



Greenhouse Gas Report **2021 Period**



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May 2022

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Introduction

Since 2010, when Iberdrola prepared its first Greenhouse Gas (GHG) Report, the company has continuously consolidated its position as a global benchmark for its commitment to transparency and its defence of a sustainable and environmentally friendly growth model. To give continuity to this commitment, Iberdrola now presents its 2021 Greenhouse Gas Report.

Iberdrola publishes this report in order to describe the Greenhouse Gas Inventory and to transparently inform its Stakeholders of the Company's emissions, in accordance with the commitments made in our [Environmental Policy](#) and [Climate Action Policy](#), both of which were approved by the Board of Directors at the meeting of 19 April 2021.

This report contains the company's 2021 Greenhouse Gas (GHG) Inventory, with the following considerations:

- It includes emissions from the activities of the entire Iberdrola group: Iberdrola España (Spain), ScottishPower (United Kingdom), Avangrid (United States), Neoenergía (Brazil), Iberdrola México (Mexico), Iberdrola Energia Internacional (Portugal, France, Italy, Germany, Greece, Australia, Hungary, Romania).
- The greenhouse gases considered are: CO₂, SF₆, CH₄, N₂O and CFC's. (NF₃ is not considered, as it is not used in Iberdrola).
- The consolidation of the GHG emissions is addressed from an operational control standpoint¹.
- In the reporting criteria for its generation assets, Iberdrola differentiates between **“own” production and installed capacity and production and installed capacity for “third parties”**. The last one reflects the particular operating conditions of some of our plants in Mexico, which Iberdrola operates under the direction of the Federal Electricity Commission (CFE) as an Independent Power Producer (IPP). Under these conditions, the IPP plants include their emissions in the indirect scope of this report.

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.

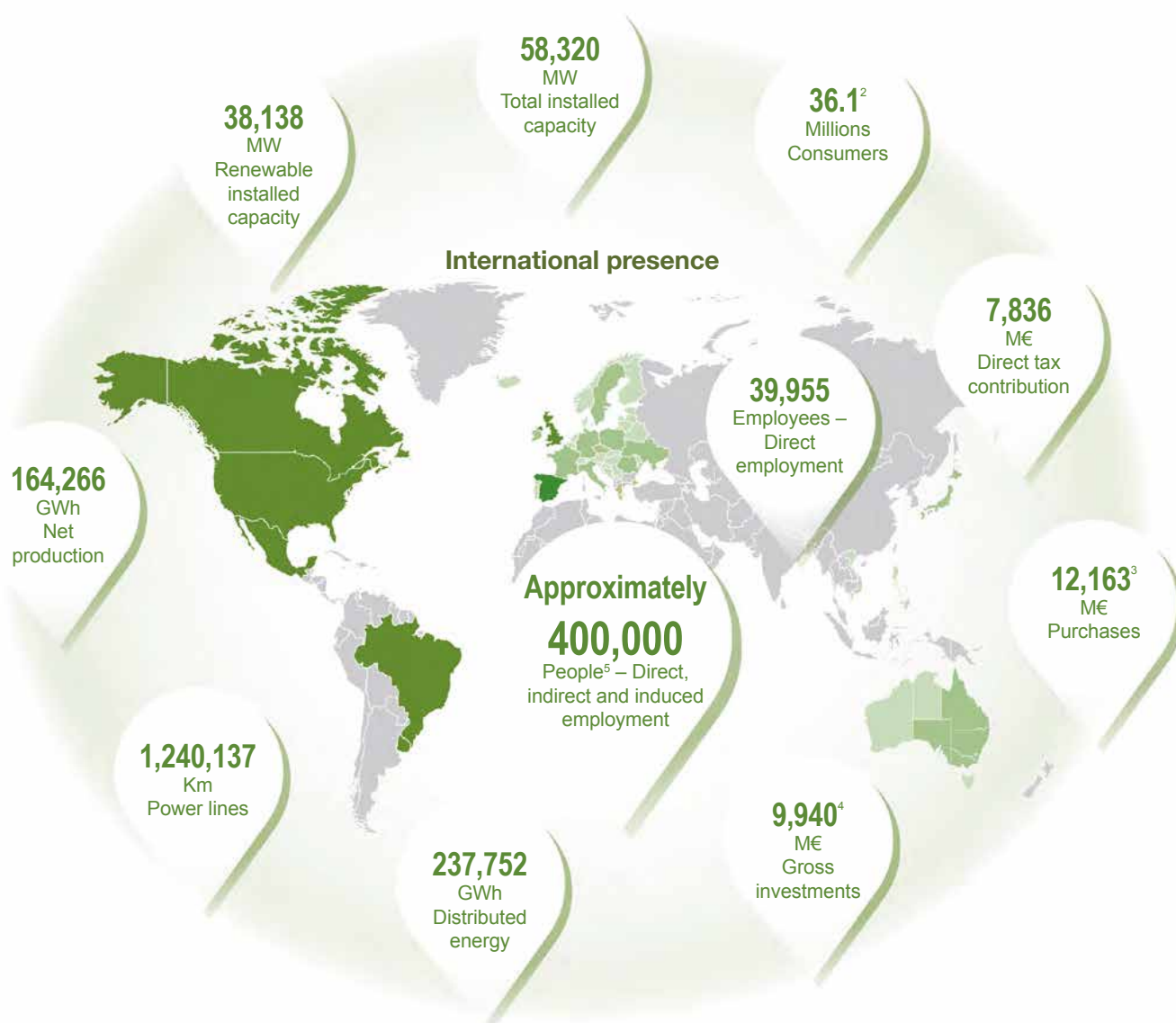
¹ With the exception of the nuclear power stations and partly controlled cogeneration stations in Spain and hydropower stations in Brazil, which are accounted for on a share basis in keeping with the Sustainability Report.

2. The energy company of the future

With over 170 years of history behind it, Iberdrola is now a global energy leader, the number one producer of wind power, and one of the world's biggest electricity utilities in terms of market capitalisation².

The group supplies energy to around 100 million people in dozens of countries, employs around 40,000 people and has assets with more than €140 billion.

Key figures of the group



(1) At year-end 2021.

(2) Consumers: for electric power, total number of liberalised market customers is used for areas of distribution and liberalised supply in the liberalised market, while supply points are used for the other areas. For gas: total number of liberalised market gas customers is used, except for the United States, where total number of supply points is used.

