t CO_2 eq.	72,918	78,928	92,691
- Proportion due to CH4 in LNG terminals	t CO_2 eq.	135,151	44,354	86,637
- Proportion due to other sources (other combustion, vehicles, fluorinated gases, etc.)	t CO_2 eq.	509,428	448,637	330,471
of which emissions from other activities (vehicles, fluorinated gases, working methods, etc.)		290,118	313,530	372,702
GHG emissions per unit of activity – energy production	kg CO_2 eq. / MWheq.	131.4	151.7	180.1

□□ *Verified by the Statutory Auditors with "reasonable" assurance for 2023 (see Section 3.12).*

Indirect emissions

The Group's approach to GHG emissions accounting and reporting is based on the GHG Protocol Corporate Standards (for companies) and the ISO 14064 standard (supplemented by ISO 14069). These standards constitute an internationally recognized reference framework.

ENGIE has analyzed the various categories of emissions in order to identify and quantify the most pertinent categories. The following categories have been identified and quantified to date.

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Scope 2 – Indirect emissions related to energy consumption				
Scope 2 "Location Based" – Indirect emissions associated with energy	t CO_2 eq.	654,073	850,154	552,962
of which indirect emissions related to power consumption	t CO_2 eq.	584,526	749,362	543,973
of which indirect emissions related to the consumption of steam, heating or cooling	t CO_2 eq.	6,428	8,486	8,989
of which indirect emissions linked to losses on electricity transmission networks	t CO_2 eq	63,119	92,307	
Scope 2 "Market Based" – indirect emissions associated with energy	t CO_2 eq.	847,043	-	-
of which indirect emissions related to power consumption	t CO_2 eq.	777,496	-	-
of which indirect emissions related to the consumption of steam, heating or cooling	t CO_2 eq.	6,428	-	-
of which indirect emissions linked to losses on electricity transmission networks	t CO_2 eq.	63,119		
Scope 3: Other indirect GHG emissions				
Scope 3 – Total	t CO_2 eq.	133,337,361	144,543,263	122,622,236
Cat. 3.1 – Purchased products and services	t CO_2 eq.	5,936,639	5,465,933	5,486,727
Cat. 3.2 – Capital equipment	t CO_2 eq.	3,051,298	2,820,304	2,206,878
Cat. 3.3 – Upstream commodity chain (Energy-related emissions not included in the "direct GHG emissions" and "indirect energy-related GHG emissions" categories)	t CO_2 eq.	41,451,946	42,168,536	17,796,478
of which emissions for electricity purchased for resale	t CO_2 eq.	28,533,202	26,250,871	-
Cat. 3.5 – Waste generated by activities (services paid for)	t CO_2 eq.	2,265	0	0
Cat. 3.6 – Business travel	t CO_2 eq.	43,177	26,762	13,636
Cat. 3.7 – Employee commuting	t CO_2 eq.	56,591	66,222	91,396
Cat. 3.11 – Use of sold products (fuels sold to third parties, off market)	t CO_2 eq.	52,536,380	61,288,580	65,561,304
of which sales of natural gas and LNG	t CO_2 eq.	52,526,771	61,279,489	65,560,855
of which sales of biomass and biomethane	t CO_2 eq.	9,609	9,091	449
Cat. 3.15 – Investments (GHG emissions from power plants consolidated under the equity method)	t CO_2 eq.	30,259,065	32,706,929	31,465,816
of which emissions from energy production	t CO_2 eq.	29,969,276	32,184,853	31,465,816
of which emissions from other activities	t CO_2 eq.	289,789	522,076	-

□□ *Verified by the Statutory Auditors with "reasonable" assurance for 2023 (see Section 3.12).*

Climate change adaptation

Adaptation through anticipation of the negative impacts of climate change is key to making ENGIE's networks and activities more resistant to natural hazards (more extreme events such as floods and droughts, etc. and other more progressive phenomena such as rising sea levels, rising temperatures, etc.). The risks generated by climate change are varied and include physical risks, risks of disruption to value chains, reputational risks and regulatory risks.

ENGIE is implementing practical measures to guard against this set of risks, including, for example, the construction of a perimeter wall to tackle the risk of exceptionally heavy flooding at the Tihange site in Belgium, a vegetation project to prevent soil erosion in the event of storms in Mexico (Mina Solar solar park), the digging of ditches and a reservoir to deal with the risk of flooding at the Capel Grange solar park (United Kingdom).

