REPORT 2023

COMPANHIA ENERGÉTICA DE MINAS GERAIS

Greenhouse Gas Emissions Inventory

Base year 2022

Corporate GHG emissions inventory - CEMIG 2023

Identification Form

Customer	Companhia Energética de Minas Gerais - CEMIG
Project	Greenhouse Gas Emissions Inventory
Document Type	Final version after audit
Date	June 2023
File name	Corporate GHG emissions inventory - CEMIG 2023 (base year 2022)
Confidentiality	Public
Document language	English
Number of pages	56
Version	Final

SUMMARY

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EXECUTIVE SUMMARY

This document presents the results of the Greenhouse Gas Emissions (GHG) of Companhia Energética de Minas Gerais - Cemig divided by its operational units:

- CEMIG Geração e Transmissão and SPEs;
- CEMIG Distribuição;
- CEMIG SIM;
- GASMIG;
- CENTROESTE;
- CEMIG Holding.

The timeframe studied comprises the year 2022 (January 1, 2022 - December 31, 2022) and the Inventory segregated the calculations in scopes 1, 2 and 3, as shown in Figure 1.

In 2022, Cemig's total emissions amounted to **5,296,977 tCO2e**, with scope 3 being the main contributor, responsible for approximately **93%** of total emissions, equivalent to **4,921,854 tCO2e**. Next is scope 2, totalizing **291,766 tCO2e**, which represents approximately **5%** of total emissions. Finally, scope 1 emissions accounted for **83,357.59 tCO2e**, contributing approximately 2% to the overall emissions.

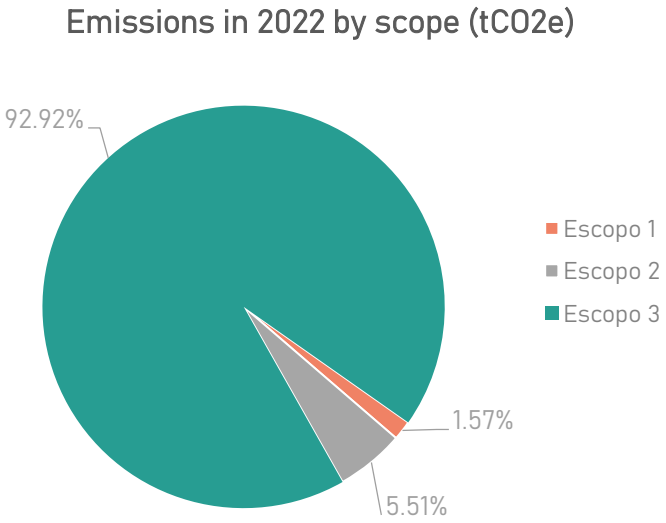

Figure 1 - Emissions in 2022 by scope

In the base year 2022, Cemig had a total of **5,736 tCO2e** of biogenic emissions, considering scopes 1 and 3. In scope 1, the total biogenic emissions were **1,000 tCO2e**, of which **14 tCO2e** from the consumption of diesel in generators and natural gas in stationary sources (because it contains a percentage of biodiesel in its composition) and **986 tCO2e** due to the use of fuels by the company's fleet, given the percentage of biodiesel added to diesel, of ethanol added to the gasoline blend and when using pure ethanol. In scope 3, biogenic emissions in 2022 totaled **4,736 tCO2e**, an amount that comes from waste generated in operations **(76 tCO2e)**,

commuting of employees **(19.6 tCO2e)** and transportation and distribution upstream **(4,492 tCO2e).**

Between 2022 and 2021, there was a **48%** reduction in emissions, caused mainly by the decrease in the emission factor related to the use of grid-connected electricity (Figure 2).

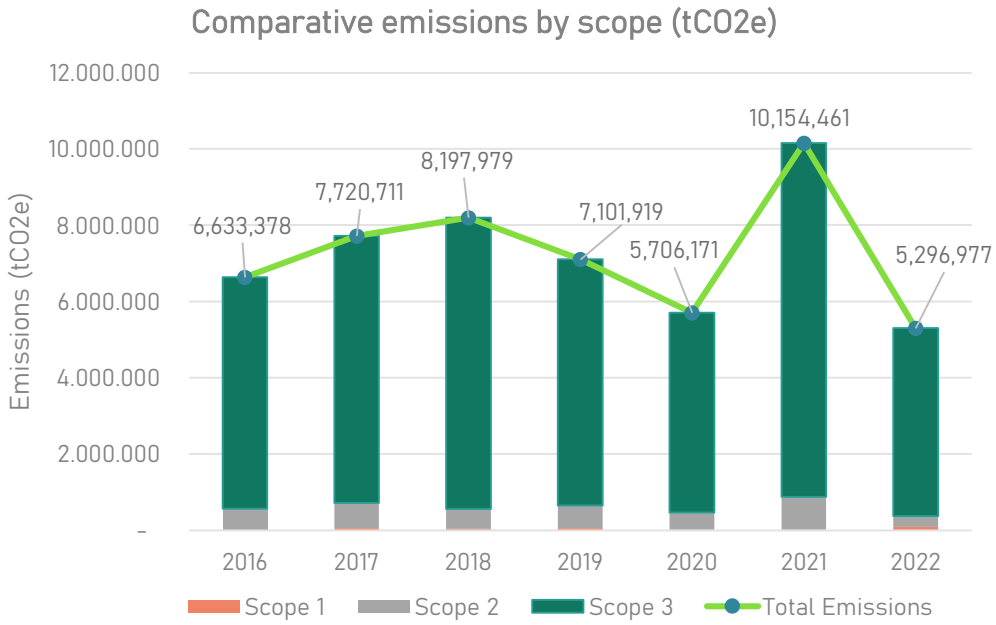

Figure 2 - Historical series of Cemig's emissions, by year and scope

The results of Cemig's historical series of emissions are also detailed in Table 1.