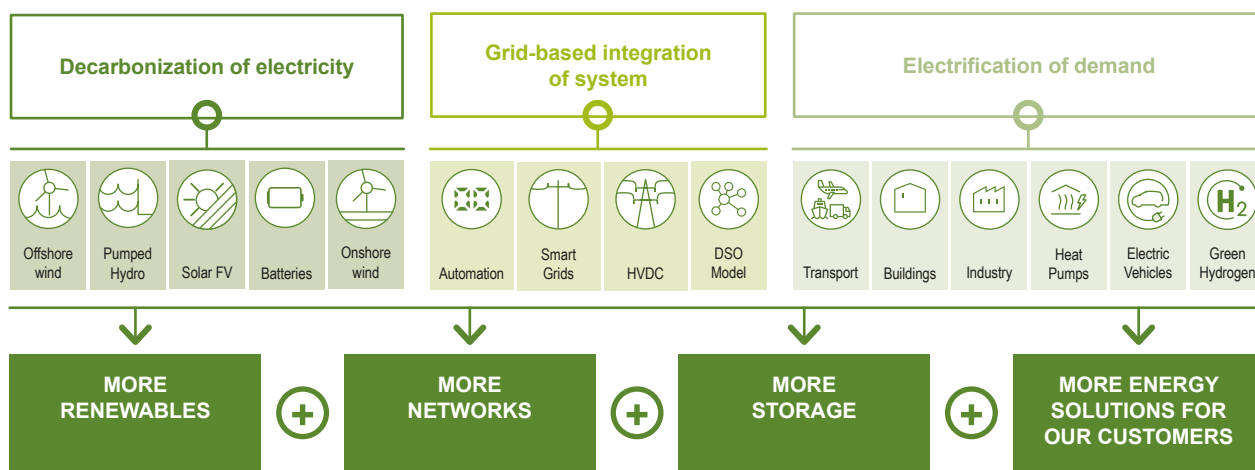
(3) Volume awarded during the year. Amount invoiced in 2021: € 9,423.7 million.

(4) Includes the purchase of Neoenergia Brasília (CEB-D), in the amount of €409 million.

(5) Data from the Study of Iberdrola's Impact, prepared by PwC using data for financial year 2020.

Iberdrola strongly believes that the transition to a carbon neutral economy by 2050 is technologically possible, economically viable and socially necessary. The decarbonisation of the economy is a great opportunity to create wealth, generate employment and improve the state of the planet and people's health. This is why the group is committed to taking a leading role in energy transition, a journey in which Iberdrola was first embarked on 20 years ago and that has led to an investment of €120 billion since then.

This commitment will be achieved by encouraging:



The Iberdrola group has committed **to reduce its emissions intensity to 50 gCO₂/kWh globally by 2030**, thus achieving an 86 % reduction in three decades, as well as being **net zero globally by 2050**.

3. Relevant Changes and Limits of the Organisation

3.1 Significant changes to the emissions
inventory

3.2 Limits of the organisation

3.1 SIGNIFICANT CHANGES TO THE EMISSIONS INVENTORY

The following significant changes affecting the development of this report took place in 2021:

Modification of the methodology to calculate emissions:

- In the section on indirect GHG emissions caused by imported energy: the calculation of emissions associated with the consumption of electrical energy in pumping is optimised.
- In the section on indirect GHG emissions associated with the use of the organisation's products: modification of the calculation of Emissions associated with electrical energy purchased for sale to end customers.

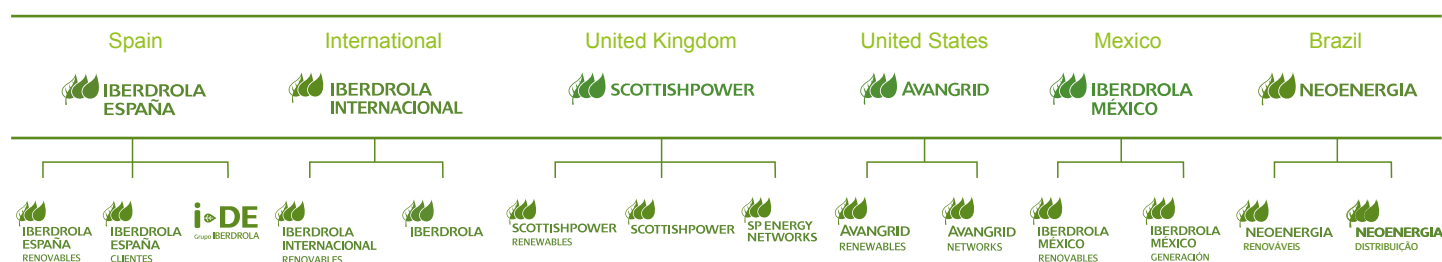
3.2 LIMITS OF THE ORGANISATION

The consolidation of GHG emissions is considered from an operational control standpoint, as stated in the considerations in the introduction to this report.

The share percentages are specified in the Consolidated Annual Financial Statements Report and Consolidated Management Report corresponding to the fiscal year 31 December 2021.

Iberdrola has sought to identify and adapt to the needs of each of the countries in which it operates. The company has used the experiences of each market to reinforce its brand values and, beyond the location of the business, has created a brand culture based on a global-local balance:

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 presented at subholding company level:

- Iberdrola España (Spain).
- ScottishPower (United Kingdom).
- Avangrid (United States of America).
- Neoenergia (Brazil).
- Iberdrola México (Mexico).
- Iberdrola Energia Internacional (Portugal, France, Italy, Germany, Greece, Australia, Romania, Hungary).

4. Operating limits and exclusions

4.1 Operating limits

4.2 Exclusions

4.1 OPERATING LIMITS

In this report the greenhouse gases considered are:

- CO₂ (Emissions from fixed and mobile combustion).
- SF₆ (Fugitive emissions expressed as 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).

NF₃ gas is not considered, as it is not 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.

Direct GHG emissions

Direct GHG emissions from GHG 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:
 - Of methane (CH₄) (natural gas storage and transport).
 - Of sulphur hexafluoride (SF₆) (distribution networks, generation substations, etc.).
 - From refrigerant gases (CFCs) from air-conditioning equipment.
- Emissions from mobile combustion, associated with fuel consumption in transport equipment such as motor vehicles, vessels, etc., (we take into account fleet vehicles and vessels to transport personnel in this section).
- Emissions from land use: associated with the change in land use, calculated by the volume of vegetation generated.

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.

- Indirect GHG emissions due to imported energy.

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.

- 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.
- Emissions associated with losses in the electricity transmission or distribution networks. (Only third-party electricity is considered to avoid double accounting).

A balance between own generated energy and total distributed energy is conducted in order to avoid double accounting.

- Indirect GHG emissions due to transport.

GHG emissions from sources located outside the limits of the organisation. 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 associated with the upstream life cycle of fuels consumed in electricity generation such as extraction, transportation and processing (Well to Tank, WTT).

- Indirect GHG emissions caused by products used by the organisation.

GHG emissions from sources outside the limits of the organisation 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.

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 (due to fuel consumption) for third party production, IPP plants in Mexico.

4.2 EXCLUSIONS

We will exclude from this inventory those emissions that do not figure highly (< 2%) with respect to total emissions. This group includes:

- Emissions from mobile sources in generation facilities.
- Emissions associated with the energy consumption in commercial buildings occupied by Iberdrola Energía Internacional, managed by third parties.

