

Eletrobras Group Greenhouse Gas (GHG) Emissions Inventory

2022

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Eletrobras

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Global climate change poses an existential threat to our current and future society, and measures need to be taken to minimize its effects. Efforts to stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system have been high on the agendas of governments, the scientific community and businesses since the United Nations Framework Convention on Climate Change was signed in 1992 and enacted in Brazil by Decree no. 2 652/1998.

According to the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6):

1. Human-induced global warming of 1.1 ºC has spurred changes to the Earth's climate that are unprecedented in recent human history.

2. Climate impacts on people and ecosystems are more widespread and severe than expected, and future risks will escalate rapidly with every fraction of a degree of warming.

3. Adaptation measures can effectively build resilience, but more finance is needed to scale solutions.

4. Some climate impacts are already so severe they cannot be adapted to, leading to losses and damages.

5. Global GHG emissions peak before 2025 in 1.5 °C-aligned pathways.

6. The world must rapidly shift away from burning fossil fuels—the number one cause of the climate crisis.

7. We also need urgent, systemwide transformations to secure a net-zero, climate-resilient future.

8. Carbon removal is now essential to limit global temperature rise to 1.5 ºC.

9. Climate finance for both mitigation and adaptation must increase dramatically this decade.

10. Climate change—as well as our collective efforts to adapt to and mitigate it—will exacerbate inequity should we fail to ensure a just transition.

But the IPCC also offers hope, highlighting pathways to avoid these intensifying risks. It identifies readily available, and in some cases, highly cost-effective actions that can be undertaken now to reduce GHG emissions, scale up carbon removal and build resilience.

In this context, businesses have an increasingly important role to play by implementing measures designed to minimize climate change. Understanding their share of responsibility

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within the global system is a first step. GHG emissions inventories are a key tool to this end.

As part of our efforts to uphold good practices in corporate sustainability, Eletrobras has published Greenhouse Gas Emissions Inventories annually since 2008. This is the 15h edition of our inventory.

The inventory, and Eletrobras' other related initiatives, are consistent with Brazil's National Policy on Climate Change (instituted by Law no. 12 187/2009 and regulated by Decree no. 7 390/2009), which establishes instruments that include: measures to support the development of processes and technology to reduce and remove greenhouse gases from the atmosphere, and proposals to achieve greater savings of energy, water and other natural resources, and to reduce GHG emissions and waste; and records, inventories, estimates, assessments and other reporting of GHG emissions and their sources, prepared based on information and data supplied by public and private entities (art. 6º, XII and XIII).

As part of our commitment to combating climate change, we have set targets to minimize our negative impacts and advance the transition to a new development model based on a low-carbon economy. This commitment is expressed in our Environmental Policy, in our efforts to manage greenhouse gas emissions, in our prioritization of renewable, low-emission energy projects, and in our support for and alignment with the 2030 Agenda, and in particular Sustainable Development Goals (SDGs) 7 - ***Affordable and Clean Energy*** and 13 – ***Climate Action***, both of which have been prioritized by Eletrobras Group companies in their corporate strategies.

We have an electricity mix that is based on low-carbon energy sources, effectively contributing to make Brazil's wider energy mix one of the cleanest in the world. In 2022, these sources accounted for 95% of our corporate installed capacity. Our renewables portfolio offers a number of opportunities, with many of our assets already registered to issue renewable energy certificates.

This report describes the results of our 2022 GHG emissions inventory for Eletrobras CGT Eletrosul, Eletrobras Chesf, Eletrobras Eletronorte, Eletrobras Furnas, and our parent company, based on information provided by each entity as part of a continuous, year-long process that involved employees from all Group companies in measuring, compiling and submitting information, discussing content and calculations, and editing the Eletrobras reports. Following our privatization in 2022, Eletronuclear, Itaipu Binacional and Cepel are no longer part of the Eletrobras Group.

This inventory also includes atmospheric emissions of sulfur oxides (SOx), nitrogen oxides (NOx), particulate matter and ozone-depleting substances, as listed in the Montreal Protocol, as well as estimates of GHG emissions and removals from activities causing land-use change.

In 2022, "Public Utility Effluents" were included under scope 3.



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BASIS OF PREPARATION AND ASSUMPTIONS

- The information presented in this Inventory was compiled at each Eletrobras Group company by information owners, in a process supervised by Group company representatives in the Climate Strategy Working Group (WG3), created within the Eletrobras Group Environment Committee (CMA).

- These data are verified and validated, and GHG emissions are processed and calculated, using a platform, called Emisfera, that provides a set of proprietary software tools developed by Brazilian Power Sector Research Center - Cepel. Emisfera is also used to store historical results and provides a wide range of output reports that cater to companies' different reporting needs and can be used to track performance against emissions reduction targets. The main tools available in EMISFERA include: a Data Collection & Analysis Tool (FCA), which is used to import data from the Corporate Sustainability Disclosures System (IGS System), analyze the data for consistency (rate tier system) and pre-process the data to calculate emissions; an Emissions Calculation Tool (FCE), used to calculate emissions and present the results either in aggregate and/or in summary form, and the Land-Use Emissions Estimation Tool (FUS). Figure 1 illustrates how the Emisfera tools and the IGS database operate together in developing the Eletrobras Group GHG inventory.

- Since 2016, the Emisfera tools have been aligned with the IGS database, i.e. all inputs for calculating emissions are collected by the IGS system, which uses a consistent set of protocols to measure data at all Group companies. This has made the process more reliable and traceable, as all companies use the IGS System and all information is available within a single tool.

- The Eletrobras Group GHG Emissions Inventory uses well-established methods to calculate GHG emissions, including the IPCC 2006 Guidelines for National Greenhouse Gas Inventories, and uses the Greenhouse Gas Protocol[1] (WRI, 2004) for the purpose of organizing emission sources, setting boundaries and presenting results. The operational control approach[2] is used to set the organizational boundary.