Table 1 - Historical series of Cemig's emissions, by year and scope

Year	2016	2017	2018	2019	2020	2021	2022
Scope 1 (tCO2e)	15,463.00	48,849.00	35,568.42	51,938.63	11,419.36	12,847.64	83,356.59
Scope 2 (tCO2e)	552,805,00	664,413.00	518,279.63	598,518.28	448,083.44	861,233.04	291,766.24
Scope 3 (tCO2e)	6,065,110.25	7,007,449.00	7,644,130.59	6,451,461.79	5,246,667.74	9,280,380.25	4,921,854.09
TOTAL	6,633,378.25	7,720,711.00	8,197,978.64	7,101,918.70	5,706,170.54	10,154,460.93	5,296,976.92

The parameter of electric energy sales, in MWh, allowed an intensity indicator to be established from the results of the GHG Emission Inventories. Therefore, the emissions intensity in the base year of 2022 stood at **0.09 tCO2e/MWh**, with scope 1 contributing **0.008 tCO2e/MWh**, scope 2 contributing **0.005 tCO2e/MWh**, and scope 3 contributing **0.08 tCO2e/MWh**. In terms of tCO2e (scope 1) and generated energy the value is 4.56 **tCO2e/GWh.**

Table 2 presents the results of emissions by scope and emission category. In scope 1, the category 'Change in land use' represented the largest emission, totaling **60,160 tCO2e** or **72%** of the total value of the scope. The category 'Distribution system losses' was responsible for the largest portion of emissions in scope 2, accounting for **290,031 tCO2e** or **99%** of the total scope value. Lastly, in the year under study, scope 3 emerged as the main contributor to emissions, with the category 'Use of goods and products sold' standing out as the largest source, accounting for a total of **4,887,786 tCO2e**, equivalent to 99% of the total emissions value within scope 3.

Table 2 - Table scope, categories, emissions, and total scope (tCO2e)

GHG Emissions - 2022 (tCO2e)									
Scope and emission source		Cemig D	Cemig GT + SPEs	Cemig H	Cemig SIM	Centroeste	Gasmig	Total emissions by category	Total emissions by scope
Scope 1	Stationary direct emissions	103	38	-	-	-	0	141	83,357
	Direct emissions from mobile sources	5,949	1,255	-	0	-	104	7,308	
	Direct emissions from Land use and agricultural activities	60,217	5,700	-	-	3,676	-	69,594	
	Direct fugitive emissions	4,144	1,342	-	-	-	738	6,314	
Scope 2	Electricity consumption	1,494	224	-	-	-	10	1,735	291,766
	Distribution system losses	283,525	6,506	-	-	-	-	290,031	
Scope 3	Goods and services purchased (LPG consumption in forklifts)	3	-	-	-	-	-	3	4,921,854
	Waste generated in operations	259	321	-	-	-	-	583	
	Business travel	145	62	110	1	-	10	329	
	Employee home-work commuting	57	84	-	-	-	-	141	
	Upstream transport and distribution	32,930	82	-	-	-	-	33,012	

GHG Emissions - 2022 (tCO2e)									
Scope and emission source		Cemig D	Cemig GT + SPEs	Cemig H	Cemig SIM	Centroeste	Gasmig	Total emissions by category	Total emissions by scope
	Use of goods and products sold	1,288,208	901,582	605,792	-	-	2,092,203	4,887,786	

When evaluating the representativeness of the operational units in the composition of emissions, Gasmig contributed the largest share, totalling **2,093,065 tCO2e**, which corresponds to **35,5%** of total emissions. Cemig D contributed **1,676,916 tCO2e**, which represents **32%** of total emissions. Cemig GT and its SPEs contributed **874,911 tCO2e**, representing **17%** of total emissions. Finally, Cemig H contributed **605,902.9 tCO2e**, corresponding to **9%** of total emissions. Cemig SIM presented only **1.2 tCO2e**. These results are presented in Table 3.

Table 3 - Emissions, in tons of CO2 equivalent, by operational unit

	Emissions (tCO2e)	Emissions (%)
Cemig D	1,677,035.16	31.7%
Cemig GT + SPEs	917,289.86	17.3%
Cemig H	605,905.61	11.4%
Cemig SIM	5.28	0%
Centroeste	3,676.00	0.1%
Gasmig	2,093,065.02	39.5%
Total	**5,296,976.92**	**100%**

INTRODUCTION

According to the Intergovernmental Panel on Climate Change (IPCC), one of the main organizations in charge of compiling scientific studies on climate change, the global average surface temperature of the Earth has increased by around 1.1 °C since the end of the 19th century, and the period from 2011 to 2020 was the warmest ever recorded. Also, according to the body, the current state of temperature and climate change is unprecedented in history (IPCC, 2021). Figure 3 presents the history of global average temperature increase between 1950 and projections for 2100 (according to different emission scenarios, the result of assumptions about different policies adopted by countries).

As presented in the sixth report (AR6) on climate change of the IPCC (IPCC, 2022), the increase in global average temperature will possibly exceed 1.5°C, increasing the need for the establishment of policies and actions to reduce GHG emissions.