5. Quantification of emissions 2021

GHG Emissions 2021 (t CO ₂ eq)	Iberdrola España	Scottish Power	Avangrid	Neoenergía (*)	Iberdrola México	IEI	Total
Direct GHG Emissions	4,535,617	40,481	1,617,720	985,834	6,046,557	27,141	13,253,352
Indirect GHG Emissions	3,712,703	8,596,300	19,705,472	3,021,737	16,006,104	1,604,399	52,646,715

Direct GHG Emissions (t CO ₂ eq)	Iberdrola España	Scottish Power	Avangrid	Neoenergía	Iberdrola México	IEI	Total
Stationary Combustion Emissions	4,522,530	6,168	1,314,046	921,231	6,038,664	18,418	12,821,058
Power generation emissions	4,478,497	-	1,306,617	921,137	6,029,997	18,395	12,754,643
CH ₄ emissions from generation fuel consumption (t CO ₂ eq)	2,430	-	658	18	3,570	-	6,676
N ₂ O emissions from generation fuel consumption (t CO ₂ eq)	3,747	-	622	26	3,372	-	7,767
Gas storage emissions	-	5,089	-	-	-	-	5,089
Emissions in other facilities, buildings, offices, ... (due to fuel consumption)	37,856	1,079	6,149	50	1,725	24	46,883
Direct fugitive emissions	6,131	18,810	270,395	8,125	6,896	0	310,358
Fugitive emissions of methane (CH ₄) (t CO ₂ eq)	-	9	248,955	-	-	-	248,964
SF ₆ Fugitive Emissions (t CO ₂ eq)	5,529	18,155	21,440	6,731	6,221	-	58,076
Fugitive emissions refrigerant gases (t CO ₂ eq)	602	647	-	1,394	675	-	3,318
Emissions from mobile combustion (t CO ₂ eq)	6,957	15,502	33,278	31,844	996	8,723	97,301
Emissions from land use (t CO ₂ eq)	-	-	-	24,634	-	-	24,634
Total	4,535,617	40,481	1,617,720	985,834	6,046,557	27,141	13,253,352

Indirect GHG Emissions (t CO ₂ eq)	Iberdrola España	Scottish Power	Avangrid	Neoenergía	Iberdrola México	IEI	Total
Indirect GHG Emissions from imported energy	487,353	518,151	402,350	641,731	9,385	2,508	2,061,476
Aux energy consumption in shutdown and pumping	259,224	4,239	26,966	2,130	8,916	2,508	303,983
Electricity consumption in buildings	499	21	18,048	2,016	469	-	21,054
Lost in network	227,629	513,890	357,336	637,585	-	-	1,736,440
Indirect GHG emissions from transportation	738,816	9,330	234,155	217,664	3,681,759	5,279	4,887,003
Emissions from employee work trips	2,138	1,614	2,689	541	247	205	7,435
Commuting emissions	10,447	6,798	992	7,041	2,333	1,259	28,870
Upstream life cycle generation fuel emissions	726,231	918	230,474	210,082	3,679,179	3,815	4,850,698
Indirect GHG Emissions caused by products used by the organization	873,588	444,969	1,100,820	508,456	143,508	351,229	3,422,571
Supply Chain Emissions	873,588	444,969	1,100,820	508,456	143,508	351,229	3,422,571
Indirect GHG Emissions associated with the use of the organization's products	1,612,946	7,623,850	17,968,147	1,653,886	12,171,452	1,245,383	42,275,665
Emissions from electricity purchased from third parties	-	2,378,165	5,512,893	1,653,886	-	899,293	10,444,237
Emissions from gas supplied to customers	1,612,946	5,245,685	12,455,254	-	-	346,090	19,659,976
Indirect GHG Emissions Generation facilities for third parties	-	-	-	-	12,171,452	-	12,171,452
Total	3,712,703	8,596,300	19,705,472	3,021,737	16,006,104	1,604,399	52,646,715

(*) The emissions of Neoenergía (Brazil) have an independent emission verification declaration in accordance with the ABNT NBR ISO 14064-3:2007 standard and the Specifications of Verification of the Brazilian GHG Protocol. Being the verified values included in this report.

6. Base year

We take **2020 as the base year**, replacing 2019. The change is due to:

- Including for the first time information from the subholding Iberdrola Energía Internacional IEI.
- Including in direct emissions, data from two new CO₂ sources for the first time:
 - Coolant gases.
 - Ground use.
- Changes in the calculation methodology with an impact on emissions of more than 10%, the emissions affected are:
 - Those associated with the consumption of electrical energy in pumping, improving the quality of the data, calculating the emissions of the energy consumed on a daily basis.
 - Those associated with electricity purchased from third parties for sale to end customers, the methodology has been redefined to adapt it to the reality of the marketers.

The recalculation of 2020, due to changes in methods, would be as follows:

	2020 -data	recalculated data
Direct emisisions GHG	13,002,609	13,002,609
Indirect emissions GHG	59,734,536	53,716,612

The fields affected by the recalculation being:

Indirect Emissions GHG	2020 - data	recalculated data
Aux energy consumption in shutdown and pumping	451,671	329,915
Emissions from electricity purchased from third parties	16,495,518	10,599,350

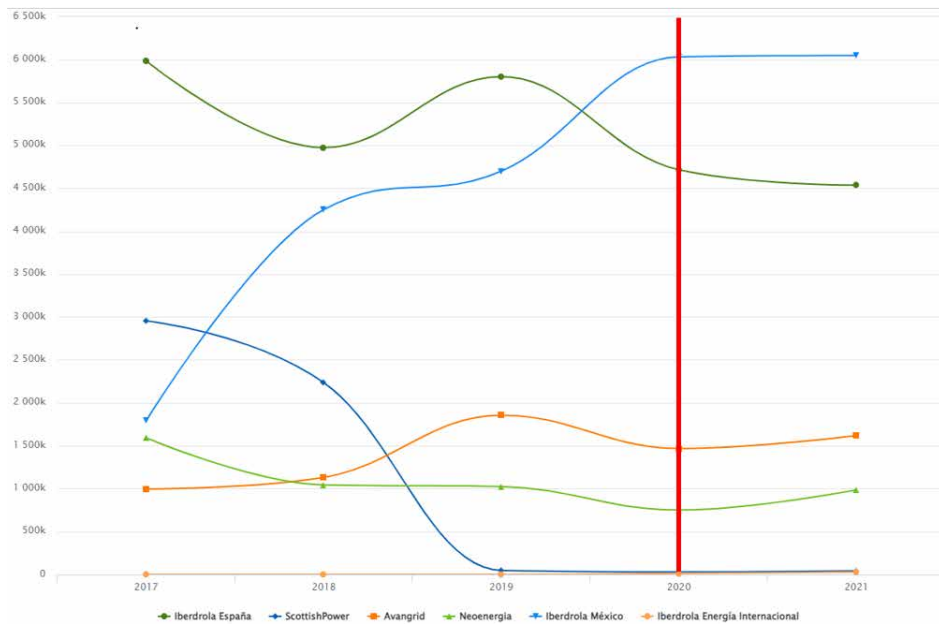
The **base year 2020** - once recalculated would therefore become:

GHG Emissions 2021 (t CO ₂ eq)	Iberdrola España	Scottish Power	Avangrid	Neoenergia	Iberdrola México	IEI	Total
Direct GHG Emissions	4,714,905	29,001	1,466,766	750,128	6,031,094	10,714	13,002,609
Indirect GHG Emissions	4,009,719	8,963,473	19,923,916	1,803,320	17,119,836	1,896,348	53,716,612
Direct GHG Emissions (t CO ₂ eq)	Iberdrola España	Scottish Power	Avangrid	Neoenergia	Iberdrola México	IEI	Total
Stationary Combustion Emissions	4,702,456	6,873	1,180,100	699,834	6,028,580	10,056	12,627,899
Power generation emissions	4,667,569	-	1,173,419	699,722	5,968,099	10,056	12,518,865
CH ₄ emissions from generation fuel consumption (t CO ₂ eq)	1,969	-	528	14	11,670		14,182
N ₂ O emissions from generation fuel consumption (t CO ₂ eq)	4,397	-	629	33	48,681	0	53,741
Gas storage emissions	-	5,404	-	-	-	-	5,404
Emissions in other facilities, buildings, offices, ... (due to fuel consumption)	28,520	1,470	5,523	65	131	0	35,708
Direct fugitive emissions	6,066	15,489	249,788	8,301	2,465	615	282,723
Fugitive emissions of methane (CH ₄) (t CO ₂ eq)	0	16	218,010	0	0	0	218,026
SF ₆ Fugitive Emissions (t CO ₂ eq)	4,003	15,185	31,776	7,444	1,776	109	60,293
Fugitive emissions refrigerant gases (t CO ₂ eq)	2,063	287	2	857	689	506	4,404
Emissions from mobile combustion (t CO ₂ eq)	6,383	6,639	36,879	24,117	49	43	74,110
Emissions from land use (t CO ₂ eq)	0	0	0	17,876	0	0	17,876
Total	4,714,905	29,001	1,466,766	750,128	6,031,094	10,714	13,002,609
Indirect GHG Emissions (t CO ₂ eq)	Iberdrola España	Scottish Power	Avangrid	Neoenergia	Iberdrola México	IEI	Total
Indirect GHG Emissions from imported energy	515,676	429,696	316,157	490,242	8,080	1,048	1,760,899
Aux energy consumption in shutdown and pumping	285,596	4,744	30,163	1,327	7,038	1,048	329,915
Electricity consumption in buildings	1,135	20	19,603	1,339	1,042	0	23,138
Lost in network	228,945	424,932	266,392	487,576	-	0	1,407,845
Indirect GHG emissions from transportation	601,675	5,557	159,384	129,671	3,035,893	2,246	3,934,426
Emissions from employee work trips	2,849	1,853	1,680	1,015	349	193	7,940
Commuting emissions	13,126	3,002	3,236	6,516	1,206	825	27,910
Upstream life cycle generation fuel emissions	585,699	703	154,468	122,140	3,034,337	1,228	3,898,575
Indirect GHG Emissions caused by products used by the organization	1,336,339	957,800	1,800,855	828,434	327,524	232,238	5,483,189
Supply Chain Emissions	1,336,339	957,800	1,800,855	828,434	327,524	232,238	5,483,189
Indirect GHG Emissions associated with the use of the organization's products	1,556,030	7,570,420	17,647,520	354,973	13,748,340	1,660,817	42,538,099
Emissions from electricity purchased from third parties	0	2,525,410	6,321,790	354,973	-	1,397,177	10,599,350
Emissions from gas supplied to customers	1,556,030	5,045,010	11,325,730	0	0	263,640	18,190,409
Indirect GHG Emissions Generation facilities for third parties	-	-	-	-	13,748,340	-	13,748,340
Total	4,009,719	8,963,473	19,923,916	1,803,320	17,119,836	1,896,348	53,716,612

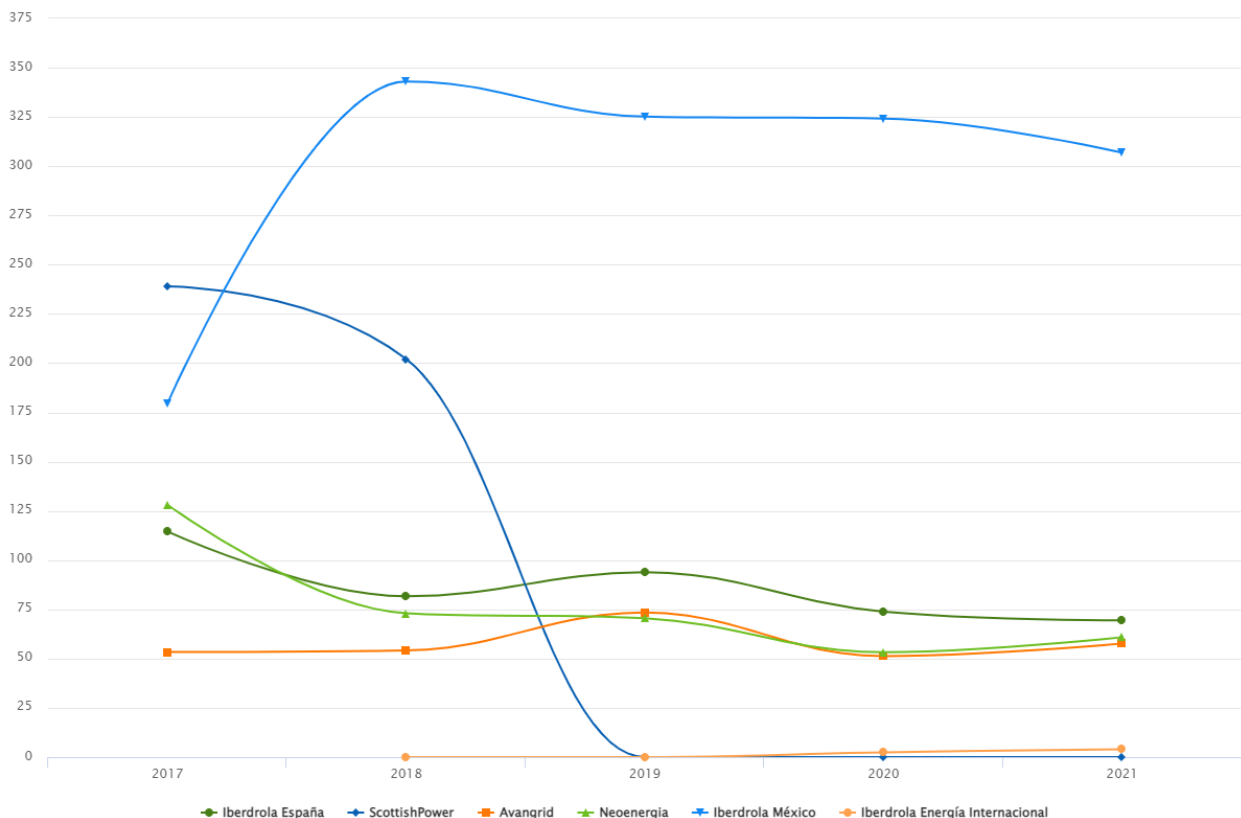
(The values that change with respect to the 2020 verified values are highlighted)

7. Conclusions

Emissions remain stable compared to the base year, in all sub-holdings.