- In calculating emissions from electricity consumption, we used the emission factors for the National Grid, which are calculated and published by the Ministry of Science, Technology, Innovation and Communications (MCTIC)[3].

- Emissions from transmission losses were calculated based on information provided by the Eletrobras Group Transmission Division.

- For Scope 2 emissions, the location-based approach and the market-based approach are used.

1. GHG Protocol: an internationally recognized accounting and reporting standard launched in 1998 and revised in 2004, and currently the most widely used international accounting tool for companies to understand, quantify, and manage greenhouse gas emissions.

2. In the operational control approach, a company accounts for 100% of the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control, such as SPEs.

3. Available at: http://www.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/textogeral/emissao_corporativos.html

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- As a mandatory requirement in Brazil, all gasoline contains a fraction of sugarcane ethanol, and all diesel contains a fraction of biodiesel. Due to this, the GHG emission factor for these fuels is less than the global average. Biogenic CO2 emissions from the consumption of biofuels (biodiesel, ethanol added to gasoline, and fuel ethanol) are stated in a separate table in the inventory. These emissions are reabsorbed through photosynthesis during the cultivation of sugarcane, soybeans and other crops used in the production of these biofuels. For this reason, since the Eletrobras GHG Inventory for 2013, the emission factors published in the First National Inventory of Road Vehicle Emissions (MMA, 2011) have been used instead of IPCC emission factors for the consumption of fuels by road vehicles (ethanol, natural gas, gasoline and diesel).
- Emissions from thermal power purchased by Eletrobras Eletronorte from Independent Power Producers (IPPs) for resale to end consumers are quantified in scope 3 and therefore separately from emissions from Eletrobras' own thermal power plants, which are reported under scope 1.
- The energy content of fuels has been calculated based on the conversion factors contained in the National Energy Balance for 2021.
- Emissions from hydroelectric reservoirs have not been reported for lack of a global scientific consensus on a methodology for calculating net GHG emissions from water bodies such as artificial reservoirs.
- Point emissions of air pollutants—such as sulfur oxides (SOx), nitrogen oxides (NOx) and particulate matter contained in combustion gases—were determined based on monitoring data collected at the Eletrobras Group's thermal power plants.
- Emissions of ozone-depleting substances listed in the Montreal Protocol have been estimated for three sources: leakage during installation, leakage during maintenance, and leakage during disposal. These emissions are all of gases used in refrigeration and air-conditioning equipment.
- All data and calculations used in GHG inventories are kept on file and verified by an independent third party for every annual edition of the inventory. For the 2022 inventory published in 2023, the assurance report was issued on July 24, 2023 by PwC Brazil[4] (see appendix).
- Figure 2 shows the GHG Inventory development process used at the Eletrobras Group, the inventory scope, its general structure, and sources included in the inventory.

4. In this report, "PwC" refers to PricewaterhouseCoopers Auditores Independentes Ltda., a member firm of the PricewaterhouseCoopers network.

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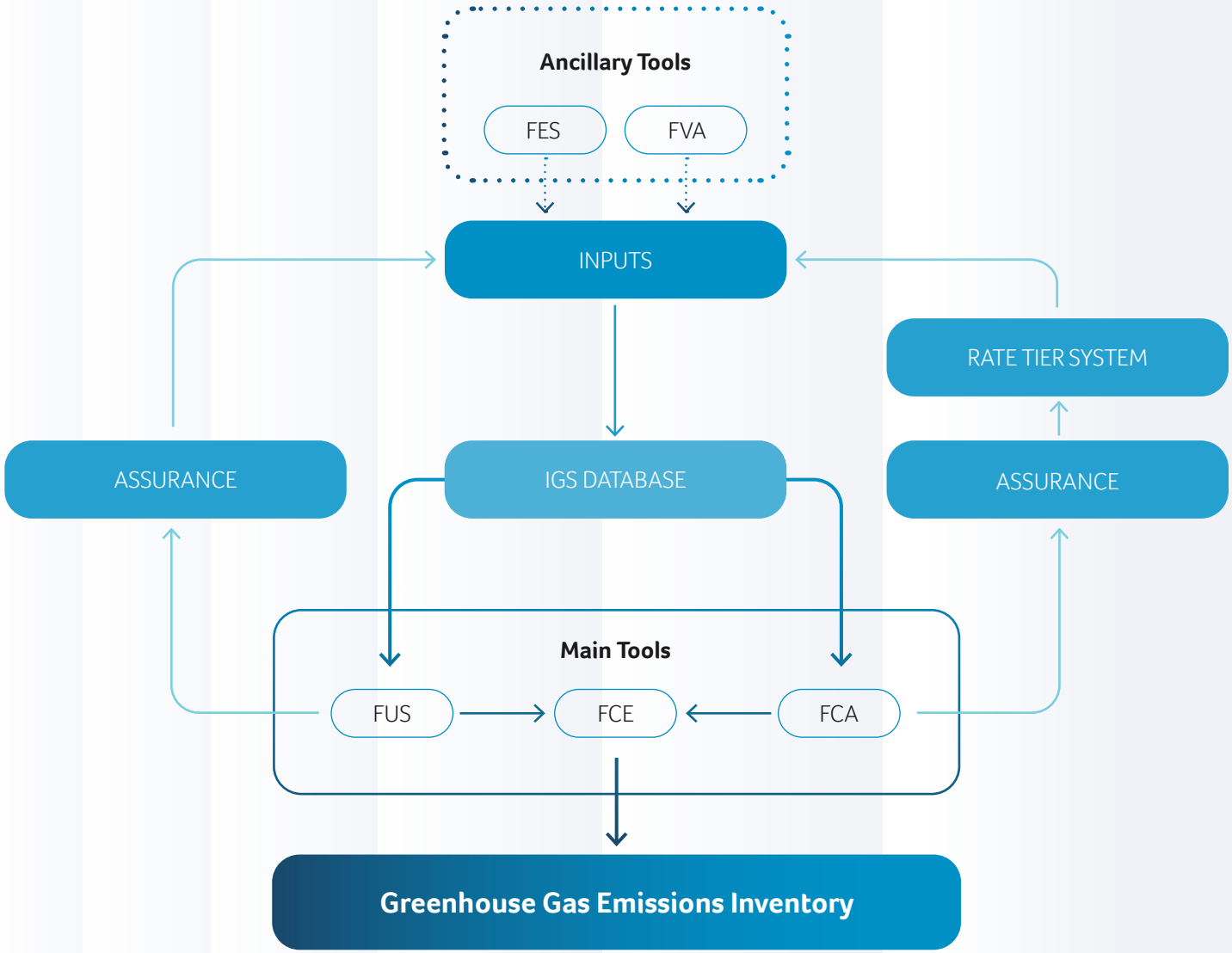
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Figure 1 – Data acquisition process for the GHG inventory