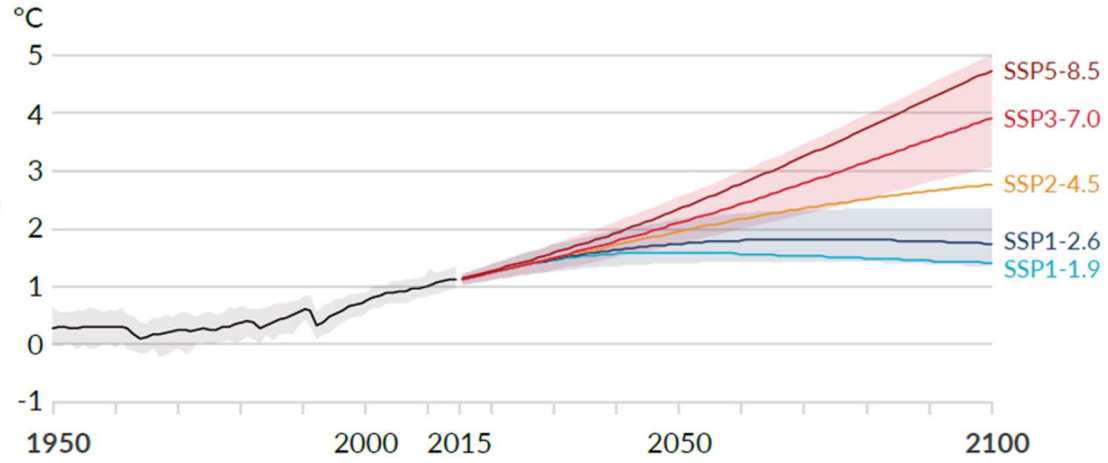

Figure 3 - Global surface temperature change from 1950-2100 (Source: IPCC, 2021)

According to IPCC reports, the cause of climate change is anthropogenic, and this information is supported by most international scientific research. Although there is controversy in political and civil society circles, the peer-reviewed scientific literature since 2012 shows over 99% consensus on this finding (Lynas, 2021).

Reducing GHG emissions is the key to preventing the global average temperature from surpassing the targets established in the 2015 Paris Agreement. In pursuit of this goal and to effectively mitigate its impact on the environment, Cemig diligently monitors and records GHG emissions across all its subsidiaries and operations. This comprehensive monitoring enables the company to identify primary emission sources and prioritize reduction initiatives, thus contributing to the overarching objective of limiting the global temperature increase to 1.5 °C.

About Cemig

Cemig is one of the largest electricity companies in Brazil and is widely active throughout the sector's production chain, from generation to transmission and distribution of electricity. It also operates in the distribution of natural gas through Gasmig.

In the generation sector, the company has stakes in 83 projects in 10 Brazilian states, 44 of which it owns, with 100% ownership. Among these ventures are 76 hydroelectric plants, 6 wind farms and 1 photovoltaic plant, which total 5.78 GW for Cemig Group. In addition, it controls 19 solar farms through Cemig SIM, a company dedicated to distributed generation that currently has 63 MWp of installed capacity.

Within the transmission sector, the company operates the second largest energy transmission group in the country, with an extensive network spanning nearly 5 thousand kilometers. This transmission system is responsible for the transportation of large blocks of energy from the large generating centers to the consumer centers.

In the distribution sector, Cemig Distribuição S/A (or Cemig D) stands out as the largest electricity distributor in Brazil in terms of network coverage, serving approximately 96% of the State of Minas Gerais. Furthermore, it has the highest rate of service to low-income consumers in the country, providing electricity to 42.9% of all consumers in the residential class.

Cemig also operates in the natural gas distribution business through Gasmig, the exclusive distributor of piped natural gas throughout Minas Gerais, serving the industrial, residential, commercial segments with compressed natural gas (CNG), liquefied natural gas (LNG), automotive (VNG) and thermoelectric.

In 2022, Cemig's Board of Directors approved the Company's *Net Zero* Commitment, which aims to reduce the company's emissions and reach emission neutrality in 2040. The company also committed to develop a science-based GHG emission reduction target, as recommended by the Science Based Targets (SBTi) initiative, which establishes guidelines and methodologies for developing science-based emission reduction targets to limit global warming to 1.5 °C.

Among the targets proposed but not yet approved by the SBTi initiative are:

- 90% reduction of absolute Scope 1, 2 and 3 emissions by 2040, considering the base year of 2021, reaching the residual value of 1,015,446.09 tCO2e considering Gasmig emissions;
- 69.4% reduction in absolute GHG emissions of scopes 1 and 2 by 2030, using 2021 as the base year;
- 42% reduction of scope 3 GHG emissions by 2030, using 2021 as the base year;
- Reduction of Scope 1, 2 and 3 emissions by 75.8% per MWh until 2030, considering 2021 as the base year without including Gasmig's emissions; For 2022, the target is 0.1 tCO2/MWh and for 2030 the intensity target is 0.033 tCO2/MWh;
- Increase annual renewable electricity supply from 0% in 2021 to 100% by 2024;

- Reduction of 65% of the intensity (percentage of actual SF6 loss/total installed SF6 mass) of sulphur hexafluoride (SF6) losses with 2019 as base year and 2027 as target year.

The establishment of these targets became possible due to Cemig's ongoing practice of measuring its GHG emissions through Emission Inventories since 2011. The company is committed to consistently executing these inventories year after year, enabling it to monitor the effectiveness of its mitigation actions and assess whether the decarbonization efforts align with the established targets and the trajectory required to limit the global temperature increase to 1.5°C. In this regard, the company has also been preparing its Climate Transition Plan, which should be released by the end of 2023.

METHODOLOGY

GHG Protocol

To prepare Cemig's GHG Emissions Inventory, the GHG Protocol method was adopted, which is a set of standards, guidelines and tools that were created to allow companies and governments to measure and manage their greenhouse gas emissions (GHG). This program was created in partnership between the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) and includes standards for the accounting of GHG emissions and removals for several sectors, such as cities, corporate sector, value chain, agriculture, and cattle raising, product life cycle, among others.

Through the global standardization provided by the GHG Protocol, it is possible for public and private actors to reliably measure and report the climate impact of their activities in terms of GHG emissions. The GHG Protocol offers specifications for the accounting, quantification, and publication of corporate inventories of Greenhouse Gas emissions, allowing companies to better understand their environmental impact and to plan more effective mitigation actions.