Despite a slight increase in direct emissions compared to 2020, emissions intensity continues the trend downwards, driven by the increase in renewable generation.



Emission intensity in 2021 was 96 g CO₂/kWh.

Own production in 2021 was 129,331 GWh, with renewable production exceeding 75,000 GWh.

The Iberdrola group has committed to reduce its emissions intensity to 50 g CO₂/kWh globally by 2030.



8. 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%.

9. Quantification methods

9.1. Direct ghg emissions

9.2. Indirect ghg emissions

Considering the diversity of the organization's activities and the geographical dispersion of the facilities, as an approach for the quantification of the GHG Emissions, Iberdrola has selected the method: product of the activity data (obtained internally, or provided by a supplier) by its corresponding Emission Factor (direct fuel analysis or emission factors from official sources with international recognition).

Sources used to obtain the Emission Factors (EF) are:

- **MITERD** Spain.
- **DEFRA** (Department for Environment Food & Rural Affairs): UK and International.
- **EPA** (Environmental Protection Agency) USA and Mexico.
- **Ferramenta** Brazil.
- **IPCC (AR5)** For global Emissions Factors.

9.1. DIRECT GHG EMISSIONS

Stationary combustion emissions

- CO₂ emissions, from electric power generation facilities (due to the combustion of any type of fuels).

Emissions resulting from the combustion of any type of fuel consumed in stationary (fixed) equipment.

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.

$$\text{Emissions CO}_2 (t) = DA^6(GJ) \times FE^7 \left(\frac{tCO_2}{GJ} \right)$$

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

We calculate CH₄ and N₂O emissions by multiplying the fuel consumption (in energy) by a percentage factor (Kg/GJ) according to IPCC or EPA data.

With the CH₄ and N₂O emissions we obtain the CO₂ eq emissions by means of:

$$tCO_2 eq = CH_4 (t) \times PCG^8 \left(\frac{tCO_2}{tCH_4} \right) \mid tCO_2 eq = N_2O (t) \times PCG \left(\frac{tCO_2}{tN_2O} \right)$$

- 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).

For the calculation of emissions derived from the combustion of diesel, LPG and natural gas:

$$tCO_2 eq = DA (GJ) \times FE \left(\frac{tCO_2}{GJ} \right)$$

6. 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.

7. 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. t is expressed as t CO₂/GJ.

8. GWP: Global Warming Potential of the gas (IPCC AR5).

- CO₂ emissions from the combustion of fuels in gas storage facilities.

This refers to carbon dioxide (CO₂) emissions produced by the gas storage facility at Hatfield Moore (United Kingdom), due to combustion and CH₄ losses from venting.

$$tCO_2 eq = DA \text{ (GJ)} \times FE \left(\frac{tCO_2}{GJ} \right)$$

Direct fugitive emissions in anthropogenic systems:

- From methane (CH₄).

These are emissions due to methane (CH₄) leaks that occur in gas transport 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.

$$tCO_2 eq = Emissions \text{ CH}_4 \text{ (t)} \times PCG \left(\frac{tCO_2}{tCH_4} \right)$$

- From sulphur hexafluoride (SF₆)

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

The leaked gas is measured by weight difference when recharging the equipment.

$$tCO_2 eq = Emissions \text{ SF}_6 \text{ (t)} \times PCG \left(\frac{tCO_2}{tSF_6} \right)$$

- 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.

Emissions from mobile consumption

These are emissions resulting from the consumption of fuel in transport equipment, motor vehicles, vessels, and trucks. In the case of Iberdrola, we refer to fleet cars and vessels used to transport staff at offshore wind farms. The fuel types taken into account are: petrol, diesel, ethanol, LPG (Liquefied Petroleum Gas) and marine diesel-fuel.

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.

It was assumed that from the volume generated in the activities, 47% of the mass is carbon. The ratio of 44/12 was used for the conversion of Carbon (C) to CO₂, following IPCC guidelines.

9.2. 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.

Indirect GHG emissions due to imported energy

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.

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

Emissions derived from the use of electrical energy for the operation of auxiliary systems of plants in outages (no production).

The calculation is made according to the GHG Protocol recommendation “Location base” (the calculation of the auxiliary consumption is made by total energy balance).

$$t\ CO_2eq = \text{Energy Consumption (MWh)} \times FE^9 \left(\frac{t\ CO_2}{MWh} \right)$$

- 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).

All energy consumed is registered (renewable and non-renewable), accounting those which have a certificate of origin as renewable energy.

Electrical energy consumption in buildings shall be accounted for according to the recommendations of the GHG Protocol, Scope 2, according to two methodologies:

- Location-based: Calculate using the country's average emissions mix, by total energy consumed in buildings.
- Market-based: The emissions mix used is that of the electricity supply company (if available), the energy accounted for is the total energy supplied, discounting the energy with certification of origin (green energy, 0 emissions).
- Emissions associated with losses in the electricity transmission or distribution networks.

(Only third-party electricity is considered to avoid double accounting).

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. There are several reasons and factors that contribute to these losses, the most important of which is the Joule Effect.

Own generation is subtracted from the energy transmitted or distributed to avoid double accounting of emissions already considered in the direct scope.

In this section we will calculate the emissions resulting from these losses in the grid from energy distributed or transported from third parties

9 EF: Emission factor of the country where the energy is accounted for.

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

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

Indirect GHG emissions due to transport

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' business travel by different means of transport (air, car, train, ...).

Emissions associated with business travel are calculated on the basis of the kilometres travelled by each means of transport and the emission factor 1 of the means of transport considered:

$$tCO_2eq = Kms \text{ per traveller (Means of Transport)} \times FE \left(\frac{tCO_2eq}{Kms \text{ per traveller}} \right)$$

- Emissions associated with commuting.

These are emissions from employees' commuting to and from work (commuting in company fleet cars is not included).

The information is obtained through employee surveys.

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

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

Indirect GHG emissions caused by products used by the organisation

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

- Emissions associated with the supply chain.

The calculation is performed at global level by Iberdrola S.A., with the emissions information provided by suppliers through the corporate purchasing tool, a global ratio of kgCO₂/€ invoiced is calculated, which makes it possible to determine the emissions associated with each country subholding based on its turnover.

Indirect GHG emissions associated with the use of the organisation's products

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.