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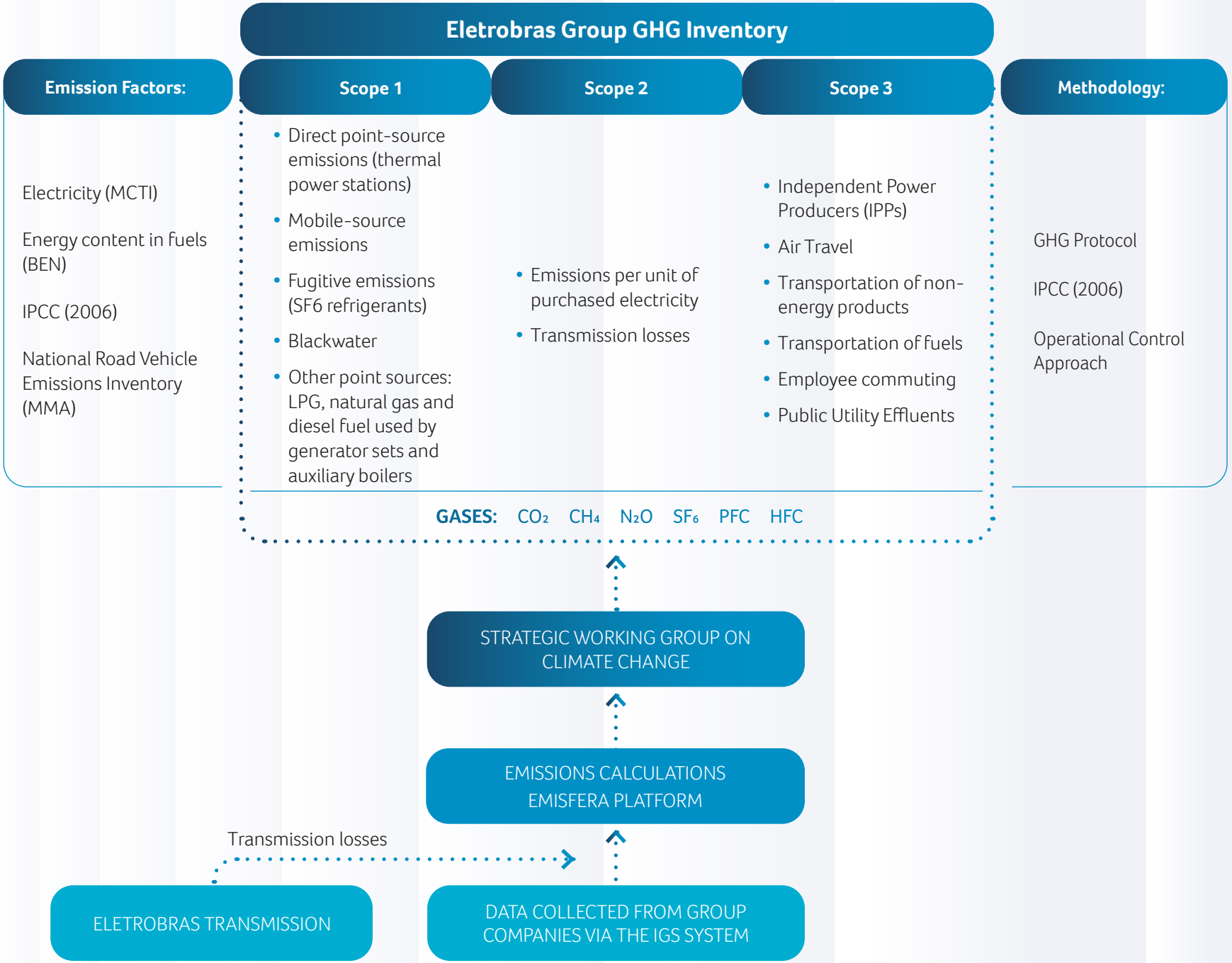
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Figure 2 - GHG Inventory development process



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ELETROBRAS GROUP GHG EMISSIONS

The Eletrobras Group's GHG emissions for 2022 are shown in summary form in Table 1 and in detail in Table 3. Total emissions were 5,640,060 tCO_2e across scopes 1, 2 and 3.

The bulk of emissions are scope 1 (70% of the total), followed by scope 3 (24% of the total) and scope 2 (6% of the total).

Table 1 - Eletrobras Group GHG Emissions – Year 2022 (tCO_2e)

Scope	GHG Emissions	% of total
Scope 1	3,958,097	70
Scope 2	313,886	6
Scope 3	1,368,077	24
Total	**5,640,060**	**100**

Three sources account for 99% of total emissions in 2022: company-owned thermal power plants, independent power producers (IPPs), and transmission losses, with company-owned thermal power plants accounting for 69% of total emissions.