Limits of Inventory

The perimeter or boundary of the GHG Inventory defines the emission sources, gases, geographic area, and timescales that will be considered in the accounting. The main objective of defining the perimeter is to provide an overview of GHG emissions in the organization inventoried, identifying emitting sectors and their nature to plan actions that can generate significant changes. By defining the perimeter, it is possible to obtain a more accurate picture of the origins of emissions, excluding sources that are not relevant to the study.

Boundaries of the Organization

The organization boundary for Cemig's GHG Inventory was established considering the companies in which Cemig has more than 99% shareholding. These companies are considered an integral part of Cemig and therefore their GHG emissions are accounted for in the organization's Inventory.

By establishing this limit, Cemig seeks to provide a comprehensive and accurate view of the GHG emissions of its operation, considering the activities of its subsidiaries that have a significant impact on the climate. In this way, the company can identify critical areas in its operations and implement mitigation actions to reduce its GHG emissions.

Time limits

The temporal boundary of a GHG Inventory refers to the period in which a company or organization's GHG emissions are reported. The objective is to define a consistent period for reporting and to allow comparisons of GHG emissions between companies and previous years inventoried.

The period studied comprises the year 2022 (January 1, 2022 - December 31, 2022).

Greenhouse Gases (GHG)

In the context of the study of Cemig's Greenhouse Gas Emission Inventory, it is necessary to establish which gases will be considered in the calculation of emissions. To this end, the GHG covered by the Kyoto Protocol were considered:

- Carbon dioxide (CO_2): released from the burning of fossil fuels such as coal, oil, natural gas and derivatives, or from mobile and stationary sources, or from deforestation;
- Methane (CH_4): released by the burning of mobile and stationary sources, in solid waste and effluent treatment processes, by enteric fermentation and management of animal waste, among others;
- Nitrous oxide (N_2O): released by the burning of mobile and stationary sources and the treatment of effluent processes;
- Hydrofluorocarbons (HFCs): released by refrigeration equipment such as air conditioners and refrigerators, for example refrigerant gases R-134a, R-404A, R-407C, R-410, used in energy distribution equipment;
- Perfluorocarbons (PFCs): generic name for organo-fluorocarbon compounds composed only of carbon and fluorine, originating globally in the production of aluminium, i.e. not generated by Cemig's activities;
- Sulphur hexafluoride (SF_6): generated by electricity and power equipment;
- Nitrogen trifluoride (NF_3): generated in the manufacture of screens, photovoltaic panels, LED lamps and other microelectronic devices, that is, it is not generated by Cemig's activities.

To ensure that all gases are measured consistently and placed in the same notation, they are expressed in tons of carbon dioxide equivalent (tCO2e) using their respective Global Warming Potential (GWP). The GWP is an indicator that quantifies the contribution of each greenhouse gas to global warming, by comparing the amount of warming a gas generates relative to the same amount of carbon dioxide. Table 4 provides the values of each gas in terms of carbon dioxide equivalent.

Table 4 - Global warming potentials by gas (Source: IPCC,2021)

Greenhouse Gases (GHG)	Global Warming Potential (GWP)
CO_2	1
CH_4	27.9
NO_2	273
NF_3	17,400
SF_6	23,500
PFCs	0.004 – 12,400
HFCs	0,005 – 14,600

Sectors of activity

The GHG Protocol establishes three scopes for the measurement of GHG emissions. Scope 1 considers direct emissions resulting from the company's activities, such as the burning of fossil fuels in vehicles and equipment, industrial processes, waste treatment, exhaust gas emissions, among others.

According to the document "Emission Categories - Scope 1", published by the Brazilian GHG Protocol Program, the emission categories of this scope are:

- Stationary combustion sources: emissions from the combustion of fossil fuels in stationary sources, such as electricity generators, boilers, furnaces and heaters;
- Mobile combustion: emissions from the combustion of fuels in land, air and sea vehicles, also including losses from the storage and distribution of fuels;
- Industrial processes: emissions from chemical, physical and biological processes in industrial sectors such as cement production, steelmaking, chemicals and petrochemicals;
- Waste treatment: emissions from waste treatment processes such as landfills, biological treatment of waste, methane emissions from landfills and CO_2 emissions from thermal treatment of waste;
- Fugitive emissions: emissions from leakage and unintentional escape of greenhouse gases, such as natural gas leakage and escape of gases from refrigeration and air-conditioning systems.

Scope 2 emission categories, according to GHG Protocol, are the indirect greenhouse gas emissions that result from the consumption of electricity, heat or steam purchased by an

organization. These emissions are associated with the production of electricity, heat, or steam by third parties, which are accounted for separately in their Emissions Inventories. Scope 2 emission categories include:

- Emissions related to the purchase of electricity, heat or steam;
- Emissions related to technical and non-technical losses in the energy generation, transmission, and distribution systems.