These are the emissions from electricity purchased from third parties for sale to the end customer where direct emissions are not accounted for. The emissions calculated are those from the generation of the energy purchased from third parties.

The energy purchased from third parties, for sale to end customers, is calculated by subtracting the renewable energy generated from the total energy sold, or in the case of distributors, discounting the distributed renewable energy (if the data is known), then multiplying the resulting energy by the country's emission factor to obtain its total emissions, and the direct emissions from own generation are subtracted to avoid double accounting, the resulting value being the emissions of the energy purchased from third parties.

- Emissions associated with gas supplied to customers.

These are the CO₂ emissions from the combustion of the gas sold to the end customer.

- Emissions from power generation facilities (due to fuel consumption) for third party production, IPP plants in Mexico.

These are the emissions produced in combined cycle plants operating under the Independent Power Producer (IPP) modality.

We measure the emissions of carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄), in T CO₂ eq, produced by the fixed combustion of fossil fuels.

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

$$\text{Emissions CO}_2 (t) = DA(GJ) \times FE \left(\frac{t \text{ CO}_2}{GJ} \right)$$

It only applies to Mexico plants.

Report completion date 06 may 2022

Annexes

A.1. ABNT Verification statement for neoenergía (Brazil).

A.2. AENOR Verification statement.

A.1. ABNT VERIFICATION STATEMENT FOR NEOENERGIA (BRAZIL)



DECLARAÇÃO DE CONFORMIDADE
Conformity Declaration

DECLARAÇÃO DE VERIFICAÇÃO

Nº 367.010/22

Esta Declaração de Verificação documenta que a ABNT realizou atividades de verificação de acordo com a norma ABNT NBR ISO 14064-3:2007 e as *Especificações de Verificação do Programa Brasileiro GHG Protocol*.

NEOENERGIA S/A
Responsável pelo Inventário: Lucas Cavicchioli
E-mail: lucas.cavicchioli@neoenergia.com

Associação Brasileira de Normas Técnicas – ABNT
Verificador Líder: Thiago Ernani Guinancio Milagres
E-mail: thiagoguinancio@gmail.com

As emissões de gases de efeito estufa (GEE) informadas pela NEOENERGIA S/A em seu inventário de emissões, de 1º de janeiro até 31 de dezembro de 2021, são verificáveis e cumprem os requisitos da norma ABNT NBR ISO 14064-1:2007 e do Programa Brasileiro GHG Protocol, detalhados nas *Especificações do Programa Brasileiro GHG Protocol de Contabilização, Quantificação e Publicação de Inventários Corporativos de Emissões de Gases de Efeito Estufa (EPB)*.



Nível de Confiança

A ABNT atribuiu o seguinte nível de confiança ao processo de verificação:

☒ Verificação com nível de confiança limitado.

"Não há indícios de que o inventário de gases de efeito estufa da NEOENERGIA S/A para o ano de 2021 não esteja materialmente correto, não seja uma representação justa dos dados e informações de GEE e não tenha sido preparado de acordo com as EPB."

Os limites do processo de verificação foram:
O número mínimo de visitas às instalações não foi atingido, pois a verificação foi feita de forma remota, como permitido pela equipe do PBGHGP para o Ciclo 2022 por causa da pandemia do covid-19.



ABNT Associação Brasileira de Normas Técnicas

Av. Treze de Maio, 13 – 28º Andar – Centro – Rio de Janeiro – RJ – CEP 20031-901

Rua Conselheiro Nebras, 1.131 – Campos Eliseos – São Paulo – SP – CEP 01203-002



DECLARAÇÃO DE CONFORMIDADE

Conformity Declaration

Descrição do Escopo da Verificação

O inventário do ano de 2021 da **NEOENERGIA S/A** foi verificado dentro do seguinte escopo:

Limites Organizacionais	Limites operacionais
☒ Controle Operacional ☒ Participação Societária	☒ Escopo 1 ☒ Escopo 2 – Abordagem em localização ☐ Escopo 2 – Abordagem Baseada em escolha de compra ☒ Escopo 3

☐ Foram excluídas da Verificação: N/A

Instalações visitadas

Lista das instalações visitadas durante o processo de verificação:

A verificação ocorreu nos dias 05 e 11 a 13 de abril de 2022 de forma remota.



Total de emissões verificadas em toda a organização (Controle Operacional)

GEE	Toneladas Métricas de CO ₂ equivalente (tCO ₂ e)			
	Escopo 1	Escopo 2 Abordagem baseada na localização	Escopo 2 Abordagem baseada em escolha de compra	Escopo 3 (se aplicável)
CO ₂	-	-	-	-
CH ₄	-	-	-	-
N ₂ O	-	-	-	-
HFCs	-	-	-	-
PFCs	-	-	-	-
SF ₆	-	-	-	-
NF ₃	-	-	-	-
TOTAL	985.834,00	641.731,72	-	2.380.006,00
CO ₂ Biogênico	1.403,53	-	-	-

ABNT Associação Brasileira de Normas Técnicas

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Total de emissões verificadas em toda a organização
(Participação Societária)

GEE	Toneladas Métricas de CO ₂ equivalente (tCO ₂ e)			
	Escopo 1	Escopo 2 Abordagem baseada na localização	Escopo 2 Abordagem baseada em escolha de compra	Escopo 3 (se aplicável)
CO ₂	-	-	-	-
CH ₄	-	-	-	-
N ₂ O	-	-	-	-
HFCs	-	-	-	-
PFCs	-	-	-	-
SF ₆	-	-	-	-
NF ₃	-	-	-	-
TOTAL	985.834,00	641.731,72	-	2.380.006,00
CO ₂ Biogênico	1.403,53	-	-	-

Comentários Adicionais

A organização elaborou um sistema de gestão de dados de GEE, o Sygris, que não informa os dados de emissões para os seis gases/família de gases de GEE separadamente em toneladas métricas de CO₂ equivalente.

Foi adotado o procedimento de verificação remota através da utilização da plataforma Microsoft Teams para garantir um nível de confiança limitado ao processo de verificação.



Conflitos de Interesse (CDI)

Eu, Thiago Ernani Guinancio Milagres, certifico que nenhum conflito de interesse existe entre NEOENERGIA S/A e a ABNT, ou qualquer dos indivíduos membros da equipe de verificação envolvidos na verificação do inventário, conforme definido no capítulo 3.2.1 das *Especificações de Verificação do Programa Brasileiro GHG Protocol*.

Thiago Ernani Guinancio Milagres
(Verificador Líder)

04/05/2022
Data

☒ Reconhecimento de assinatura digital

ABNT Associação Brasileira de Normas Técnicas

Av. Treze de Maio, 13 – 28º Andar – Centro – Rio de Janeiro – RJ – CEP 20031-901
Rua Conselheiro Nebias, 1.131 – Campos Eliseos – São Paulo – SP – CEP 01203-002



DECLARAÇÃO DE CONFORMIDADE

Conformity Declaration

Conclusão do Verificador sobre o Inventário de Emissões de GEE

Como responsáveis pelas atividades de verificação do inventário de GEE da NEOENERGIA S/A, atestamos que as informações contidas neste documento são verdadeiras.