The Group has also established methods to help its various sites to draw up adaptation action plans. The use of tools, such as Aqueduct software for managing and analyzing water risks and areas of water stress, helps the Group to identify local-scale risks and enables it to identify adaptation strategies tailored to the problems and features of each site.

Adapting to climate brings multiple beneficial effects for ENGIE: anticipating risks enables it to manage its assets better, cut costs and expand its market to new products and services.

3.5.4.2 Renewable energy

The strengthening of the Group's capacity in renewable energy has continued, for both electricity and heat production and, in the case of biogas, for transportation. In 2023, the renewable energy capacities of facilities controlled by ENGIE, excluding equity-accounted companies and unconsolidated operations, represented 25.9 GW equivalent of installed energy (GWeeq).

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Renewable – Net installed power (electric and thermal) □□	MWeeq.	25,874	22,291	20,450
Renewable – Electricity and Heat produced □□	GWheeq.	78,529	70,383	63,765
Energy produced – share of large hydropower	Percentage	56.8%	59.6%	60.4%
Energy produced – share of small hydropower	Percentage	1.0%	1.2%	1.3%
Energy produced – share of wind	Percentage	26.8%	23.1%	22.6%
Energy produced – share of geothermal	Percentage	0.4%	0.4%	0.4%
Energy produced – share of solar	Percentage	8.8%	7.1%	4.8%
Energy produced – share of biomass and biogas	Percentage	6.2%	8.6%	10.6%
Renewable and Non-Renewable – Electricity and Heat produced	GWheeq.	169,345	183,986	190,864
Renewable share of total electricity and heat produced	Percentage	46.4%	38.3%	33.4%

□□ *Verified by the Statutory Auditors with "reasonable" assurance for 2023 (see Section 3.12).*

3.5.4.3 Energy efficiency

For electricity and heating production facilities, energy performance is directly connected to the site's efficiency which influences its profitability. Measures taken to improve the generation fleet, and which are compliant with environmental regulations and the constraints of the electricity market, have helped optimize its energy efficiency and, hence, consumption of raw materials. For example, the replacement of older turbines or boilers with recent models has an immediate positive impact on a facility's energy efficiency.

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Energy production of controlled facilities (Scope 1)	GWheeq.	169,345	183,986	190,864
Energy production of equity-accounted facilities (Scope 3)	GWheeq.	92,222	88,544	93,230
Primary energy consumption – total (excluding own consumption) □□	GWh LHV	217,479	278,430	318,311
Share of coal / lignite	Percentage	2.03%	4.79%	10.04%
Share of natural gas	Percentage	46.32%	41.35%	36.56%
Share of fuel oil (heavy and light)	Percentage	1.38%	0.83%	0.76%
Share of uranium	Percentage	42.38%	44.68%	44.72%
Share of biomass and biogas	Percentage	4.36%	4.77%	4.34%
Share of other fuels	Percentage	3.35%	3.43%	3.25%
Share of fuel in transport	Percentage	0.18%	0.14%	0.33%
Electricity and thermal power consumption (excluding own consumption) □□	GWheeq.	6,323	6,692	7,499
Energy efficiency of fossil fuel plants (including biomass / biogas) □□	Percentage	50.4%	49.6%	47.6%

□□ *Verified by the Statutory Auditors with "reasonable" assurance for 2023 (see Section 3.12).*

3.5.4.4 Nuclear energy

Maintaining a very high level of safety at the nuclear reactors operated by Electrabel is a key priority for the Group. Electrabel also attaches great importance to limiting the environmental impact of these facilities (e.g. emissions, waste). Each plant publishes an annual environmental on the Electrabel website.

Waste from nuclear power plants, particularly radioactive waste, is monitored by Electrabel, but also by the national body for radioactive waste and enriched fissile materials (ONDRAF) and its subsidiary Belgoprocess, which is responsible for the management of radioactive waste from nuclear power plants. The detailed information to be published about volumes of fuel or of high-level radioactive waste is specified by the Belgian Royal Decree of October 17, 2011 titled "Royal Decree regarding the physical protection of nuclear materials and nuclear installations."

