

Greenhouse Gas Report

Inventory 2023



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01. Introduction

1. Introduction

Iberdrola has been publishing its Greenhouse Gas (GHG) Report every year for the last 14 years now, thus demonstrating its status as a global benchmark in its commitment to transparency and its defence of a sustainable growth model that respects the environment. Continuing with this commitment, Iberdrola once again presents its Greenhouse Gas Report.

Iberdrola publishes this report annually, in order to describe the Greenhouse Gas Inventory and to transparently inform its stakeholders of the company's emissions, in accordance with the commitments assumed in our **environmental policies**¹, which constitute the response to climate change goals and purposes, preservation of the environment and loss of biodiversity, while at the same time contributing to identifying and taking advantage of the opportunities arising from the energy and ecological transition:

- **Sustainable management policy.** Iberdrola strives to ensure that its development meets the needs of the present without compromising the ability of future generations to satisfy their own needs.
- **Environmental Policy**¹. Respect for the environment is the key to Iberdrola's sustainable energy model.
- **Climate action policy**¹. Iberdrola takes a leading position in the fight against climate change.
- **Biodiversity policy**¹. Iberdrola promotes the biodiversity of ecosystems and the awareness of its stakeholders.

Iberdrola aims to achieve carbon neutrality for its direct and indirect emissions from imported energy by 2030. The ultimate goal is to achieve a Net Zero emissions balance by 2040.

Iberdrola's transformation towards climate neutrality, in full coherence with the achievement of a more efficient, competitive, clean and sustainable economic system, consolidates the company as the largest electricity company in the world without coal production.

This report contains Iberdrola's greenhouse gas (GHG) inventory for 2023, in line with the company's decarbonisation targets.

1 https://www.iberdrola.com/corporate-governance/governance-sustainability-system/environment-climate-change-policies/environmental-policy



02. The energy company of the future



2. The energy company of the future

The Iberdrola Group is today a global energy leader that has been two decades ahead of energy transition to combat climate change and offer a sustainable and competitive business model that creates value for society. Iberdrola has been committed to clean energy for more than 20 years with the aim of exceeding 52,000 MW of renewable capacity by 2025.

We will close the 2023 financial year with 42,175 green MW installed. In the last 12 months we have added 3,250 new renewable MW, representing almost 8% of the 2022 capacity. Thanks to its production, close to 80,000 clean GWh (6.3% more than the previous year).



Growth in renewable energy production was led by wind power, reaching 22,676 MW installed at the end of the year, after adding 655 MW of new onshore wind power and connecting a new offshore wind farm in France (Saint-Brieuc) to the grid.



"Iberdrola's contribution to meeting the global climate objectives established by the Paris Agreement takes shape in an ambitious approach to the transition towards an energy model based on renewable energies; and is supported by a solid network of alliances and collaborations.

Consistent with its strategy, Iberdrola is characterized by supporting ambitious approaches in establishing objectives, plans and the political and regulatory frameworks necessary to carry out the necessary investments for the transition. And raising awareness in society is a key element"



Iberdrola's contribution in the fight against climate change



03. Greenhouse Gas Report



3. Greenhouse Gas Report

This report contains Iberdrola's Greenhouse Gas Inventory, hereinafter GHG, for 2023 with the following considerations:

- It includes emissions from the activities of the entire Iberdrola Group: Iberdrola España, ScottishPower, Avangrid, Neoenergia, Iberdrola México and Iberdrola Energía Internacional.
- The greenhouse gases considered are: CO₂, SF₆, CH₄, N₂O e CFC's. (NF₃ is not considered, it is not used in Iberdrola).
- In the reporting criteria for its generation assets, Iberdrola differentiates between "own" production and installed capacity for "third parties".

The organisation responsible for the preparation of this report is the Corporate Environmental department within the Innovation and Sustainability Division of Iberdrola S.A.

The report has been prepared in accordance with the requirements established in **Standard UNE-EN-ISO 14064-1:2018**: "Greenhouse gases. Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals".

The Greenhouse Gas inventory was verified using a **limited assurance** engagement.

3.1 Significant changes to the emissions Inventory

During 2023 there have been no relevant changes that affect the calculation of this inventory.

3.2 Limits of the organisation

Iberdrola has sought to identify and adapt to the needs of each of the countries in which it operates. Beyond the location of the business, at Iberdrola we work to create a brand culture based on a global-local balance.





The consolidation of GHG emissions at Iberdrola is tackled from an operational control approach².

The information included within the scope of the GHG inventory corresponds to the company structure of the group, which comprises the company, subholdings, parent Companies of the business units and investee Companies. The GHG inventory is presented both at consolidated level and at subholding company level:

- Iberdrola España (Spain)
- Scottish Power (United Kingdom)
- Avangrid (United States of America)
- Neoenergia (Brazil)
- Iberdrola México (Mexico)
- Iberdrola Energia Internacional (carrying out the inventory for the countries: Portugal, France, Italy, Germany, Greece, Australia, Romania, Hungary, Cyprus and Poland)³.