GHG emissions that are directly under the operational control of the Eletrobras Group (Scopes 1 and 2) amount to 4,271,983 tCO_2e or 76% of the total. Emissions from sources not owned or controlled by the Eletrobras Group (scope 3), which are generated by suppliers of services and products, stood at 1,368,077 tCO_2e.

Out of total direct (scope 1) emissions, 99% were generated by Group-owned thermal power plants.

In scope 2, transmission losses represent 99% of emissions, with only 1% deriving from electricity consumption.

In 2022 the rate of transmission losses across the Eletrobras Group was 0.53% (table 2), down 34.6% on 2021; however, these losses are not manageable by transmission concessions. The Eletrobras Group's transmission subsidiaries are essentially responsible for maintaining the availability of the transmission systems within their concession. The National Grid Operator (ONS) is responsible for planning the operation of the system, and therefore power throughput, and consequently transmission losses are the result of ONS-defined operation strategies. In addition, equipment maintenance has no effect on transmission system losses, but only on availability.

Table 2 – Transmission losses (%) in 2022.

Eletrobras Group	Transmission Losses (%)
Eletrobras CGT Eletrosul	0.57
Eletrobras Chesf	0.49
Eletrobras Eletronorte	0.50
Eletrobras Furnas	0.56
Total	**0.53**

Emissions from thermal power purchased from Independent Power Producers (IPPs) represented 99.6% of total scope 3 emissions.

In 2022, 47% of our scope 2 emissions were offset using renewable energy certificates; our net emissions in the year, using the market-based approach, were 165,355 tCO_2e.

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Table 3 - Eletrobras Group GHG Emissions – Year 2022 (tCO_2e)

Companies	Scope 1									Scope 2		Scope 2 (market based)		Scope 3						Subtotal by Company
	Point			Mobile			Other													
	Group-Owned Thermal Power Plants	Generators	Other	Land	Waterborne	Air	SF6	Refrigeration	Liquid Effluents	Electricity Consumption	Transmission Losses	Electricity Consumption	Transmission Losses	Transportation of Fuels	Independent Power Producers (IPPs)	Transportation of Non-Energy Products	Air Travel	Employee Commuting	Public Utility Effluents	
Eletrobras CGT Eletrosul	1,832,488	27	8	1,359	0.5	n.a	19,348	388	87	591	57,629	0	57,629	n.a	n.a	1,251	175	647	24	**1,914,023**
Eletrobras Chesf	n.a.	117	94	2,945	2.6	124	0	2,922	4,202	196	77,485	0	0	n.a	n.a	0	557	553	106	**89,304**
Eletrobras Eletronorte	1,654,563	1,084	236	2,602	79.8	n.a	5,181	2,922	3	531	42,325	0	0	n.a	1,362,889	0	369	486	247	**3,073,517**
Eletrobras Furnas	421,679	91	69	3,695	2.8	0	1,622	1	130	324	134,657	0	107,726	0	n.a	0	487	81	0	**562,838**
Parent Company	n.a.	0	n.a	25	n.a	n.a	n.a	0	0	147	n.a	0	n.a	n.a	n.a	n.a	185	n.a	20	**378**
Subtotal by source	3,908,731	1,320	406	10,626	86	124	26,151	6,233	4,422	1,790	312,096	0	165,355	0	1,362,889	1,251	1,773	1,766	397	**TOTAL (tCO_2e) 5,640,060**
Subtotal by type of source	3,910,456			10,835			36,806			1,790	312,096	0	165,355	0	1,362,889	1,251	1,773	1,766	397	
Subtotal by scope				**3,958,097**						**313,886**		**165,355**		**1,368,077**						

Key: n.a – not applicable

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Emissions by type of gas are shown in Table 4. Carbon oxide (CO_2) accounts for the bulk of emissions at 99%. Combined emissions of sulfur hexafluoride (SF_6), nitrous oxide (N_2O), methane (CH_4) and refrigerants (HFCs and PFCs) account for less than 1% of the total.

SF_6 is essentially used as an insulating medium in high-voltage circuit breakers. The practices in place for managing or mitigating fugitive emissions of SF_6 include: low SF_6 pressure alarms on circuit breakers; annual breaker pressure inspections; fortnightly circuit breaker inspections; instructions on identifying SF_6 leakage; the use of SF_6 detectors; and special equipment for collecting and treating SF_6 gas.

Fugitive emissions of SF_6 contained in high-voltage equipment essentially derive from: 1) equipment (circuit breaker) construction; 2) severe failure; 3) servicing.

Table 4 – GHG emissions by type of gas (scopes 1, 2 and 3) - Year 2022

Entities	CO_2	CH_4		N_2O		SF_6		HFCs and PFCs	Total by Company
	tCO_2e	tCO_2e	tgas	tCO_2e	tgas	(tCO_2e)	tgas	(tCO_2e)	(tCO_2e)
Eletrobras CGT Eletrosul	1,885,871	708	24	7,707	29	19,348	0.8	388	1,914,023
Eletrobras Chesf	82,002	4,322	144	58	0.2	0	0	2,922	89,304
Eletrobras Eletronorte	3,062,061	1,872	62	1,480	5.6	5,181	0.2	2,922	3,073,517
Eletrobras Furnas	560,567	375	13	273	1.0	1,622	0.07	0.7	562,838
Parent Company	355	20	0.7	2.5	0.01	0	0	0	378
Total	**5,590,856**	**7,298**	**243**	**9,521**	**36**	**26,151**	**1**	**6,233**	**5,640,060**

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Although CO_2 emissions from burning ethanol and biodiesel are not included in the GHG inventory, as these are deemed as renewable fuels, the methodology used in preparing the inventory recommends that estimates be made of emissions from these fuels. These are presented in Table 5. The data show a 18% reduction in CO_2 from burning ethanol and biodiesel compared to 2021. This was partly due to reduced employee commuting during the COVID-19 pandemic.