Provisions for the downstream portion of the nuclear fuel cycle (operations relating to fuel after its use in a nuclear reactor) and for the costs of decommissioning nuclear power plants after they are shut down, are shown in Section 1.6.5.2.

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Radioactive gas emissions				
Rare gases	TBq	37.01	32.19	36.12
Iodines	GBq	0.03	0.03	0.03
Aerosols	GBq	0.04	0.28	0.27
Radioactive nuclear waste (low and medium level)	m^3	123	182	186
Radioactive liquid wastes				
Beta and Gamma emitters	GBq	10.20	14.95	11.46
Tritium	GBq	56.30	101.80	83.49

The risk factors relating to nuclear power are presented in Section 2.2.7 "Risks related to nuclear activities."

3.5.4.5 Water

As a committed player in water management, ENGIE is taking part in the current debate over the management of priority basins and water stewardship, alongside organizations such as the CEO Water Mandate of the UN Global Compact and the OECD. The Group has set itself the target of reducing water consumption for energy produced by 2030 and is continuing to implement action plans for sites facing high or extreme water stress. In 2023, ENGIE was awarded an A- rating by the CDP Water Disclosure program.

Each year, as part of the optimization of its energy production, ENGIE assesses the risk of water stress for the Group's industrial sites using the Baseline Water Stress Index and the Aqueduct tool (World Resource Institute) which maps different water-related risks. In 2023, 53 sites were located in areas with extremely high water stress, i.e. 7% of sites (excluding solar and wind), for which action plans have been finalized and are being implemented. The impact of water stress is relative, however, as it depends on the site's activity and fresh water needs. Only five out of the 53 sites have substantial freshwater requirements (more than 100,000 m^3 / year). For the others, the challenge is rather how to indirectly help to preserve water resources, for example by proposing the reuse of the water by other entities in the drainage basin. All of the Group's initiatives have resulted in a 36.5% reduction since 2017 in freshwater withdrawals (salt free water) and 50% in total water consumption (fresh and salt water combined).

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Fresh water				
Total withdrawal	Mm^3	1,773	1,658	2,406
Total discharge	Mm^3	1,726	1,603	2,340
Non-fresh water				
Total withdrawal	Mm^3	4,292	5,215	5,249
Total discharge	Mm^3	4,276	5,191	5,218
Total consumption (Withdrawals – Discharges)	Mm^3	62	80	96

3.5.4.6 Waste

ENGIE took the recommendations of an internal audit on waste management and incorporated them into its environmental policy released in 2017. Its chief aim was to reduce the quantities of waste it produces and to increase its rate of waste recovery. The Group has set operational production reduction objectives for hazardous waste (-95% vs 2017) and non-hazardous waste (-80% vs 2017) by 2030.

These reduction efforts are supplemented by the monitoring of recovery rates of 83% for non-hazardous waste and of 24.4% for hazardous waste in 2023. The Group's industrial sites actively seek local waste recovery solutions, even though some of these channels remain dependent on market opportunities governed by the laws of supply and demand.

Food waste and associated waste only relate to group catering for employees. In this area, ENGIE selects subcontractors that include missing space measures against food waste in their specifications.

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
Total quantity of non-hazardous waste and by-products discharged (including sludge)	t	753,711	1,459,706	2,875,114
• Fly ash, refioms (residues from the purification of incineration fumes from household waste)	t	84,857	660,169	1,669,050
• Ash, bottom ash	t	220,895	513,615	702,669
• Desulfurization by-products	t	13,992	53,170	69,841
• Sludge	t	39,013	13,484	21,269
• Driftwood	t	5,097	10,783	11,508
Total quantity of non-hazardous waste and by-products recovered (including sludge)	t	625,771	1,164,816	2,419,194
Total quantity of hazardous waste and by products discharged (including sludge and excluding radioactive waste) □□	t	26,797	23,506	33,601
Total quantity of hazardous waste and by products recovered (including sludge and excluding radioactive waste) □□	t	6,537	4,926	5,180

□□ *Verified by the Statutory Auditors with "reasonable" assurance for 2023 (see Section 3.12).*

3.5.4.7 Atmospheric pollutants

ENGIE uses a wide range of techniques to further reduce its emissions: reduction at the source using a tailored energy mix, optimization of combustion and treatment of fumes, filters or water injection to reduce all particles (of all sizes), installation of low-NOx burners or use of urea injection (secondary treatment) to control nitrogen oxides, and choosing fuels with very low sulfur content to reduce sulfur dioxide emissions.

