

Fighting climate change and ensuring environmental sustainability

35.4 million m³

TOTAL WATER CONSUMPTION

-21.7% on 2022

€17,982 million

ORDINARY EBITDA FROM LOW-CARBON PRODUCTS, SERVICES AND TECHNOLOGIES⁽¹⁾

73.2%

ZERO-EMISSIONS GENERATION

(% of total)

€12,837 million

CAPITAL EXPENDITURE ON LOW-CARBON PRODUCTS, SERVICES AND TECHNOLOGIES

(1) Ordinary EBITDA for low-carbon products, services and technologies represents the ordinary gross operating margin of the low-carbon products, services and technologies included in the following business lines: Enel Green Power, Enel Grids, Enel X and End-user Markets (excluding gas).

Main climate change indicators

		2023	2022	Change	
Direct greenhouse gas emissions - Scope 1	MtCO _{2eq}	34.51	53.07	(18.56)	-35.0%
Indirect greenhouse gas emissions - Scope 2 - location based ⁽¹⁾	MtCO _{2eq}	3.28	3.82	(0.54)	-14.1%
Indirect greenhouse gas emissions - Scope 2 - market based ⁽¹⁾	MtCO _{2eq}	4.51	5.10	(0.59)	-11.6%
Indirect greenhouse gas emissions - Scope 3 ⁽²⁾	MtCO _{2eq}	56.53	71.04	(14.51)	-20.4%
- of which emissions connected with gas sales ⁽²⁾	MtCO _{2eq}	16.79	20.63	(3.84)	-18.6%
Intensity of Scope 1 GHG emissions related to power generation ⁽³⁾	gCO _{2eq} /kWh	160	229	(69)	-30.1%
Intensity of Scope 1 and Scope 3 GHG emissions related to Integrated Power ⁽⁴⁾	gCO _{2eq} /kWh	168	210	(42)	-20.0%
Specific emissions of SO ₂	g/kWh _{eq}	0.09	0.07	0.02	28.6%
Specific emissions of NO _x	g/kWh _{eq}	0.26	0.32	(0.06)	-18.8%
Specific emissions of particulates	g/kWh _{eq}	0.006	0.005	0.001	20.0%
Zero-emission generation as percentage of total	%	73.2	61.0	12.2	20.0%
Total direct fuel consumption	Mtoe	19.3	26.5	(7.2)	-27.2%
Average efficiency of thermal plants ⁽⁵⁾	%	42.0	42.8	(0.8)	-1.9%
Water withdrawals in water-stressed areas	%	23.3	19.3	4.0	20.7%
Total specific withdrawals of fresh water	l/kWh	0.20	0.23	(0.03)	-13.0%
Reference price of CO ₂	€/ton	71	86	(15)	-17.4%
Ordinary EBITDA from low-carbon products, services and technologies ⁽⁶⁾	millions of €	17,982	13,900	4,082	29.4%
Capital expenditure on low-carbon products, services and technologies	millions of €	12,837	13,351	(514)	-3.8%
Ratio of capex for low-carbon products, services and technologies to total	%	94.6	92.1	2.5	2.7%

- (1) The figure for 2022 has been adjusted to reflect an update in the methodology for calculating energy consumption in distribution assets and an update of the emission factors of national electricity systems.
- (2) The figure for 2022 has been adjusted to reflect an update in the calculation methodology based on the calorific value of natural gas sold to end users and an update of the emission factors of national electricity systems.
- (3) KPI corresponding to the target certified by the SBTi in 2022, calculated considering direct emissions (Scope 1) from electricity generation compared with total renewable, nuclear and thermoelectric generation, excluding pumped production. The figure for 2022 has been adjusted to reflect an update of the emission factors of national electricity systems.
- (4) KPI corresponding to the target certified by the SBTi in 2022, calculated considering direct emissions (Scope 1) from electricity generation and indirect emissions from the purchase of electricity for sale to end users (Scope 3) as a ratio to the total of renewable, nuclear and thermoelectric production, excluding pumped production, and also electricity purchased.
- (5) The calculation does not consider Italian O&G plants being decommissioned or of marginal impact. Average efficiency is calculated on the basis of the plant fleet and is weighted by generation.
- (6) Ordinary EBITDA for low-carbon products, services and technologies represents the ordinary gross operating margin of the low-carbon products, services and technologies included in the following business lines: Enel Green Power, Enel Grids, Enel X and End-user Markets (excluding gas).

In 2023, **total direct and indirect emissions** (i.e. Scopes 1, 2 and 3) amounted to 94.3 MtCO_{2eq}, an all-time low, reversing the rising trend seen in 2021 and 2022 following the global energy crisis. More specifically, total emissions decreased by 26.3% compared with 2022 (127.9 MtCO_{2eq}). This was mainly due to an overall improvement in the main operational performance measures, which have helped to reduce direct and indirect emissions throughout the entire value chain, including a 38% reduction in thermal generation due to lower coal and CCGT generation in Italy and Iberia and the sale of thermal plants in Russia in 2022 and in Argentina in 2023, the 19% volume reduction in natural gas sold to end users, and the 24% reduction in the ratio of greenhouse gas emissions to supply chain spending compared with 2022. In addition, the digitalization and automation of electricity grids have also helped to reduce grid losses and enable the development of renewables, thereby playing a key role in the Group's decarbonization efforts, as well as in the decarbonization of the energy systems in which the Group operates.