Scope 3 is the most complex of the three scopes established by the GHG Protocol, since it includes the indirect emissions of an organization, that is, those generated in other stages of the value chain in which the organization is inserted. These emissions can be divided into 15 categories, as described below:

1. **Purchases of goods and services**: emissions resulting from the production of goods and services acquired by the organization;
2. Capital goods: missions generated throughout the life cycle of the acquired or purchased capital goods, from the extraction of resources, production and transport to the moment they are received by the organization;
3. **Energy use**: emissions resulting from the use of electric, thermal and fossil fuel energy by the organization, not included in scope 1 and 2;
4. **Transport and distribution (upstream)**: include emissions from the transport of goods in vehicles and facilities that are not owned or operated by the organization, as well as outsourced transport and distribution services, including inbound and outbound logistics;
5. **Waste generated in the operation:** covers emissions related to the treatment and/or final disposal of solid waste and liquid effluents from the operations of the stocktaking organization in the inventory year, carried out in facilities owned or controlled by third parties;
6. **Business travel**: emissions resulting from business travel undertaken by employees of the organization;
7. **Employee commuting**: emissions resulting from the daily commuting of the organization's employees;
8. **Leased assets (the organization as lessee):** includes emissions arising from the operation of assets that have been leased by the inventory-taker organization, but which have not been accounted for in Scopes 1 and 2;
9. **Transport and distribution (downstream):** include emissions from the transport and distribution of products sold by the inventory-taker organization (if it is not responsible for payment) from its operations to the final consumer, encompassing retail and warehousing, performed in third party vehicles and facilities;
10. **Processing of products sold:** includes emissions resulting from the processing of intermediate products, which occur after the sale of these products by the inventorying organization and are carried out by another organization;
11. **Use of goods and services sold:** includes emissions from the end use of goods and services sold by the inventory taker organization in the inventory year are

accounted for. These emissions include all emissions throughout the life cycle of the goods and services sold, from the time of purchase until disposal by the end consumer;

12. **End-of-life treatment of products sold:** includes emissions from the final disposal and treatment of products sold by the stocktaking organization at the end of their useful life in the inventory year.
13. **Leased assets (the organization as lessor):** includes emissions arising from the operation of assets owned by the inventorying organization (lessor) and leased to other entities in the year inventoried;
14. **Franchises:** includes emissions resulting from the activities of the organization's franchises;
15. **Investments:** includes emissions resulting from financial investments of the organization.

It is important to highlight that scope 3 emissions are considered indirect but may have a significant impact on the total emissions of an organization, so it is essential that they are considered in an Inventory of GHG emissions.

Data collection

The data collection method utilized for this project involved conducting a kick-off meeting to introduce the reporting methodology and the dedicated tool. Subsequently, a user-friendly tool was provided to Cemig's employees responsible for managing various data. The data collection process also involved bilateral communication through email and virtual meetings, aimed at assisting the respondents in accurately reporting the required activity data.

The tool provided contains all emission categories pertaining to each of the scopes and the respondent was responsible for inputting activity data. It was built and used during data collection and enabled the construction of an organized history of the company's data.

In addition, the spreadsheet uses the following key notations to aid understanding of the completed data: 'Not occurring', 'Not estimated', 'Confidential', 'Included elsewhere' and 'Accounted', detailed in Figure 4. These notations help to clarify the nature of the data, increasing the reliability of the data used for emissions calculations.

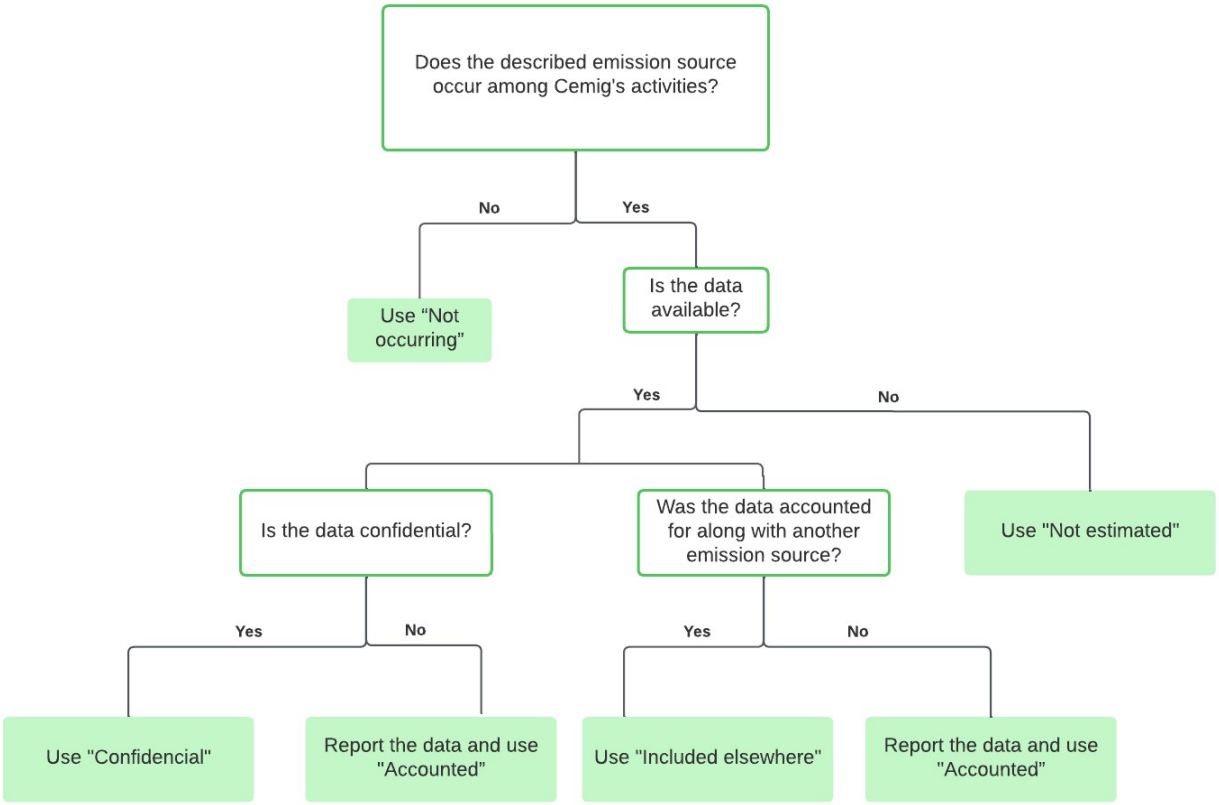

Figure 4 - Key Notations Flowchart

Emission Sources

Table 5 below presents a summary of the emission sources accounted for in the 2022 base year Inventory, using the key notations presented above.