3.3 Operating limits

In this report the greenhouse gases considered are:

- CO₂ (Emissions from fixed and mobile combustion)
- **SF**₄ (Fugitive emissions expressed in T CO₂ eq)
- CH₄ (Fugitive emissions and those associated with fuel consumption expressed as t CO₂eq)
- N₂O (Emissions associated with fuel consumption expressed as t CO₂ eq)
- CFC's (Fugitive emissions of refrigerant gases expressed in T CO₂ eq)
- NF, Not considered in this inventory as it does not form part of Iberdrola's processes.

Iberdrola defines the scope of its direct and indirect emissions for operations undertaken within the limits of the organisation, with the GHGs classified in accordance with Standard UNE-EN-**ISO 14064:2018-1**.

DIRECT GHG EMISSIONS (CATEGORY 1)

They are direct GHG emissions from sources owned or controlled by the company.

- Stationary combustion emissions:
 - CO₂ emissions, from electric power generation facilities (by combustion of any type of fuels).
 - Methane (CH₄) and nitrous oxide (N₂O) emissions associated with the combustion of any type of fuel.
 - CO₂ emissions from the combustion of fuels in buildings or facilities, from heating equipment or generators.
 - CO₂ emissions from the combustion of fuels in gas storage facilities.
- Direct fugitive emissions in anthropogenic systems:
 - From methane (CH₄) (natural gas storage and transport).
 - From sulphur hexafluoride (SF₆) (distribution networks, generation substations, etc.).
 - From refrigerant gases (CFCs) from air-conditioning equipment.

² With the exception of the nuclear power plants, the Spanish investee cogeneration plants and the Brazilian hydro power plants, which are accounted for under the equity share, as published in the Non-Financial Information Statement (NFIS).

³ The rest of the countries that form part of Iberdrola Energía Internacional are not currently considered in this inventory due to their scant relevance.



- Emissions from mobile combustion associated with fuel consumption in transport equipment, we take into account fleet vehicles, ships and airplanes for transporting personnel in this section.
- Emissions from land use (Brazil).

INDIRECT GHG EMISSIONS

These emissions are a consequence of the organisation's activities, but which are generated in sources that are owned or controlled by the organisation.

HGH EMISSIONS BY IMPORTED ENERGY (CATEGORY 2)

Indirect GHG emissions by imported energy are those from electricity, heat or steam consumed by the organisation and provided by third parties. Emissions from electricity transmission and distribution will also be included in this section.

- Emissions associated with electricity consumption during outages at thermal, renewable and nuclear power plants.
- Emissions associated with the consumption of electricity by pumps at hydroelectric power stations.
- Emissions associated with electricity consumption in the group's buildings (calculated according to the "location base and market base" methods).
- Emissions associated with network losses in the transmission or distribution of electricity, for the activity of transmission and distribution of electricity, emissions are calculated considering electricity losses as imported energy.
- A balance is made between own generated energy and total distributed energy to avoid double accounting.

DIRECT GHG EMISSIONS BY TRANSPORT (CATEGORY 3)

These are mobile sources and their emissions are due mainly to fuel burned in transport equipment.

- Emissions associated with employee business travel.
- Emissions associated with commuting (transport of employees from their place of work to their residence).
- Emissions from other life cycle processes used in upstream electricity generation, such as extraction, transport and processing of fuel to produce electricity (Well to Tank. WTT).

GHG EMISSIONS BY PRODUCTS USED BY THE ORGANISATION (CATEGORY 4)

• Emissions associated with all goods purchased by the organisation: emissions associated with the supply chain.

INDIRECT GHG EMISSIONS ASSOCIATED WITH THE USE OF THE ORGANISATION'S PRODUCTS (CATEGORY 5)

Emissions associated with the use of the organisation's products that come from energy products traded by the organisation.

- Emissions associated with electricity purchased from third parties for sale to end customers.
- Emissions associated with gas supplied to customers.
- Emissions from power generation facilities producing electricity for third parties, PIE plants in Mexico.



3.4 Exclusions

Emissions that have a low representativeness and where it is not feasible to obtain evidence for their quantification are excluded from this inventory. In any case, no exclusion exceeds 2% of total emissions in its category.

In particular, excluded from this report are:

- Emissions from mobile sources at Iberdrola España's thermal generation facilities.
- Emissions from refrigerant gas leaks at Avangrid facilities due to no legal requirement.
- Methane venting emissions (CH4) from ScottishPower's gas storage facility.
- Emissions associated with the consumption of energy in buildings:
 - Managed by third parties at Iberdrola Energía Internacional.
 - Not managed by Avangrid's General Services.
 - Those of non-relevant occupancy in Neoenergía.
- Emissions associated with the consumption of auxiliary systems in Avangrid's photovoltaic and wind power facilities.

3.5 Base year

The base year for Iberdrola's GHG verification is maintained as 2021.

3.6 Uncertainty assessment

The estimated uncertainty of the emissions is a combination of the uncertainties in the emission factors and in the corresponding activity data.