The Group has set operational objectives to reduce NO_x (-75% vs 2017), SO_x (-98% vs 2017) and total particle emissions (-60% vs 2017) by 2030.

Indicator title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021
NOx emissions	t	27,037	34,197	49,819
Incl. energy production	t	26,676	33,896	49,574
SOx emissions	t	3,396	7,418	106,028
Incl. energy production	t	3,379	7,400	106,007
Fine particle emissions	t	2,832	3,398	5,820
Incl. energy production	t	2,823	3,391	5,815
Mercury emissions	kg	104	139	347
Incl. energy production	kg	38	49	198

3.5.4.8 Management of biodiversity

Biodiversity is a natural heritage that is essential to human health and well-being, but also to economic activities. ENGIE, through its industrial activities, has a direct potential impact on biodiversity (ecological continuity, avifauna, piscifauna, etc.), and an indirect impact via the supply chain. The Group is also dependent on biodiversity, notably through its use of biomass resources and water and climate regulation provided by ecosystem services.

According to international experts at IPBES [(1)], biodiversity is threatened by five major pressures: changes in land use, the overexploitation of resources, climate change, pollution and invasive exotic species. Fragmentation and disturbance of habitats caused by the territorial of our sites and soil sealing are the main impact of the main impact of ENGIE's activities on biodiversity.

(1) Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

Since 2010, the Group has integrated biodiversity into its strategy and activities. It now has a dedicated policy and key commitments through the "act4nature international" initiative and "Entreprises Engagées pour la Nature." The act4nature international commitments were renewed in October 2023 and a two-year review of the "Companies committed to nature" commitments was sent to the French Biodiversity Office. Full details of these commitments and their progress are available on ENGIE's website at the following address: www.engie.com/en/group/social-responsibility/csr-goals/biodiversity

Examples of objectives and actions carried out by the Group include the restoration of natural habitat (hedges, grassy strips, wetlands), the reduction of the impact of wind turbines on wildlife, the installation of fish ladders at dams, ensuring that gas-grid easements contribute to ecological continuity, and applying differentiated landscaping to green spaces.

The Group develops its projects in line with the "Avoid, reduce and offset" approach. The risk assessment takes the form of a CSR matrix required for all major projects.

All of the Group's sites are analyzed each year with regard their proximity to various protected areas (IUCN categories I to VI, Ramsar, UNESCO natural and mixed, KBA, MAB). Each site located less than 15 km from a protected areas works on implementing action plans developed in consultation with the relevant stakeholders.

The Group has also made a strong commitment to manages the sites in a manner that respects nature, by discontinuing the use of chemical phytosanitary products and contributing to the restoration of ecological continuity.

In 2023, the Group measured its biodiversity footprint using the Global Biodiversity Score tool. A summary of the results will be presented on the website in the first half of 2024.

Objective title	Unit	ENGIE 2023	ENGIE 2022	ENGIE 2021	2030 target
Development of action plans for industrial sites located in or near a biodiversity hotspot, within a 15 km radius.	%	62	60	41	100
Introduction of ecological management of the Group's industrial sites, including nature-friendly maintenance of green spaces and zero phytosanitary products	%	58	34	28	100

In pursuit of its commitment to biodiversity, the Group relies on the skills and expertise of its two historic partners: the French committee of the IUCN (International Union for Conservation of Nature) and France Nature Environnement (FNE). Since 2009, the French IUCN committee has been providing ENGIE with its expertise to further integrate biodiversity into its strategy, and since 2008, FNE has been helping to establish contacts with local experts and to raise awareness of issues such as the application of the "avoid, reduce and offset" approach in France. These partnerships are developed on a three-year basis. Since 2022, these partnerships have seen the addition of a partnership with the Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) under the Proteus program.

3.5.4.9 Managing risk and environmental complaints

The management of environmental risks has two components: risk prevention and crisis management.