Table 5 - Emission sources and notation related to Cemig's activities

Scope	Issue Category	Emissions (tCO2e)	Notation
Scope 1	Direct stationary combustion emissions	141	Accounted
	Direct emissions from mobile combustion	7,308	Accounted
	Agricultural activities and land use	69,594	Accounted
	Direct fugitive emissions	5,296	Accounted
Scope 2	Electricity	1,735	Accounted
	T&D losses	290,031	Accounted

Scope	Issue Category	Emissions (tCO2e)	Notation
	Thermal energy		Not occurring
Scope 3	Goods and services purchased	3	Accounted
	Capital goods		Not occurring
	Activities related to fuel and energy not included in scopes 1 and 2		Not occurring
	Upstream leased assets		Not occurring
	Waste generated in operations	583	Accounted
	Business travel	329	Accounted
	Employee home-work commuting	141	Accounted
	Upstream transport and distribution	33,012	Accounted
	Transport and downstream distribution		Not occurring
	Processing of products sold		Not occurring
	Use of goods and products sold	4,887,786	Accounted
	Final disposal of products sold		Not occurring
	Leased assets downstream		Not occurring
	Franchises		Not occurring
	Investments		Not occurring
	Scope 3 emissions not classifiable in categories 1 to 15		Not occurring

RESULTS

General

In 2022, Cemig's total emissions amounted to **5,296,977 tCO2e**, with scope 3 being the main responsible, accounting for approximately **93%** of total emissions, equivalent to **4,921,854 tCO2e**. Next is scope 2, totaling **291,766 tCO2e** or approximately **5%** participation in emissions. Lastly, scope 1 accounted for **83,357 tCO2e**, representing approximately 2% of the total emissions (Table 6).

Table 6 - Summary table of emissions by emission category.

Scope	Issue Category	Emissions (tCO2e)	Share (%)
Scope 1	Direct stationary combustion emissions	140.79	0.17%
	Direct emissions from mobile combustion	7,307.85	8.77%
	Agricultural activities and land use	69,593.51	83.49%
	Direct fugitive emissions	6,314.44	7.58%
	TOTAL SCOPE 1	83,356.59	1.57%
Scope 2	Electricity	1,734.83	0.59%
	T&D losses	290.031,42	99,41%
	TOTAL SCOPE 2	291.766,24	5.11%
Scope 3	Goods and services purchased	3.17	0.00%
	Waste generated in operations	582.98	0.01%
	Business travel	328.91	0.01%
	Employee home-work commuting	141.09	0.00%
	Upstream transport and distribution	33,012.14	0.67%
	Use of goods and products sold	4,887,785.80	99.36%
	TOTAL SCOPE 3	4,921,854.09	92.91%
TOTAL SCOPE 1 + 2 + 3		**5,296,976.92**	**100%**

Scope 1

Scope 1 aggregated direct emissions from the categories 'Stationary combustion', 'Mobile combustion', 'Fugitive emissions' and 'Agricultural activities and land use change'. In 2022, Cemig's emissions from this scope represented **83,357 tCO2e** or **2%** of total emissions. Among scope 1 emissions, emissions related to 'Agricultural activities and land use change' accounted for the largest scope emissions, with **69,594 tCO2e** representing **1%** of total emissions. Next, the category 'Mobile combustion' accounted for the second largest share of emissions, totaling **7,308 tCO2e**, or **0.13% of** total scope 1 emissions. Fugitive emissions accounted for the third largest volume of scope 1 emissions at **6,314 tCO2e** or **0.11% of** scope 1 emissions.

Cemig D presented the highest emission for this scope, totaling **70,294 tCO2e**, approximately **84%** of scope 1. Followed by Cemig GT and SPEs that emitted **8,425 tCO2e**, about **10%** of scope 1 emissions. The Centroeste operating unit had emissions of **3,676 tCO2e**, which represents **4%** of the company's scope 1 emissions. Gasmig was responsible for **1% of** scope 1 emissions, totaling **842 tCO2e**. Cemig SIM had emissions of **0.03 tCO2e** for scope 1. Cemig H did not present emissions for this scope.

Scope 1 emissions, broken down by emission source, are presented in Figure 5.