Scope 1 GHG emissions amounted to 34.51 MtCO_{2eq} in 2023, representing 36.6% of total GHG emissions, down 35% compared with the 53.07 MtCO_{2eq} of 2022. Of the total, 94.9% of these emissions are linked to the process of burning fuels for electricity generation, which has benefited from the reduction in thermal generation and the increase in generation from renewable sources.

Protection and development of natural capital

The protection of natural capital and combating climate change are strategic factors that are integrated into planning and in business management and development, so as to promote the sustainable economic development of the communities in which the Group operates, and are deciding factors in consolidating the Enel's leadership in energy markets.

As an energy company, our operations depend on natural resources but, at the same time, have an impact on those

Electricity generated by Enel in 2023 from **zero-emission sources** amounted to 73.2% of total generation, increasing considerably from the 61.0% registered in 2022 due mainly to an increase in the contribution of hydroelectric and solar generation.

Our constant commitment to improving air quality in the areas where Enel operates is underscored by the attention paid to reducing emissions of the main air pollutants associated with thermal generation, namely sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulates.

In 2023, there was a decrease in NO_x emissions compared with 2022, in both absolute and specific terms, linked to the concomitant lower overall generation by gas and CCGT plants in Italy and Iberia and to the sale of plants in Argentina. SO₂ and particulate emissions, on the other hand, have increased compared with last year as a consequence of the increased coal generation in Latin America (Colombia), which is normally inactive, due to specific generation needs resulting from intense drought associated with the effects of El Niño, which caused a significant alteration of the balance of rainfall. More specifically, specific emissions of SO₂ were equal to 0.09 g/kWh_{eq} (+28.6% compared with the 2022 value of 0.07 g/kWh_{eq}), with NO_x at 0.26 g/kWh_{eq} (-18.8% compared with the 2022 value of 0.32 g/kWh_{eq}) and particulates at 0.006 g/kWh_{eq} (+20.0% compared with the 2022 value of 0.005 g/kWh_{eq}).

resources. This is why Enel integrates assessments of risks and opportunities into Group governance and into our decision-making processes in line with international frameworks by setting specific targets over time.

The decarbonization of our energy mix, along with our objectives to reduce our impact on nature, to reclaim habitats, and to share the benefits of ecosystem services with our communities, are cornerstones of Enel's sustainability strategy.

Responsible water resource management

		2023	2022	Change	
Total withdrawals	millions of m ³	55.0	76	(21.0)	-27.6%
Water withdrawals in water-stressed areas	%	23.3	19.3	4.0	20.7%
Total specific withdrawals of fresh water	l/kWh _{eq}	0.20	0.23	(0.03)	-13.0%
Total water consumption	millions of m ³	35.4	45.2	(9.8)	-21.7%
Water consumption in water-stressed areas	%	22.1	20.5	1.6	7.8%

The water needed in electricity generation is obtained from “non-scarce” sources (i.e. seawater used as-is in open-cycle cooling processes or undergoing desalination to obtain demineralized and industrial water) and, only where necessary, from scarce sources (surface, underground and civil-use fresh water). In 2023, there was a significant reduction in total water withdrawals (-27.6% from 76 million cubic meters in 2022 to 55 million cubic meters in 2023) due to lower thermal generation in Italy, Iberia and Latin America and nuclear generation in Spain, which corresponds to a 13% reduction in total specific withdrawals of fresh water

(0.20 l/kWh_{eq} in 2023 compared with 0.23 l/kWh_{eq} in 2022). This decrease was also seen for withdrawals of fresh water in water-stressed areas,⁽³⁸⁾ from 12.4 x10³ million liters in 2022 to 10.3 x10³ million liters (-17%), although less severe than the reduction recorded in total withdrawals, with an increase in the relative percentage of water withdrawn from water-stressed areas out of the total (+20.7%, from 19.3% in 2022 to 23.3% in 2023).

About 11.6% of total electricity generated by the Enel Group used fresh water in water-stressed areas, deriving mainly from thermal and nuclear plants.

Enel’s commitment to biodiversity

Enel has extensive experience managing and preserving biodiversity in and around our production sites in an ever-increasing number of countries. In 2019, Enel adopted Group guidelines that establish the principles and procedures for managing our impact on biodiversity and ecosystem services (BES) throughout the entire life cycle of our plants, from development and operations to decommissioning.

The identification of potential impacts on biodiversity and nature is essential in order to define the most effective strategies to avoid, minimize, remedy or compensate for the associated effects, through application of the Mitigation Hierarchy. In the same way, identifying all that depends

on biodiversity and natural capital enables us to identify the best strategies to reduce any consequent risks.

In 2023, we pursued 183 projects to safeguard species and natural habitats in and around operational plants, 57 of which were developed in partnership with government, non-governmental organizations, and universities, for a total investment of €10.8 million. These projects were carried out throughout the world.

Also in 2023, we carried out a further 60 projects related to plants under construction, mainly in Brazil, Chile, Colombia, Italy and Spain, aimed at protecting and monitoring the indigenous species affected, for a total investment of over €9 million.

(38) Mapped in line with GRI criteria in relation to the “(baseline) water stress” conditions specified in the World Resources Institute Aqueduct Water Risk Atlas.