The emission factors used to create the Iberdrola GHG Inventory are extracted from official sources and are specific to each category of source. The selection of these emission factors is intended to minimise uncertainty as much as possible. Unless clear evidence to the contrary is available, it is assumed that probability density functions are normal.

The uncertainty of the activity data used for creating the Iberdrola GHG Inventory is assured by the local regulations of countries participating in the EU ETS (Emission Trading System). For countries not participating in the EU ETS, it is assured by calibrating metering equipment according to the technical specifications or specific procedures of each facility.

A maximum relative importance level of 5% of total emissions has been set, except for those facilities that are subject to regulatory verification, in which case it will be 2%.



04. GHG Inventory Data 2023



4. GHG Inventory Data 2023

4.1 Iberdrola Group

Iberdrola combines its growth in renewables and networks with the goal of achieving carbon neutrality for categories 1 and 2 by 2030 and net zero emissions by 2040 for all categories.

Global emissions for Iberdrola S.A. in 2023 have been:

GHG Direct Emissions (Category 1)	(tCO2e)
Stationary combustion emissions	10,192,145
Emissions from power generation	10,050,911
CH₄ emissions power generation	5,501
N₂O emissions power generation	38,030
Gas storage emissions	1,187
Emissions in buildings,(generation set, heating,)	96,517
Direct fugitive emissions	285,840
CH₄ Methane fugitive emissions	222,913
SF₄ fugitive emissions	55,756
Refrigerant gases fugitive emissions	7,171
Emissions from movil combustion	91,599
Land use emissions	18,004
Total Direct Emissions	10,587,589

GHG Indirect Emissions	(tCO2e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	1,710,995	1,746,827
Auxiliary energy during shutdown and pumping		690,214
Electricity consumptionin buildings	20,316	56,148
Network losses		1,000,465
GHG emissions due to transport (Category 2)		4,619,795
Employee business travel		22,124
Commuting		33,256
Upstream life cycle of fuels		4,564,415
GHG Emissions due to porducts use by the organization (Category 4)		3,730,983
Supply chain		3,730,983
GHG Emissions due to use of the organization's products		30,953,373
For energy purchased from the third parties		5,208,447
For gas supplied to customers		11,960,416
PIE Production		13,784,510
Total Indirect emissions (Location Base)		41,050,978
Total Indirect emissions (Market Base)		41,015,146

In 2023, CO₂ emissions per MWh generated were among the lowest at the national and international level and maintain the downward path set by our climate action plan and is aligned with the 2030 decarbonisation target.

The direct emissions intensity in 2023 was 77 kg CO₂/MWh, in line with the increase in installed renewable capacity.

The evolution of emissions intensity is:







In 2023, total direct emissions amounted to 10,587,589 t CO₂ e, 6% less than the previous year, in line with its commitment to clean energy and a sustainable, efficient and safe energy model.

Indirect emissions in the 2023 financial year total 41,050,978 tCO₂ e, a reduction of 8% compared to the 2022 financial year.

The following graph shows the distribution of direct and indirect emissions by subholding.

Subholding Indirect Emissions







Iberdrola España's emissions inventory is:

GHG Direct Emissions (Category 1)	(tCO2e)
Stationary combustion emissions	3,734,015
Emissions from power generation	3,663,120
CH₄ emissions power generation	1,993
N₂O emissions power generation	34,638
Emissions in buildings,(generation set, heating,)	34,263
Direct fugitive emissions	6,669
SF₄ fugitive emissions	4,079
Refrigerant gases fugitive emissions	2,590
Emissions from movil combustion	4,725
Emisiones Directas Totales	3,745,409

GHG Indirect Emissions	(tCO2e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	822,886	832,776
Auxiliary energy during shutdown and pumping		660,365
Electricity consumptionin buildings	412	10,302
Network losses		162,109
GHG emissions due to transport (Category 2)		599,694
Employee business travel		9,920
Commuting		13,028
Upstream life cycle of fuels		576,745
GHG Emissions due to porducts use by the organization (Category 4)		778,476
Supply chain		778,476
GHG Emissions due to use of the organization's products		951,905
For energy purchased from the third parties		-
For gas supplied to customers		951,905
Total Indirect emissions (Location Base)		3,162,851
Total Indirect emissions (Market Base)		3,152,961

Iberdrola España's emissions intensity was reduced by 16% due to an increase in renewable versus non-renewable production.

The reduction in indirect emissions was mainly due to the absence of emissions from electricity purchased from third parties for sale to end customers.