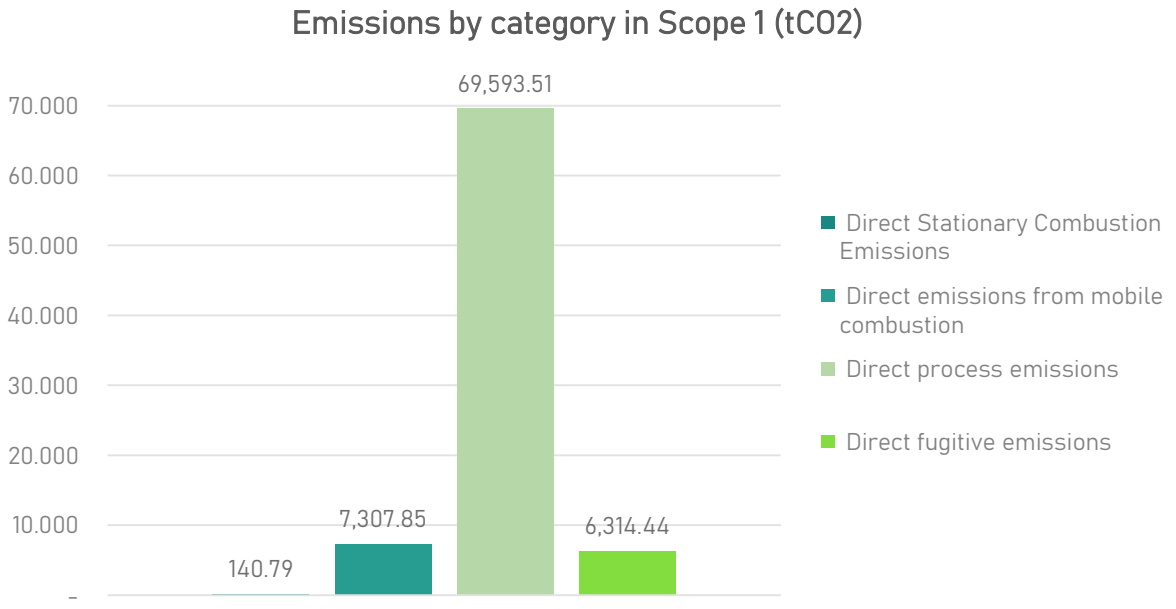

Figure 5 - Cemig scope 1 emissions by emission category

The Table 7 presents the scope 1 emissions per precursor. Vegetal suppression presented the highest emissions per precursor, representing **77%** or **63,837 tCO2e**, followed by diesel oil consumption, which totaled **6,218 tCO2e** or **7%.** Finally, the use of nitrogen fertilizer

was responsible for the third largest emissions of the scope in question, totaling **5,852 tCO2e** or **7%.**

Table 7 - Scope 1 emissions by precursor

Emission source	Emission (tCO2e)	Representativity (%)
Dolomitic limestone	1,621.31	1.95%
GN	7.51	0.01%
Diesel oil	6,217.63	7.35%
Petrol	1,107.98	1.33%
Ethanol	1	0.00%
Aviation paraffin	131	0.16%
LPG	1.27	0.00%
CNG	72.38	0.09%
R-410a	381.66	0.46%
HFC-134a	216.4	0.26%
R-22	927.8	1.11%
Sf6	4,042	4.86%
Vegetal Suppression	63,836.50	76.58%
Nitrogen Fertilizer	4.154,85	4,96%
Corgon 20	0.05	0.00%

Stationary Combustion

The 'Stationary combustion' aggregates the emissions from the burning of fossil fuels to produce heat and electricity, such as the use of diesel in power generators. This category represented **0.16%** of total emissions of scope 1, totaling **141 tCO2e** in the year studied.

Cemig D presented the highest emissions related to stationary combustion, adding up to **103 tCO2e**, of which **95 tCO2e** are related to the consumption of diesel oil in generators for transmission, **7 tCO2e** to the use of natural gas in autoclave and about **1 tCO2e** from the use of natural gas in the organization's restaurants. Cemig GT and SPEs emitted **38 tCO2e**, the second highest for this category, of which **32 tCO2e** for the consumption of diesel oil in generators for transmission and **6 tCO2e for the** consumption of diesel oil in generators for generation. The emissions related to the stationary combustion of GASMIG were **0.2 tCO2e**, which are related in total to the consumption of diesel oil in other stationary sources. The operational units Cemig SIM, Cemig H and Centroeste did not contribute to the mobile combustion category.

The emissions were broken down by operational unit and are presented in Figure 6.

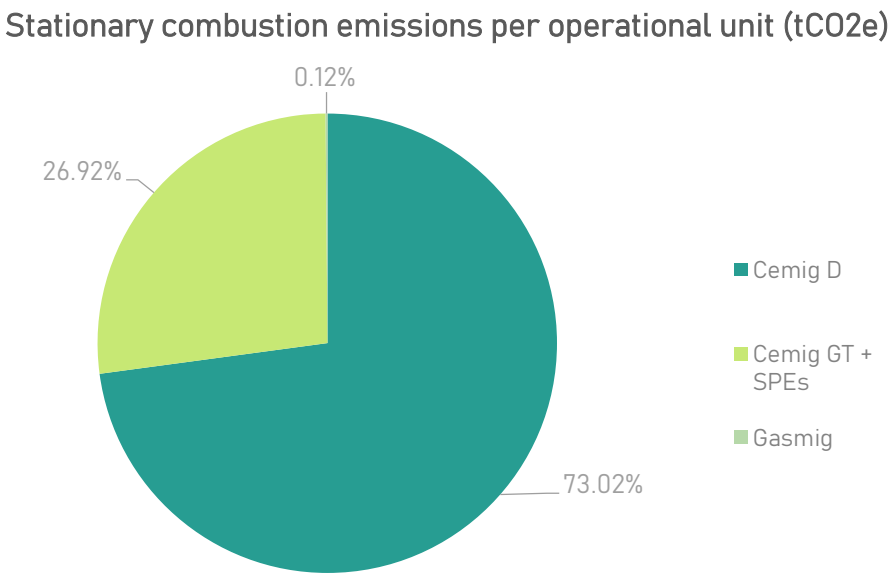

Figure 6 - Direct emissions from stationary combustion by Cemig's operational unit

Mobile Combustion

The category 'Mobile combustion' includes direct emissions related to the use of fossil fuels in transportation. Among Cemig's activities, there were emissions by fuel burning related to road, waterway, and air transportation. In 2022, total emissions from mobile combustion were **7,308 tCO2e**, which represents **9%** of emissions for scope 1.

Cemig D operational unit was responsible for the largest share of emissions in this category, with **5,949 tCO2e** or **81% of** emissions from mobile combustion. At Cemig D, road transport accounted for the largest share of emissions in this category, totaling **98%** of mobile combustion emissions of the operational unit or **5,857 tCO2e**. Direct emissions from air transport at this operational unit represented less than **2%** for mobile combustion, adding up to **92 tCO2e**.