Indicator title	ENGIE 2023	ENGIE 2022	ENGIE 2021
% of relevant revenues covered by an environmental risk prevention plan	93.7%	96.0%	82.8%
% of relevant revenues covered by an environmental crisis management plan	90.9%	95.3%	88.6%

The Group handles any environmental complaints. A summary is given below:

Indicator title	ENGIE 2023	ENGIE 2022	ENGIE 2021
Environment-related complaints	4	20	13
Environment-related convictions	0	1	2
Amount of compensation (*€ thousands*)	0	9	697
Environmental expenditure (*€ thousands*)	924,914	902,683	632,298

Complaints received by ENGIE subsidiaries were as follows:

- in Belgium, wind farm managers received one complaint for noise pollution and one relating to disturbances associated with the strobe effect of the turbines.
- in the Netherlands, the manager of the Levanto wind farm received a complaint that icy concretions fell on a vehicle;
- in Romania, a complaint was received for noise pollution related to a measuring station in the gas distribution network.

Assessments have been, or are being, carried out for all these complaints and talks with stakeholders are underway.

A fine was also paid by the Energia Mayakan site in Brazil following a check on the diameter of a water evacuation pipe which did not correspond to the one authorized by the operating permit. Work was carried out to bring the water discharge into compliance.

In 2023, environmental expenses (investments and current operating expenses related to environmental preservation) amounted to around €925 million.

3.5.4.10 Noise pollution

Any industrial activity is a source of noise pollution. In order to reduce these impacts, Group entities conduct regular soundproofing work (acoustic cladding, noise barriers, containment, etc.). For more recent projects, reducing this potential form of noise pollution is directly integrated into the design.

For its renewable energy projects, particularly onshore wind and solar power, ENGIE conducts impact studies and offers support measures to prevent, reduce or offset any noise or visual impact. Examples of such actions include defining and implementing turbine restrictions (stoppage or reduced power at key times and / or under certain wind conditions), conducting specific actions with builders to reduce the sound power of machines, seeking better harmonization with the landscape during the design and, after construction, initiating planting and vegetation schemes on sites or for neighbors if there is an obvious visual impact.

3.5.4.11 Land use

Protection of soil and groundwater is an integral part of the Group's environmental policy. The environmental consequences of soil pollution can be significant, as can the costs of subsequent remedial measures. It is therefore important to prevent this risk and to hedge it with financial provisions. These amounted to €1.388 billion in 2023 and concerned site rehabilitation, decommissioning of non-nuclear facilities and scheduled product elimination. In this area, ENGIE complies with the regulations in each of the countries in which the Group operates.

For example, a soil pollution survey was carried out at several power plant sites in Belgium. Risks were assessed in conjunction with the appropriate environmental authorities and a remediation program was implemented.

ENGIE owns a number of former gasworks. These sites may be affected by oil, heavy metals and other volatile substances that can adversely affect health. As a result, they must be repaired before reuse. In 1996, a 10-year plan was agreed via a memorandum between Gaz de France and the French government to rehabilitate these sites, which have been compatible with their use from a health perspective since 2007. When disposing of these former sites, ENGIE is committed to ensuring that the buyer's project is compatible with the environmental and industrial liabilities of the site and that the risk to the environment and residents is effectively managed. At all its sites, the Group monitors the soil and groundwater, in accordance with its operating permits, in order to prevent pollution.

Moreover, in order to more firmly anchor its presence in the regions, ENGIE has established a structured system of dialog with its stakeholders, pursuant to the main international standards (AA1000, ISO 26000, the Global Compact principles, and OECD guidelines). This system is based on regular meetings with NGOs and non-profit associations, and on the development of long-term partnerships in connection with ENGIE's activities. The dialog is defined at Group level and then rolled out to each regional hub according to specific local requirements in terms of issues, activities and regulations. As part of these new 2030 CSR objectives, ENGIE aims to cover 100% of its industrial activities in 2020 with a structured stakeholder dialog and consultation mechanism.

Gas pipelines account for one form of land use by ENGIE. As the gas lines are buried, they do not break up natural habitats on the surface as they do not prevent species from moving around as they should. Nevertheless, they can have a negative impact on underground habitats. Gas pipelines can also generate land-use conflicts and GRTgaz has therefore established amicable easement agreements in France with all the owners of the land crossed, following consultation periods (the signing rate for amicable agreements is regularly >90% for projects). These agreements define land usage restrictions for the owners (prohibition on building in pipeline locations and planting vegetation higher than 2.70 m) in exchange for compensation. More specific work is carried out with the agricultural industry to preserve land use for farmers as part of their professional activity.