4.3 ScottishPower

ScottishPower's emissions inventory is:

GHG Direct Emissions (Category 1)	(tCO₂e)
Emisiones por combustion Estacionaria	4,323
Gas storage emissions	1,187
Emissions in buildings,(generation set, heating,)	3,136
Direct fugitive emissions	21,234
CH₄ Methane fugitive emissions	16
SF₄ fugitive emissions	21,157
Refrigerant gases fugitive emissions	61
Emissions from movil combustion	13,817
Emisiones Directas Totales	39,374

GHG Indirect Emissions	(tCO2e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	487,827	499,418
Auxiliary energy during shutdown		4,600
Electricity consumptionin buildings	929	12,520
Network losses		482,297
GHG emissions due to transport (Category 2)		6,407
Employee business travel		3,131
Commuting		3,068
Upstream life cycle of fuels		208
GHG Emissions due to porducts use by the organization (Category 4)		474,615
Supply chain		474,615
GHG Emissions due to use of the organization's products		6,508,073
For energy purchased from the third parties		2,790,038
For gas supplied to customers		3,718,034
Total Indirect emissions (Location Base)		7,488,513
Total Indirect emissions (Market Base)		7,476,922

The emission intensity is 0 g CO₂/ kWh as the production of PS is 100% renewable.

Indirect emissions have decreased by 18% mainly due to a decrease in emissions associated with the use of the organisation's products.





4.4 Avangrid

Avangrid's emissions inventory is:

GHG Direct Emissions (Category 1)	(tCO₂e)
Stationary combustion emissions	1,352,344
Emissions from power generation	1,292,286
CH₄ emissions power generation	587
N₂O emissions power generation	551
Emissions in buildings,(generation set, heating,)	58,920
Direct fugitive emissions	245,594
CH₄ Methane fugitive emissions	222,897
SF₄ fugitive emissions	22,697
Refrigerant gases fugitive emissions	-
Emissions from movil combustion	38,560
Emisiones Directas Totales	1,636,499

GHG Indirect Emissions -	(tCO2e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	171,514	185,746
Auxiliary energy during shutdown		4,653
Electricity consumptionin buildings	17,797	32,029
Network losses		149,064
GHG emissions due to transport (Category 2)		242,763
Employee business travel		4,980
Commuting		8,139
Upstream life cycle of fuels		229,644
GHG Emissions due to porducts use by the organization (Category 4)		932,179
Supply chain		932,179
GHG Emissions due to use of the organization's products		7,715,637
For energy purchased from the third parties		601,478
For gas supplied to customers		7,114,159
Total Indirect emissions (Location Base)		9,076,325
Total Indirect emissions (Market Base)		9,062,094

Emission intensity rises to 55 gCO₂e/ KWh, mainly due to increased Klamath emissions from higher energy demand.

The 16% decrease in indirect emissions is mainly due to the decrease in emissions associated with the use of the organisation's products.





4.5 Neoenergia

Neonergía's emissions inventory is:

GHG Direct Emissions (Category 1)	(tCO₂e)
Stationary combustion emissions	49,636
Emissions from power generation	49,484
CH₄ emissions power generation	23
N₂O emissions power generation	44
Emissions in buildings,(generation set, heating,)	85
Direct fugitive emissions	6,565
SF₄ fugitive emissions	2,900
Refrigerant gases fugitive emissions	3,666
Emissions from movil combustion	29,819
Emisiones por uso de suelo	18,004
Emisiones Directas Totales	104,025

GHG Indirect Emissions	(tCO₂e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	208,392	208,392
Auxiliary energy during shutdown		615
Electricity consumptionin buildings	782	782
Network losses		206,995
GHG emissions due to transport (Category 2)		20,529
Employee business travel		2,785
Commuting		5,911
Upstream life cycle of fuels		11,833
GHG Emissions due to porducts use by the organization (Category 4)		958,956
Supply chain		958,956
GHG Emissions due to use of the organization's products		698,550
For energy purchased from the third parties		698,550
Total Indirect emissions (Location Base)		1,886,427
Total Indirect emissions (Market Base)		1,886,427

Emission intensity increases slightly to 4 g CO₂e/KWh. This is because Termo Pernambuco CC produced energy in the last quarter of 2023, after being inactive in 2022.

The 17% increase in indirect emissions is mainly due to the increase in emissions from the supply chain.





4.6 Iberdrola México

Iberdrola Mexico's emissions inventory is:

GHG Direct Emissions (Category 1)	(tCO ₂ e)
Stationary combustion emissions	5,002,813
Emissions from power generation	4,997,043
CH₄ emissions power generation	2,897
N₂O emissions power generation	2,797
Emissions in buildings,(generation set, heating,)	75
Direct fugitive emissions	5,731
SF₄ fugitive emissions	4,876
Refrigerant gases fugitive emissions	854
Emissions from movil combustion	1,031
Emisiones Directas Totales	5,009,574

GHG Indirect Emissions -	(tCO2e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	13,087	13,106
Auxiliary energy during shutdown		12,692
Electricity consumptionin buildings	395	414
GHG emissions due to transport (Category 2)		3,738,945
Employee business travel		509
Commuting		1,620
Upstream life cycle of fuels		3,736,816
GHG Emissions due to porducts use by the organization (Category 4)		132,888
Supply chain		132,888
GHG Emissions due to use of the organization's products		13,784,510
PIE Production		13,784,510
Total Indirect emissions (Location Base)		17,669,450
Total Indirect emissions (Market Base)		17,669,431

The Mexican facilities show a very similar operating regime to the previous year without significant changes.