Thiago Ernani Guinancio Milagres

(Verificador Líder)

04/05/2022

Data

☒ Reconhecimento de assinatura digital¹

Marina Brito

(Revisor Independente)

04/05/2022

Data

☒ Reconhecimento de assinatura digital¹

Autorização

Eu, **Lucas Cavicchioli**, aceito os resultados desta declaração de verificação.

Lucas Cavicchioli

Data

☐ Reconhecimento de assinatura digital¹



Rio de Janeiro, 05 de maio de 2022.

Guy Ladvocat
Gerente de Certificação de Sistemas

¹Ao marcar a caixa "Reconhecimento de assinatura digital", concordo que esta declaração de verificação seja considerada "feita por escrito" e "assinada" para todos os fins e que quaisquer registros eletrônicos serão considerados "feitos por escrito". Renuncio expressamente a todo e qualquer direito de negar a obrigatoriedade jurídica, a validade ou a executoriedade desta declaração de verificação e de quaisquer documentos a ela relacionados com base em que tenham sido elaborados e concluídos eletronicamente.

Esta declaração de verificação é suportada por contrato de atendimento à norma e procedimentos da ABNT e é válido somente em original e com o timbre da ABNT em alto-relevo seco, assinado pelo Gerente de Certificação de Sistemas. Sua validade pode ser confirmada no seguinte endereço eletrônico: www.abnt.org.br. (CNPJ: 33.402.892/0001-06 – Tel.: (21) 3974-2300).

A.2. AENOR VERIFICATION STATEMENT



Declaración de Verificación de AENOR para IBERDROLA del Inventario de emisiones de gases de efecto invernadero correspondientes al año 2021

EXPEDIENTE: 1995/0014/GEN/04

Introducción

IBERDROLA (en adelante la organización) ha encargado a AENOR INTERNACIONAL, S.A.U. (AENOR) llevar a cabo una revisión limitada del Inventario de emisiones de gases de efecto invernadero (GEI) para el año 2021 de sus actividades incluidas en el informe de GEI de mayo de 2022, el cual es parte de esta Declaración.

AENOR se encuentra acreditada por la Entidad Mexicana de Acreditación, con número OVVGEI 004/14 (vigente a partir del 31/10/2014; fecha de actualización 19/07/2021), conforme a la norma ISO 14065:2013, para la realización de verificación de emisiones de gases de efecto invernadero conforme a los requisitos establecidos en la norma ISO 14064-3:2006 para los sectores de la energía y desechos.

Inventario de emisiones de GEI de mayo de 2022 emitido por la Organización: IBERDROLA, S.A. con domicilio social en C/ Tomás Redondo 1. 28033 Madrid (España).

Representante de la Organización: D. Bernardo LLANEZA FOLGUERAS perteneciente a la Dirección de Innovación, Sostenibilidad y Calidad.

IBERDROLA tuvo la responsabilidad de reportar sus emisiones de GEI de acuerdo a la Norma de referencia ISO 14064-1:2018.

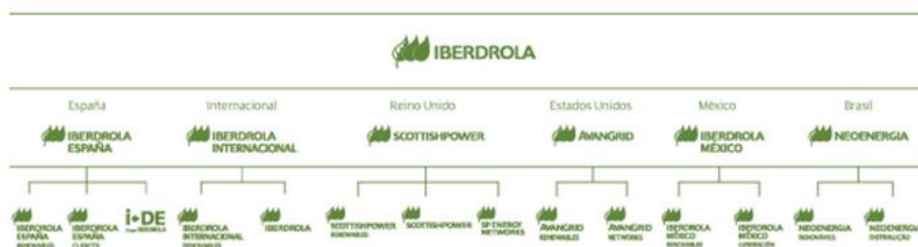
Objetivo

El objetivo de la verificación es facilitar a las partes interesadas un juicio profesional e independiente acerca de la información y datos contenidos en el Informe de GEI de IBERDROLA mencionado.

Alcance de la Verificación

El inventario de GEI del Grupo Iberdrola se presenta "a nivel SubHolding", entendiéndose por "SubHolding" una agrupación de empresas según el ámbito geográfico.

Las empresas incluidas en el alcance son:



Durante la verificación se analizó la información atendiendo al enfoque de control operacional que establece la ISO 14064-1:2018, es decir, la organización notifica todas las emisiones y o absorciones de GEIs atribuibles a las operaciones sobre las que ejerce control en las respectivas instalaciones.

Durante la verificación se analizó la información atendiendo al enfoque de control operacional, es decir, la organización notifica todas las emisiones y o absorciones de GEIs atribuibles a las operaciones sobre las que ejerce control en las respectivas instalaciones, a excepción de las centrales nucleares y de las cogeneraciones



participadas de España, que se contabiliza bajo cuota de participación, según establece la norma ISO 14064-1:2018, alineándose con el Informe de Sostenibilidad.

Además, para alguna de las centrales de producción de energía en México, las Plantas Productoras Independientes de Energía (PIE), en las que el gestor del sistema, Comisión Federal de Electricidad, decide su modo de operación, sus emisiones se han reportado como emisiones indirectas al ser instalaciones de producción con capacidad instalada “para terceros”, y se indica que Iberdrola no tiene pleno control de la operación.

En mayo de 2022 Neoenergía (Brasil) ha emitido su propio inventario de emisiones de GEI del año 2021, verificado por una entidad externa acreditada para GHG Protocol en Brasil, sus datos se incluyen en el informe aplicando el enfoque de control operacional.

Se han considerado los gases de efecto invernadero: CO₂, CH₄, N₂O, SF₆ y CFCs

Las actividades directas, indirectas y exclusiones de la verificación

Las actividades objeto de la verificación se establecen en seis categorías (siguiendo las directrices de la Norma ISO 14064-1:2018 que son:

- Categoría 1: Emisiones y remociones directas de GEI
 - o Emisiones de combustión estacionaria:
 - Emisiones de CO₂, de las instalaciones de generación de energía eléctrica (por combustión de cualquier tipo de combustibles).
 - Emisiones de metano (CH₄) y óxido nitroso (N₂O) asociadas a la combustión de cualquier tipo de combustibles (mayoritariamente en la generación de electricidad).
 - Emisiones de CO₂ por la combustión de combustibles en edificios o instalaciones, provenientes de los equipos de calefacción o grupos electrógenos.
 - Emisiones de CO₂ por la combustión de combustibles en instalaciones de almacenamiento de gas.
 - o Emisiones fugitivas directas en sistemas antropogénicos:
 - De metano (CH₄) (almacenamiento y transporte de gas natural).
 - De hexafluoruro de azufre (SF₆) (redes de distribución, subestaciones generación).
 - De gases de refrigeración (CFC's) de equipos de climatización.
 - o Emisiones por combustión móvil, asociadas al consumo de combustible en equipos de transporte, consideramos en este apartado los vehículos de flota y barcos para transporte de personal.
 - o Emisiones por el uso del suelo: asociadas con el cambio de uso del suelo calculándose por el volumen de vegetación generada (Brasil).
- Categoría 2: Emisiones indirectas de GEI por energía importada
 - o Emisiones asociadas al consumo de energía eléctrica en parada en las centrales térmicas, renovables y nucleares.
 - o Emisiones asociadas al consumo de energía eléctrica en los bombeos de las centrales hidráulicas.
 - o Emisiones asociadas al consumo de electricidad en los edificios del grupo.
 - o Emisiones asociadas a las pérdidas de red en el transporte o distribución de electricidad, para la actividad de transporte y distribución de energía eléctrica las emisiones se calculan considerando las pérdidas de electricidad como energía importada.