Table 5 - CO2 emissions from burning ethanol (hydrous and anhydrous) and biodiesel (B-100)

Entity	CO_2 emissions (tCO_2e)	
	2021	2022
Eletrobras Cepel*	38	-
Eletrobras CGT Eletrosul	687	606
Eletrobras Chesf	1,084	1,053
Eletrobras Eletronorte	519	588
Eletrobras Eletronuclear*	522	-
Eletrobras Furnas	536	729
Parent Company	2	6
Itaipu Binacional*	263	-
Total	**3,651**	**2,982**

**Following our privatization in 2022, Eletronuclear, Itaipu Binacional and Cepel are no longer part of the Eletrobras Group.*

Table 6 provides a comparison of total emissions from 2021 to 2022.

Table 6 - Eletrobras Group GHG Emissions in 2021 and 2022 (tCO_2e)

Scope	2021*	2022	Change 2021-2022 (tCO2)	Change 2021-2022 (%)
Scope 1	5,942,678	3,958,097	-1,984,581	-33.4
Scope 2	948,208	313,886	-634,322	-66.9
Scope 3	1,380,914	1,368,077	-12,837	-0.9
Total	**8,271,799**	**5,640,060**	**-2,631,739**	**-31.8**

**Figures for 2021 have been restated to exclude data for Eletronuclear, Itaipu Binacional and Cepel.*

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Across the three scopes, emissions in 2022 decreased by 31.8%. Scope 1 emissions fell by 33.4%, scope 2 emissions by 67% and scope 3 emissions by 0.9%.

Table 7 shows the Eletrobras Group's historical emissions over the previous five years.

Table 7 - Prior Year Greenhouse Gas Emissions (tCO_2e)

Entity	2018	2019	2020	2021	2022
Eletrobras Amazonas GT*	2,173,897	2,178,095	3,599,737	-	-
Eletrobras Cepel***	1,126	1,157	526	1,363	-
Eletrobras CGTEE	1,621,767	1,744,040	-	-	-
Eletrobras CGT Eletrosul**	-	-	1,393,508	2,692,933	1,914,023
Eletrobras Chesf	175,231	162,360	114,012	269,337	89,304
Eletrobras Eletronorte	116,095	100,136	69,574	3,859,708	3,073,517
Eletrobras Eletronuclear***	12,016	12,500	6,603	6,226	-
Eletrobras Eletrosul	115,889	118,048	-	-	-
Eletrobras Furnas	1,835,923	1,573,562	833,185	1,449,269	562,838
Parent Company	891	1,004	414	552	378
Itaipu Binacional***	10,605	6,482	28,651	9,262	-
Total	**6,063,440**	**5,897,384**	**6,046,210**	**8,288,650**	**5,640,060**

** Eletrobras Amazonas Energia was merged into Eletrobras Eletronorte in 2021.*

***Created in 2020 by the merger of CGTEE and Eletrosul.*

**** Following our privatization in 2022, Eletronuclear, Itaipu Binacional and Cepel are no longer part of the Eletrobras Group*

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GHG EMISSIONS & INTENSITY MATRIX

The Eletrobras Group's net electricity output in 2022 was 108,763,899 MWh, not including equity interests in Special Purpose Entities (SPEs). The output of each company is shown in Table 8.

Table 8 - Net energy output by Eletrobras Group company in 2022

Eletrobras Companies	Net energy output (MWh)
Eletrobras CGT Eletrosul	3,667,684
Eletrobras Chesf	40,079,144
Eletrobras Eletronorte	38,626,834
Eletrobras Furnas	26,390,237
Total	**108,763,899**

This inventory also reports emissions intensity values calculated for total scope 1, 2 and 3 emissions, and for scope 1 and 2 emissions not including losses, both per unit of electricity output and per unit of Net Operating Revenue. Net output and net operating revenue data for SPEs are not included in the emissions intensity calculation.

In 2022 the Eletrobras Group's emissions intensity decreased relative to 2021, reflecting a reduction in fossil-fueled generation output. The data are presented in tables 9 and 10.

Table 9 - Greenhouse Gas Emissions Intensity for 2021 and 2022

Emissions intensity (scopes 1, 2 and 3)	2021*	2022
Per unit of net electricity produced (tCO_2/ MWh)	0.089	0.052
Per unit of net operating revenue (tCO_2/ROL)	0.239	0.166

Emissions intensity (scope 1 and 2, ex-losses)	2021*	2022
Per unit of net electricity produced (tCO_2/ MWh)	0.064	0.036
Per unit of net operating revenue (tCO_2/NOR)	0.172	0.116

**Figures for 2021 have been restated to exclude data for Eletronuclear, Itaipu Binacional and Cepel*

Table 10 - Eletrobras Group GHG Emissions Intensity in 2022

Companies	Emissions intensity (scope 1, 2 and 3)		Emissions intensity (scope 1 and 2, ex-losses)	
	tCO_2/MWh	tCO_2e/NOR	tCO_2/MWh	tCO_2e/NOR
Eletrobras CGT Eletrosul	0.522	0.524	0.506	0.508
Eletrobras Chesf	0.002	0.011	0.000	0.001
Eletrobras Eletronorte	0.080	0.302	0.043	0.164
Eletrobras Furnas	0.021	0.045	0.016	0.034

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AIR POLLUTANTS (SOx, NOx AND PARTICULATE MATTER)

Eletrobras Group companies also measure power plant emissions of other air pollutants, including sulfur oxides (SOx), nitrogen oxides (NOx) and particulate matter.

The Group's SOx, NOx and particulate matter emissions in 2021 and 2022 are shown in Table 11.