4.7 Iberdrola Energía Internacional

IEI's emissions inventory is:

GHG Direct Emissions (Category 1)	(tCO2e)
Stationary combustion emissions	49,014
Emissions from power generation	48,978
CH₄ emissions power generation	-
N₂O emissions power generation	-
Emissions in buildings,(generation set, heating,)	37
Direct fugitive emissions	47
SF₄ fugitive emissions	47
Refrigerant gases fugitive emissions	-
Emissions from movil combustion	3,647
Emisiones Directas Totales	52,708

GHG Indirect Emissions	(tCO2e)	
	market base	location base
GHG emissions due to imported energy (Category 2)	7,289	7,389
Auxiliary energy during shutdown		7,289
Electricity consumptionin buildings	0	100
GHG emissions due to transport (Category 2)		11,456
Employee business travel		798
Commuting		1,489
Upstream life cycle of fuels		9,169
GHG Emissions due to porducts use by the organization (Category 4)		453,869
Supply chain		453,869
GHG Emissions due to use of the organization's products		1,294,698
For energy purchased from the third parties		1,118,380
For gas supplied to customers		176,317
Total Indirect emissions (Location Base)		1,767,411
Total Indirect emissions (Market Base)		1,767,311

The increase in indirect emissions is due to the increase in energy traded in Germany and Portugal, and emissions from the supply chain.





05. Actions towards zero net emissions



5. Actions towards zero net emissions

The aspiration to accelerate the decarbonisation of the economy must start by reducing the direct emissions of each economic actor as much as possible, and as quickly as possible. Iberdrola advocates immediate action in the main climate forums: the planet cannot wait. Iberdrola will therefore use its best efforts to achieve emission reductions.

Iberdrola focuses its efforts towards climate neutrality on driving key areas for the transformation of the energy sector:

- Decarbonisation of electricity generation through the massive introduction of renewable energies.
- Optimisation of the electricity system through Smart grids and digitalisation.
- New uses of electricity: green hydrogen production, for sectors that are difficult to decarbonise (high temperature industrial processes or heavy transport).
- In order to reduce the indirect emissions associated with its customers' electricity consumption, Iberdrola offers them products that help to avoid them, such as the following: photovoltaic self-consumption, charging points, aerothermy, etc.
- Iberdrola's Trees 2020-2030 programme, which aims to plant 20 million trees by 2030, and is estimated to help capture up to 6 Mt CO₂ in 30 years.

Internal initiatives to reduce emissions

Over the years, Iberdrola has implemented various internal initiatives aimed at saving emissions:

- Energy efficiency in Iberdrola's buildings and offices. Including the supply of green energy in all our facilities. (in 2023, 100% of the electricity consumption of the offices of Iberdrola España and ScottishPower was renewable).
- Fleet management, with a target of 100% electric by 2030.
- Electric mobility plan for employees.
- Smart plans for employees (change of boilers, photovoltaic installations, ...).



06. Quantification methods

6. Quantification methods

Taking into account the diversity of the organisation's activities and the geographic dispersion of its facilities, Iberdrola has selected the following method as an approach for quantifying GHG emissions: product of the activity data (obtained internally or provided by a supplier) by its corresponding Emission Factor (direct fuel analysis or emission factors from internationally recognised official sources).

The formulas used for the calculation of emissions, depending on the type of data, are as follows:

$$t CO_2 e = DA^4 (GJ) \times FE^5 \left(\frac{tCO_2}{GJ}\right)$$

t CO₂e=DA (t)×PCG⁶
$$\left(\frac{tCO_2}{tCH_4}\right)$$

Sources used to obtain the emission factors (EF) are:

- MITERD (Spain).
- **DEFRA** (UK and Internacional).
- EPA (US and Mexico).
- Ferramenta (Brazil).
- IPCC (AR5) For global emission factors.
- **EEA** (Europe).
- **EIA** (USA).
- DCCEEW (Australia)

6.1. Direct GHG emissions

- I Stationary combustion emissions (category 1)
 - CO₂ emissions, from electric power generation facilities (due to the combustion of any type of fuels)

We measure carbon dioxide (CO₂) emissions from the fixed combustion of fossil fuels in gas turbines, boilers and other thermal generation facilities.

The calculation of emissions is based on activity data on fuel consumption and the emission factors calculated or obtained from official sources.

• Methane (CH₄) and nitrous oxide (N₂O) emissions associated with the combustion of any type of fuel.

• Emissions from combustion of fuels in buildings

These are emissions from the consumption of fuels used for other services such as heating, hot water, emergency power generators, in buildings, offices, etc. The most commonly used fuels are: diesel, natural gas and LPG (Liquefied Petroleum Gas).

^{4.} Activity Data: is the quantitative measure of the activity produced by an emission. It is based on fuel consumption in terms of energy content expressed in GJ.

^{5.} Emission Factor: Emission factors can be calculated directly according to fuel type or by using the generic factors provided by IPCC, MITERD, ...for each fuel type. is expressed as tCO₂/GJ.

^{6.} GWP: Global Warming Potential of the gas (IPCC AR5).