Se hace un balance entre la energía generada propia y la energía distribuida total para evitar la doble contabilidad.
- Categoría 3: Emisiones indirectas de GEI por transporte
 - o Emisiones asociadas a los viajes de empleados por trabajo.



- Emisiones asociadas al commuting (transporte de empleados del lugar de trabajo a su residencia).
- Categoría 4: Emisiones indirectas de GEI por productos utilizados por la organización
 - Emisiones asociadas a la producción de bienes y servicios comprados o adquiridos por la empresa declarante en el año de referencia: Emisiones asociadas a la cadena de proveedores.
- Categoría 5: Emisiones indirectas de GEI asociadas con el uso de productos energéticos que comercializa la organización
 - Emisiones asociadas a la energía eléctrica comprada a terceros para venta a cliente final.
 - Emisiones asociadas al gas suministrado a clientes.
 - Emisiones de las instalaciones de generación de energía eléctrica de producción para terceros, plantas PIE en México
- Categoría 6: Emisiones indirectas de GEI por otras fuentes
 - No se han identificado

La organización no ha excluido la cuantificación de ninguna categoría de emisiones directas o indirectas relevante, ha excluido aquellas emisiones que poseen una baja representatividad, (< 2%) respecto al total de emisiones. En este grupo se encuentran:

- Emisiones procedentes de fuentes móviles de las instalaciones de generación.
- Emisiones asociadas al consumo de energía de edificios comerciales de Iberdrola Energía Internacional, gestionados por terceros.

Actividades de mitigación

En el informe de notificación de marzo de 2022 no se han identificado iniciativas de reducción de emisiones y/o aumento de remociones de GEI.

Año base

La organización ha establecido el año 2020 como su año base para el análisis de la evolución de su huella de carbono. Además, se han recalculado los datos de emisiones del año base 2020 debido a cambios en la metodología de cálculo que dan lugar a una variación en las emisiones mayor del 10%.

Importancia relativa

Para la verificación se acordó considerar discrepancias materiales aquellas omisiones, distorsiones o errores que puedan ser cuantificados y resulten en una diferencia mayor al 5% con respecto al total declarado de emisiones, salvo para aquellas instalaciones que se encuentran sometidas a verificación reglamentaria, en cuyo caso será del 2%.

Criterios

Los criterios e información que se han tenido en cuenta para realizar la verificación han sido:

- La Norma ISO 14064-1:2018: Especificación con orientación, a nivel de las organizaciones, para la cuantificación y el informe de las emisiones y remociones de gases de efecto invernadero.



- La norma ISO 14064-3:2006: Especificación con orientación para la validación y verificación de declaraciones sobre gases de efecto invernadero.

Por último, ha sido verificado el “Informe de Gases de Efecto Invernadero de Iberdrola Ejercicio 2021” de mayo de 2022, preparado por la organización.

AENOR se exime expresamente de cualquier responsabilidad por decisiones, de inversión o de otro tipo, basadas en la presente declaración.

Conclusión

Basado en lo anterior, y de acuerdo con el nivel de aseguramiento limitado, en nuestra opinión *No hay evidencia, que haga suponer que la información sobre emisiones reportada en el “Informe de Gases de Efecto Invernadero de Iberdrola Ejercicio 2021” de mayo de 2022, no sea una representación fiel de las emisiones de sus actividades.*

De forma consecuente con esta Declaración a continuación se relacionan los datos de emisiones y remociones finalmente verificados:

Emisiones de GEI IBERDROLA en el año 2021		t CO ₂ e
Categoría 1: Emisiones y remociones directas de GEI		13.253.352
- Emisiones de CO ₂ por el consumo de combustibles usados para la generación de electricidad		12.821.058
- Emisiones de CH ₄ por el consumo de combustibles usados para la generación de electricidad		6.676
- Emisiones de N ₂ O por el consumo de combustibles usados para la generación de electricidad		7.767
- Emisiones de CO ₂ por el consumo de combustibles usados en los almacenamientos de gas		5.089
- Emisiones de CO ₂ eq por el consumo de combustibles usados en el resto de instalaciones (edificios, oficinas)		46.883
- Emisiones fugitivas de CH ₄ (almacenamiento y transporte de gas)		248.964
- Emisiones fugitivas de SF ₆ (redes de distribución de electricidad, subestaciones de generación)		58.076
- Emisiones fugitivas de CFCs (gases refrigerantes)		3.318
- Emisiones de CO ₂ eq por el consumo de combustibles en vehículos		97.301
- Emisiones de CO ₂ eq por el cambio de uso del suelo (poda en Brasil)		24.634
Categoría 2: Emisiones indirectas de GEI por energía importada		2.061.476
- Asociadas al consumo de electricidad en instalaciones de generación durante las paradas y en el bombeo		303.983
- Asociadas al consumo de electricidad en edificios		21.054
- Asociadas a las pérdidas en las redes de distribución de electricidad		1.736.440



Emisiones de GEI IBERDROLA en el año 2021		t CO ₂ e
Categoría 3: Emisiones indirectas de GEI por transporte		4.887.003
- Asociadas a los viajes de negocio de los empleados		7.435
- Asociadas a los desplazamientos al trabajo de los empleados		28.870
- Asociadas al ciclo de vida aguas arriba de los combustibles consumidos		4.850.698
Categoría 4: Emisiones indirectas de GEI por productos utilizados por la organización		3.422.571
- Asociadas a la cadena de proveedores de los productos y servicios adquiridos		3.422.571
Categoría 5: Emisiones indirectas de GEI asociadas al uso de productos de la organización		42.275.665
- Asociadas a la electricidad comercializada que es comprada a terceros		10.444.237
- Asociadas al uso del gas natural suministrado a clientes		19.659.976
- Por el consumo de combustibles para la generación de electricidad en plantas con capacidad instalada para terceros		12.171.452
Emisiones Directas Totales		13.253.352
Emisiones Indirectas Totales		52.646.715

Verificador Jefe: Juan Hernán Diez

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Revisor Técnico: Fernando Segarra Orero

Madrid, 17 de mayo de 2022