Table 11 - Sulfur and nitrogen oxide and particulate emissions

Entity	Sulfur oxides – SOx (t)		Nitrogen oxides – NOx (t)		Particulate matter – PM10 (t)	
	2021	2022	2021	2022	2021	2022
Eletrobras Cepel*	n.a	-	n.a	-	n.a	-
Eletrobras CGT Eletrosul	13,023	9,874	4,043	2,678	764	442
Eletrobras Chesf	n.a	n.a	n.a	n.a	n.a	n.a
Eletrobras Eletronorte	0	0	8,198	19,352	0	0
Eletrobras Eletronuclear*	0	-	0	-	0	-
Eletrobras Furnas	0	0	584	427	0	0
Parent Company	n.a	n.a	n.a	n.a	n.a	n.a
Itaipu Binacional*	n.a	-	n.a	-	n.a	-
Total	**13,023**	**9,874**	**12,825**	**22,457**	**764**	**442**

Key: n.a. – not applicable

** Following our privatization in 2022, Eletronuclear, Itaipu Binacional and Cepel are no longer part of the Eletrobras Group*

In 2022, SOx and MP emissions fell by approximately 24% and 42%, respectively, from 2021. NOx emissions increased by 75% compared to 2021, reflecting the addition of 6 generator sets on lease at Eletrobras Eletronorte thermal power plants.

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MONTREAL PROTOCOL GASES

The Eletrobras Group estimates emissions of ozone-depleting substances listed in the Montreal Protocol.

Total emissions have been calculated as the sum of three sources of emissions of refrigerant gases from air conditioning equipment: leakage during installation, leakage during servicing, and leakage during disposal.

Emissions of Montreal Protocol ozone-depleting gases are shown in Table 12.

Table 12 - Emissions of Montreal Protocol ozone-depleting gases

Companies	Gases (t) 2021				Gases (t) 2022				
	HCF-123	R-22	R-141b	HFC-134a	R-22	R-141b	HFC-134a	R407c	R410a
Eletrobras CEPEL	0	0.03	0	0.02	-	-	-	-	-
Eletrobras CGT Eletrosul	0	0.10	0	0.02	0.27	0	0.23	0	0.05
Eletrobras Chesf	n.d.	n.d.	n.d.	n.d.	1.50	0.21	0.25	0.03	1.33
Eletrobras Eletronorte	n.d.	0.02	0	0	0	0	2.25	0	0
Eletrobras Eletronuclear	0.003	0.12	0	0.28	-	-	-	-	-
Eletrobras Furnas	0	0.03	0.0001	0	0.17	0	0	0	0
Parent Company	0	0.05	0	0	0	0	0	0	0
Itaipu Binacional	0	0.01	0	0.16	-	-	-	-	-
Total	**0.003**	**0.35**	**0.0001**	**0.48**	**1.94**	**0.21**	**2.72**	**0.03**	**1.38**

Key: n.d. – not available

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RENEWABLE ENERGY CERTIFICATES

Renewable Energy Certificates (RECs) are certificates of proof that a certain amount of electricity has been produced from a renewable source. Each REC is proof that 1 MWh of renewable electricity has been generated and injected into the grid. The REC market was first introduced in Brazil in 2011, and has since grown exponentially, especially following the launch of the I-REC Service—a global electricity environmental attribute tracking system—and the changes introduced in the Brazilian GHG Protocol Program, which now accepts RECs as GHG offsets.

To capitalize on the business opportunity associated with the environmental attributes of renewable electricity, Group companies Eletrobras Chesf, Eletrobras CGT Eletrosul, Eletrobras Eletronorte and Eletrobras Furnas certified several plants with Instituto Totum and proceeded to sell I-RECs from 2020.

In June 2021, Eletrobras Furnas launched a proprietary certificate platform, RECFY, assured by independent auditors, in order to diversify its portfolio of decarbonization solutions. Eletrobras Furnas has retained its certification under the I-REC Standard but has included other non-I-REC-certified plants on its proprietary platform.



With 97% of its capacity consisting of renewable sources, FURNAS was the first company in Brazil to obtain I-REC certification under the International REC Standard for three of its power plants in 2020; the Fortim Wind Cluster in Ceará, and the Itumbiara and Serra da Mesa hydroelectric plants in Goiás.

Chesf continued to certify its power plants in 2021. International Renewable Energy Certificates (I-RECs) have been issued for the following plants: Casa Nova A, Apolônio Sales, Boa Esperança, Funil, Luiz Gonzaga, Paulo Afonso (Paulo Afonso I, II, III and IV), Sobradinho and Xingó, covering 98.7% of installed capacity. These certificates are in addition to those obtained in 2020, for Casa Nova II and Casa Nova III.

In 2022 Eletrobras CGT Eletrosul registered its first renewables facilities—the Cerro Chato I, II and III wind warms—to issue I-REC certificates.

In September, we registered the Tucuruí Dam with the I-REC issuer in Brazil, Instituto Totum.

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Scope 2 Emissions Offsets

Energy certificates have become an important tool for managing scope 2 emissions. Eletrobras Chesf and Eletrobras Furnas both have plants certified to issue renewable energy certificates.

In 2022 Eletrobras Eletronorte offset 100% of its scope 2 emissions using IREC certificates issued for the Tucuruí Dam.

In 2022 Eletrobras Furnas offset its Scope 2 emissions using proprietary RECFY certificates, offsetting 100% of emissions from electricity consumption and 20% of emissions from transmission losses.

Eletrobras Chesf offset 100% of its Scope 2 GHG emissions using I-RECs issued by the Group's own generation assets.

Eletrobras CGT Eletrosul offset 100% of its electricity consumption purchased from the grid using I-REC certificates issued for its Cerro Chato II wind farm.

Our parent company offset 100% of emissions from electricity purchased for administrative sites using RECFY certificates purchased from Eletrobras Furnas.