• CO2 emissions from the combustion of fuels in gas storage facilities

Carbon dioxide emissions (CO2) from the Hatfield Moore gas storage plant (UK), combustion and fugitive CH4.

I Direct fugitive emissions in anthropogenic systems

• From methane (CH₄)

These are emissions due to methane (CH₄) leaks that occur in gas transmission lines and storage.

CH₄ leakage is calculated as the difference between the volume of gas delivered for distribution and the gas finally sold to the end customer

From sulphur hexafluoride (SF₆)

Emissions due to SF₆ leakage from medium and high voltage equipment containing this gas as dielectric and refrigerant.

Leakage gas is generally measured by weight difference in the reloading of equipment.

• From refrigerant gases (CFCs) from air-conditioning equipment

Emissions due to refrigerant gas leaks (Chlorofluorocarbon CFC gases) from air-conditioning equipment. The gases considered are: R-407C, R-404A, R-410, R-422A, R-438A, R-134A, R-32, R-134 and R-141.

I Emissions from mobile consumption

These are emissions resulting from the consumption of fuel in corporate transport equipment, motor vehicles, cars, vessels, trucks and airplanes: fleet cars, ships used for transferring personnel in offshore parks and corporate aircraft.

I Emissions from land use

The calculation of emissions associated with land use change is calculated by the volume of vegetation generated, using a conservative approach based on IPCC studies.

6.2. Indirect GHG emissions

These emissions are a consequence of the organisation's activities, but which are generated in sources that are owned or controlled by the organisation.

I Indirect GHG emissions by Imported Energy (Category 2)

Indirect GHG emissions are those from electricity, heat or steam consumed by the organisation and provided by third parties. Other indirect emissions associated with electricity generation are also included in this section. Corresponds to Scope 2 of the GHG Protocol.

• Emissions associated with the consumption of electrical energy during shutdown at generation facilities (renewable and non-renewable)

Emissions from the use of electrical energy for the operation of the auxiliary systems of plants in outages.

Emissions associated with the consumption of electricity by pumps at hydroelectric power stations



Emissions from the use of electrical energy used for pumping in hydroelectric power stations. Applicable only in Iberdrola España.

Emissions associated with electricity consumption in the group's buildings

Emissions from electricity consumption in buildings, offices and network facilities (substations and radio base stations).

A distinction is made between renewable and non-renewable energy consumption, whereby energy with a certificate of origin is counted as renewable energy.

The calculation is done as "Location based and Market based".

• Emissions associated with losses in the electricity transmission or distribution networks

The transmission and distribution of electricity leads to losses in the grid, so that in order to satisfy a given final consumption, a somewhat higher generation is required.

The calculation of emissions is conducted by balancing own generation and transported or distributed energy to avoid double counting of emissions that we already consider in the direct scope.

I Direct GHG emissions by transport (category 3)

Emissions from mobile sources located outside the limits of the organisation. Emissions are mainly due to fuel burned in transport equipment.

Emissions associated with employee business travel

These are the emissions derived from employees' work trips by different means of transport (plane, car, train, ...), with emissions calculated according to the kilometres travelled by each means of transport.

• Emissions associated with commuting

Emissions derived from the commuting of employees between their place of residence and work. The information is obtained through employee surveys.

• Emissions from other life-cycle processes used in electricity generation, upstream

Emissions from the upstream life cycle of fuels used to produce electricity: extraction, transport and processing. The factors used will be those of DEFRA in the WTT (Well to Tank) section.

I Indirect GHG emissions by products used by the organisation (category 4)

GHG emissions from sources outside the limits of the organisation associated with all goods purchased by the organisation.

Emissions associated with the supplier chain

The calculation procedure is based on the EXIOBASE Environmental Extended Input-Output (EEIO) model. The EXIOBASE model allows the environmental impacts associated with the final consumption of product groups to be calculated.

I Indirect GHG emissions associated with the use of the organisation's products (category 5)

Emissions associated with the use of the organisation's products that come from energy products traded by the organisation.



• Emissions associated with electricity purchased from third parties for sale to end customers

Emissions from electricity purchased from third parties for sale to the end customer.

Emissions associated with gas supplied to customers •

Emissions from the use of gas marketed to end customers.

Emissions from electricity generation facilities from production for third parties (Mexico) •

Emissions produced in the combined cycles operated by Iberdrola but in which the energy manager (Comisión Federal de Electricidad CFE) determines the generation conditions (start-ups, generation power, ...). These are plants that operate under the Independent Power Producer (IPP) modality).

^{12.} Solo aplica las plantas de México



A. Annexes



A. Annexes

A.I. AENOR Verification Statement (Asociación Española de Normalización y Certificación)

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AENOR Verification Declaration for IBERDROLA of the Greenhouse Gas Emissions Inventory for 2023

CUSTOMER: 1995/0014/HCO/01

Introduction

IBERDROLA S.A. has requested AENOR Confía, SAU (AENOR) to carry out a limited of the Inventory of greenhouse gas (GHG) emissions for the year 2023 of its activities included in the GHG report dated February 2024, which is part of this Statement.

AENOR is accredited by the Mexican Accreditation Entity, with number OVVGEI 004/14, in accordance with Standard ISO 14065:2020, to carry out verification of greenhouse gases emissions in accordance with the requirements established in Standard ISO 14064- 3:2019 for the energy and waste sectors.

The GHG emissions inventory for February 2024 has been issued by the Organisation: IBERDROLA, S.A. with registered office at C/ Tomás Redondo 1. 28033 Madrid, Spain.

Representative for the Organization: Bernardo LLANEZA FOLGUERAS from the Division for Innovation, Sustainability and Quality.

IBERDROLA S.A. was responsible for reporting its GHG emissions in accordance with the Reference Standard UNE-EN ISO 14064-1:2018 standard.

Target

The objective of verification is to provide interested parties with a professional and independent judgment about the information and data contained in the GHG Report of IBERDROLA mentioned.

Scope of the verification

The scope of the verification is established for the activities provided by the organization:

- Renewable, thermal and nuclear generation
- Electricity distribution
- Marketing of natural gas and electricity ٠

The Iberdrola Group is presented "at SubHolding level", "SubHolding" being understood as a grouping of companies according to geographic scope.

These include the greenhouse gases: CO₂, CH₄, N₂O, SF₆ and CFCs

During the verification, the information was analyzed according to the operational control approach set out in ISO 14064-1:2018, i.e. the organization reports all GHG emissions and removals attributable to the operations over which it exercises control at the respective facilities, with the exception of the nuclear power plants and the cogeneration plants in which it holds a stake in Spain, which are accounted for under the participation share, as established in Standard ISO 14064-1:2018, in line with the Sustainability Report.

In addition, for some of the power production plants in Mexico, the Independent Power Plants (Plantas Productoras Independientes de Energía, PIE), in which the system manager, Comisión Federal de Electricidad, decides on their mode of operation, their emissions have been reported as indirect emissions as they are production facilities with installed capacity "for third parties", and it is indicated that Iberdrola does not have full control of the operation.

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Direct and indirect activities and exclusions from verification

The activities subject to verification are established in six categories (following the guidelines of ISO 14064-1:2018), which are:

- Category 1: GHG direct emissions and removals
 - Stationary combustion emissions:
 - CO2 emissions, from electric power generation facilities (due to the combustion of any type of fuels).
 - Methane (CH4) and nitrous oxide (N2O) emissions associated with the combustion of any type of fuel for energy generation
 - CO2 emissions from the combustion of fuels in buildings or facilities, from heating equipment or generators.
 - CO2 emissions from the combustion of fuels in gas storage facilities.
 - Direct fugitive emissions in anthropogenic systems:
 - Of methane (CH4) (natural gas storage and transport).
 - Of sulphur hexafluoride (SF6) (distribution networks, generation, substations).
 - From refrigerant gases (CFCs) from air-conditioning equipment.
- Emissions from mobile combustion, associated with fuel consumption in transport equipment: (Fleet vehicles, ships aircraft to transport staff).
- Emissions from land use: associated with the change in land use, calculated by the volume of vegetation generated (Brazil).
- Category 2: Indirect GHG emissions from imported energy
 - Emissions associated with electricity consumption during outages at thermal, renewable and nuclear power plants.
 - Emissions associated with the consumption of electricity by pumps at hydroelectric power stations.
 - Emissions associated with electricity consumption in the group's buildings, based on location and market methods.
 - Emissions associated with network losses in the transmission or distribution of electricity, for the activity of transmission and distribution of electricity: emissions are calculated taking into account electricity losses as imported electricity.

A balance is made between own generated energy and total distributed energy to avoid double accounting.

- Category 3: Indirect GHG emissions from transport
 - o Emissions associated with employee business travel.
 - Emissions associated with commuting (transport of employees from their place of work to their residence).
 - Emissions from other life cycle processes used in upstream electricity generation, such as extraction, transport and processing of fuel to produce electricity (Well to Tank. WTT).
- Category 4: Indirect GHG emissions from products used by the organisation
 - Emissions associated with the production of goods and services purchased or acquired by the reporting company in the reference year: emissions associated with the supply chain.
- Category 5: Indirect GHG emissions associated with the use of energy products traded by the organisation
 - o Emissions associated with electricity purchased from third parties for sale to end customers.

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- Emissions associated with gas supplied to customers.
- Emissions from power generation facilities producing electricity for third parties, PIE plants in Mexico.
- Category 6: Indirect GHG emissions from other sources: Not identified

Exclusions

Emissions that have a low representativeness and where it is not feasible to obtain evidence for their quantification are excluded from this inventory. In any case, no exclusion exceeds 2% of total emissions in its category.

In particular, excluded from this report are:

- Emissions from mobile sources at Iberdrola España's thermal generation facilities.
- Emissions from refrigerant gas leaks at Avangrid facilities due to no legal requirement.
- Methane venting emissions (CH4) from ScottishPower's gas storage facility.
- Emissions associated with the consumption of energy in buildings:
 - Managed by third parties at Iberdrola Energía Internacional.
 - o Not managed by Avangrid's General Services.
 - Those of non-relevant occupancy in Neoenergía.
- Emissions associated with the consumption of auxiliary systems in Avangrid's photovoltaic and wind power facilities.