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ESTIMATED GHG EMISSIONS AND REMOVALS AS A RESULT OF ACTIVITIES CAUSING LAND-USE CHANGE

To determine net greenhouse gas emissions after accounting for emissions offsets, we estimated the greenhouse gas emissions and removals as a result of Group activities causing land-use change.

The clearing and reforestation data used in the calculations of emissions and removals were obtained from the environmental module of the IGS System.

CO_2 Emissions

CO_2 emissions from land-use change are those caused by clearing vegetation. These emissions were determined based on data collected from the Clearing Permits obtained by some Group companies in 2022. These permits contain information about the amount of cleared area and the type of vegetation. The amount of carbon emissions is based on the "total carbon stock" reported in the Third National Communication: Report to the United Nations Framework Convention on Climate Change (MCTI, 2016).

CO_2 Removals

CO_2 removals from land-use change are those as a result of planting seedlings as part of programs such as disturbed land rehabilitation programs and the development of riparian buffers around hydroelectric reservoirs. Data on planted area, the types of trees planted and regional climate data were used in the calculations. An average increase in carbon stock over a horizon of 20 years and a linear vegetation growth rate were assumed.

The results are shown in Table 13.

Table 13 – CO_2 Emissions x Removals in 2022

Entity	Emissions (tCO_2e)	Removals (tCO_2e)	Net Emissions (tCO_2e)	Net Result
Eletrobras CGT Eletrosul	151	467	-316	REMOVAL
Eletrobras Chesf	230	33,238	-33,007	REMOVAL
Eletrobras Eletronorte	0	31,208	-31,208	REMOVAL
Eletrobras Furnas	1,074	31,073	-29,999	REMOVAL
Total	**1,456**	**95,986**	**-94,530**	**REMOVAL**

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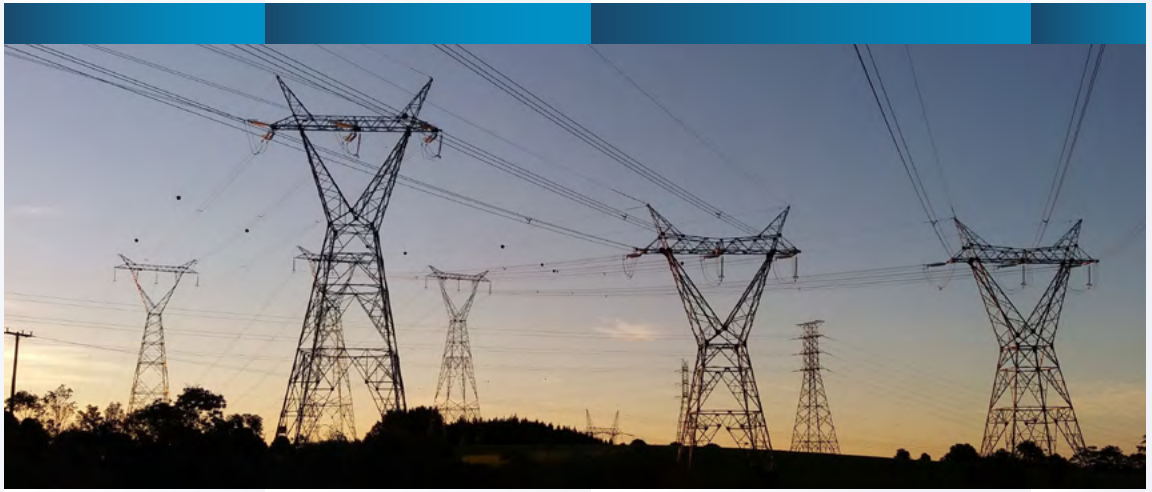
FINAL CONSIDERATIONS

This inventory provides an account of greenhouse gas emissions and removals from Eletrobras Group generation and transmission activities in 2022 and in previous years. Stakeholders can track the Eletrobras Group's performance on climate change by reviewing the indicators, targets and projects reported in Group companies' annual reports, websites, and in the Business & Management Master Plan (PDNG).

We reaffirm our commitment to continuously monitoring our emissions and implementing strategies to combat climate change. These strategies are aligned with the Eletrobras Group Environmental Policy, the PDNG and the recommendations of international authorities on corporate sustainability regarding approaches to setting, implementing and reporting on sustainability targets to society.



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APPENDIX INDEPENDENT AUDITORS' ASSURANCE REPORT

(A free translation of the original in Portuguese)

Independent auditor's limited assurance report on the data in the Greenhouse Gas (GHG) emissions inventory – 2022

To the Board of Directors and Stockholders
Centrais Elétricas Brasileiras S.A. – Eletrobras
Rio de Janeiro - RJ

INTRODUCTION

1 We have been engaged by Centrais Elétricas Brasileiras S.A. ("Eletrobras" or "Company") to present our limited assurance report on the data in the 2022 Greenhouse Gas Emissions Inventory of the Eletrobras Companies ("2022 GHG Emissions Inventory") for the year ended December 31, 2022. This report includes, among other information, the procedures used for determining significant quantifications, the criteria and the methodology for the preparation of the 2022 GHG Emissions Inventory and the organizational and operational parameters of the Company's activities.

MANAGEMENT'S RESPONSIBILITY

2 The Company's management is responsible for the preparation and fair presentation of the data in the 2022 GHG Emissions Inventory, in accordance with the criteria defined in paragraph 3 and parameters defined in paragraph 4 herein and for such internal control as it determines is necessary to enable the preparation of information free from material misstatement, whether due to fraud or error.

3 The criteria for assessment of the data in the 2022 GHG Emissions Inventory covering the Company's activities with respect to the measurement, obtaining, compilation, calculations and estimates and the reporting of the data of emissions for 2022, were based on the following documents:

(a) FGV-GVCes/WRI: Brazilian GHG Protocol Program Specifications: Accounting, Quantification and Reporting of Corporate Greenhouse Gas Emission Inventories. 2nd edition and related technical notes.

(b) ABNT NBR ISO 14064-1: Part 1 - "Specification and guidance to organizations for the quantification and preparation of reports on emissions and removals of greenhouse gases", 2007.

4 In accordance with the criterion of FGV-GVCes/WRI, mentioned in paragraph 3, the organizational boundary of the 2022 GHG Emissions Inventory was defined based on the operational control approach. The operational parameters include the sources of Scope 1 and 2 emissions, according to the Brazilian GHG Protocol Program, as well as the following emission categories of Scope 3: Upstream transportation and distribution - transportation of fuel and products that are not related to electric power generation; Business travel - air travel, Employee Commuting, Fuel-and-energy-related activities (not included in Scope 1 our Scope 2) and Effluent Treatment.

INDEPENDENT AUDITOR'S RESPONSIBILITY

5 Our responsibility is to express a conclusion on the data in the Company's 2022 GHG Emissions Inventory, based on our limited assurance engagement carried out in accordance with Technical Communication CTO 01 - "Issuance of an Assurance Report related to Sustainability and Social Responsibility", issued by the Federal Accounting Council (CFC),

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based on the Brazilian standard NBC TO 3000 - "Assurance Engagements Other than Audit and Review", also issued by the CFC, which is equivalent to the international standard ISAE 3000 - "Assurance engagements other than audits or reviews of historical financial information", issued by the International Auditing and Assurance Standards Board (IAASB). Those standards require that we comply with ethical and independence requirements, and other responsibilities, including in relation to the Brazilian Standard on Quality Control (NBC PA 01) and, therefore, the maintenance of a comprehensive quality control system, including documented policies and procedures for ethical requirements, professional standards and legal and regulatory requirements.

6 These standards also require the work be planned and performed to obtain limited assurance that the data in the 2022 GHG Emissions Inventory, taken as a whole, are free from material misstatements, in accordance with the criteria defined in paragraph 3 and parameters defined in paragraph 4 above.

7 A limited assurance engagement conducted in accordance with the Brazilian standard NBC TO 3000 and ISAE 3000 consists mainly of making inquiries of management and other professionals of the entity involved in the preparation of the information, as well as applying analytical procedures to obtain evidence that enables us to issue a limited assurance conclusion on the information taken as a whole. A limited assurance engagement also requires the performance of additional procedures when the independent auditor becomes aware of matters that lead the auditor to believe that the information taken as a whole might present significant misstatements.

8 The procedures selected are based on our understanding of the aspects related to the compilation and presentation of the data in the 2022 GHG Emissions Inventory, other engagement characteristics and an analysis of the areas in which significant misstatements might exist. The following procedures were adopted:

(a) Planning the work, taking into consideration the criteria defined in paragraph 3 and parameters defined in paragraph 4 above, the materiality and the volume of quantitative and qualitative information and the operating and internal control systems that were used to prepare the data in the Company's 2022 GHG Emissions Inventory.

(b) Understanding the calculation methodology and the procedures adopted for obtaining and compiling greenhouse gas emissions through interviews with the managers responsible for the preparation of the information of Eletrobras - Centrais Elétricas Brasileiras S.A., as well as the managers responsible for the preparation of the information of the following subsidiaries, whose sources of emission are considered significant in relation to the Company's total consolidated emissions: Furnas Centrais Elétricas - Eletrobras Furnas; Companhia de Geração e Transmissão de Energia Elétrica do Sul do Brasil - Eletrobras CGT Eletrosul; and Centrais Elétricas do Norte do Brasil. – Eletrobras Eletronorte.

(c) Applying analytical procedures and selective testing, as applicable, to quantitative information and making inquiries regarding the qualitative information and its correlation with the data in the 2022 GHG Emissions Inventory.

9 We believe that the evidence we obtained is sufficient and appropriate to provide a basis for our limited assurance conclusion.

SCOPE AND LIMITATIONS

10 The procedures applied in a limited assurance engagement are substantially less detailed than those applied in a reasonable assurance engagement, the objective of which is the issuance of an opinion on the data in the 2022 GHG Emissions Inventory. Consequently, we were not able to obtain reasonable assurance that we might become aware of all significant matters that might be identified in an assurance engagement, the objective of which is the issue of an opinion. Had we performed an engagement with the objective of issuing an opinion, we might have identified other matters and possible misstatements in the data in the 2022 GHG Emissions Inventory. Therefore, we do not express an opinion on this information.

11 Non-financial data is subject to more inherent limitations than financial data, due to the nature and diversity of the methods used to determine, calculate and estimate this data. Qualitative interpretations of the relevance, materiality, and accuracy of the data are subject to individual assumptions and judgments. Furthermore, we did not carry out any work on data reported for prior periods, nor future projections and goals.

12 The information and data with respect to the actions and activities regarding sustainability, general information and views related to climate change, the description of the managing activities related to the process for preparation of the 2022 GHG Emissions Inventory, and the description of operational activities, which

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are not a basis for the 2022 GHG Emissions Inventory, are not part of the scope of our work and, therefore, are not covered by our limited assurance report.

CONCLUSION

13 Based on the procedures performed, described herein, no matter has come to our attention that causes us to believe that the data in the 2022 Greenhouse Gas Emissions Inventory of the Centrais Elétricas Brasileiras S.A. for the year ended December 31, 2022 is not presented, in all material respects, in accordance with the criteria described in paragraph 3 and the parameters defined in paragraph 4 above.

Rio de Janeiro, July 24, 2023
PricewaterhouseCoopers
Auditores Independentes Ltda.
CRC 2SP000160/O-5

Eliane Kihara
Contadora CRC 1SP212496/O-5


Eletrobras