Mitigation activities and base year

No initiatives to reduce emissions and/or increase GHG removals have been identified in the GHG emissions inventory of February 2024.

The organization has set 2021 as the base year for analyzing the evolution of its carbon footprint.

Relative importance

For verification purposes, it was agreed to consider those omissions, distortions or errors that can be quantified and result in a difference of more than 5% with respect to the total declared emissions as material discrepancies, except for those facilities that are subject to regulatory verification, in which case it will be 2%.

Criteria

The criteria and information that have been taken into account to carry out the verification have been:

- Standard ISO 14064-1:2018: Specification with guidance at organisation level for quantification and reporting of greenhouse gas emissions and removals.
- Standard ISO 14064-3:2019: Specification with guidance for the validation and verification of declarations on greenhouse gases.

Lastly, the "Iberdrola Greenhouse Gas Inventory Report 2023, prepared by the organization was verified.

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AENOR expressly absolves itself of any responsibility for investment decisions or any other type of decision based on this declaration.

Conclusion

The GHG Emissions Report "*Iberdrola Greenhouse Gas Inventory report 2023*" of February 2024, is considered to be in accordance with the requirements of standard ISO 14064-1:2018.

Based on the above, and in accordance with the limited level of assurance, in our opinion:

There is no evidence to suggest that the emissions information reported in the "Iberdrola Greenhouse Gas Inventory Report 2023" of February 2024 is not an accurate representation of emissions from its activities.

Consistent with this Declaration, the emissions and removals data finally verified are listed below:

IBERDROLA's GHG emissions in 2023		t CO ₂ e
Category 1: GHG direct emissions and removals		10,587,589
- CO ₂ emissions for electricity generation (stationary combustion)		10,050,911
 CH₄ emissions from fuel consumption in electricity generation (stationary combustion) 		5,501
 N₂O emissions from fuel combustion in electricity generation (stationary combustion) 		38,030
- Emissions in gas storages (stationary combustion)		1,187
- Emissions at facilities: buildings, offices (stationary combustion)		96,517
- Emissions from mobile combustion (fleet cars)		91,600
 Fugitive emissions of CH4 (Gas storage and transmission) 		222,913
 Fugitive emissions of SF₆ (distribution networks, generation substations, etc.) 		55,756
- Fugitive emissions of refrigerant gases		7,171
- Emissions associated with land-use change: (pruning procedu	res in Brazil)	18,004
Category 2: Indirect GHG emissions from imported energy		1,746,827
	t CO2e (market method)	t CO2e (location method)
 Emissions from imported electricity at generation facilities during outages and pumping 		690,214
- Emissions from imported electricity in buildings	20,316	56,148
- Emissions from losses in electricity distribution networks		1,000,465
Category 3: Indirect GHG emissions from transport		4,619,795
 Emissions associated with employee business travel. 		22,124

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IBERDROLA's GHG emissions in 2023	t CO ₂ e
 Emissions associated with employees' commuting from home to the workplace 	33,256
- Upstream life-cycle emissions associated with fuels consumed in electricity generation	4,564,415
Category 4: Indirect GHG emissions from products used by the organization	3,730,983
 Emissions associated with the supply chain (suppliers of purchased products and services) 	3,730,983
Category 5: Indirect GHG emissions associated with use of the organization's products	30,953,373
- Emissions associated with electricity purchased for sale to final customer	5,208,447
- Emissions associated with gas sales to end customers.	11,960,416
 Emissions associated with electricity generation at plants with installed capacity for third parties (in Mexico) 	13,784,510
Total Direct Emissions	10,587,589
Total Indirect Emissions (Location based)	41,050,978
Total Indirect Emissions (Market based)	41,015,146

In Madrid 2024-03-04,

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Rafael García Meiro CEO

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Certificados ASAP





Carbon Footprint Certificate



HCO-2012/0007

AENOR certifies that the organization

IBERDROLA, S.A.

is in conformity with Standard ISO 14064-1:2018 Standard

for the activities: Emissions of 51,602,735 t CO2e: (Direct emissions: 10,587,589 t CO2e; Indirect emissions (market based): 41,015,146 t CO2e).

> The scope of verification is set out for the activities provided by the organization:

- Renewable, thermal and nuclear power generation
- Electricity distribution.

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Commercialization of natural gas and electricity

The companies included in the scope are: Iberdrola España, Iberdrola Internacional, Scottish Power, Avangrid, Iberdrola México, Neoenergia.

CALCULATED PERIOD: 2023

COMPLIANT WITH: Verified Emissions Report for the period 2023 and AENOR's Verification Statement

which is/are carried out in:

2024-04-14 Issued on:

AENOR CONFIA S.A.U. Génova, 6. 28004 Madrid. España Tel. 91 432 60 00.- www.aenor.es Rafael GARCÍA MEIRO

CEO