Following that, Cemig GT and the SPEs were responsible for the second largest emissions of the category in question, with **1,255 tCO2e**, which corresponds to **17%** of the company's mobile combustion emissions. Road transport accounted for almost all emissions in this category for Cemig GT and SPEs, **1,254 tCO2e**, a small portion of the operational unit's emissions is related to waterway transport which corresponds to **0.03 tCO2e**. The subsidiaries units Horizontes, Poço Fundo and Sete Lagoas did not present emissions related to mobile combustion.

Gasmig was responsible for the third largest emission of the category, totaling **104 tCO2e** about **1%**, all emissions are related to mobile combustion, of which 100% are related to road

transport. Cemig SIM emitted **0.04 tCO2e** referring to the burning of fuels for road transport. Cemig H did not present emissions for this sector.

The emissions were broken down by operational unit and are presented in Figure 7.

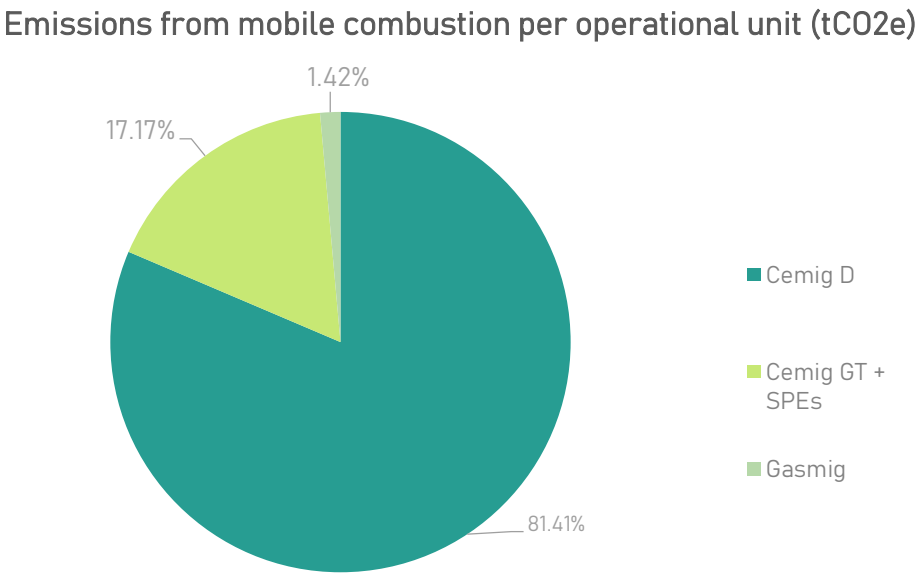

Figure 7 - Cemig's direct emissions by mobile combustion

Agricultural Activities

The 'Agricultural activities' category includes emissions from the use of fertilizers, either by nitrogen consumption in fertilizers or using lime. In 2022, total emissions related to agricultural activities represented **5,852 tCO2e**, representing **7%** of total scope 1 emissions.

Cemig GT and SPEs totaled the largest emissions for this category, accounting for **5,700 tCO2e**, which represents **99%** of emissions from Cemig's agricultural activities. Among emission activities in this category, nitrogen consumption in fertilizers accounted for **4,079 tCO2e** or **71% of Cemig** GT and SPEs emissions for agricultural activities. The use of lime was responsible for the other **29%** emitted in the category by the operational unit, adding up to **1,621 tCO2e**.

Next, Cemig D was responsible for the second largest emission from agricultural activities, adding **56 tCO2e** or **1% of** the emissions in this category, related in its entirety to nitrogen consumption in fertilizers. Gasmig, Cemig SIM, Centroeste and Cemig H did not present emissions for agricultural activities.

The emissions were broken down by operational unit and are presented in Figure 8.

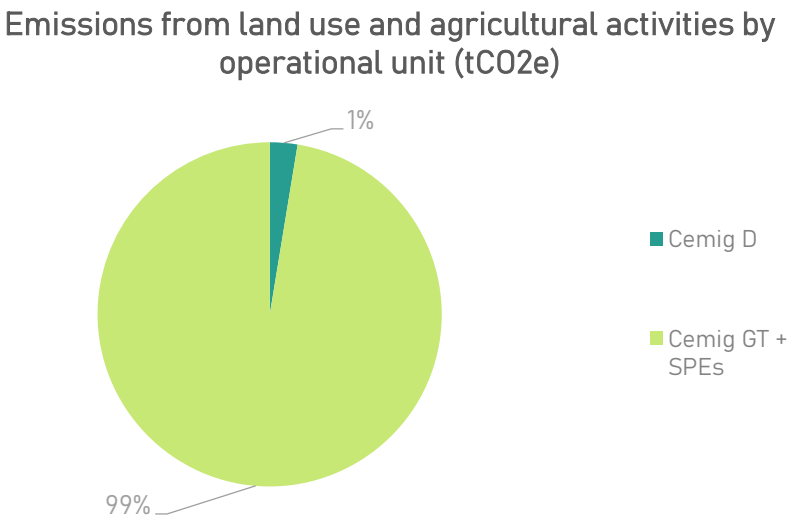

Figure 8 - Direct emissions from Agricultural activities by Cemig's operational unit

Land Use Change

The emissions related to 'Land use change' come from vegetation suppression. In 2022, emissions related to land use change represented **63,836 tCO2e**, **77%** of total scope 1.

Cemig D had the largest share of emissions from vegetation suppression that totaled **60,160 tCO2e** or **94%** of emissions related to land use change. The increase in emissions related to vegetation suppression from Cemig D, for the construction of distribution lines, aimed at complying with the investment cycle of the Distribution Development Plan (PDD) which occurs every 4 years. Following that, Cemig Centroeste presented **3,676 tCO2e** which represents **1%** of the emissions in this category. The other operating units did not present emissions related to land use change (Figure 9).

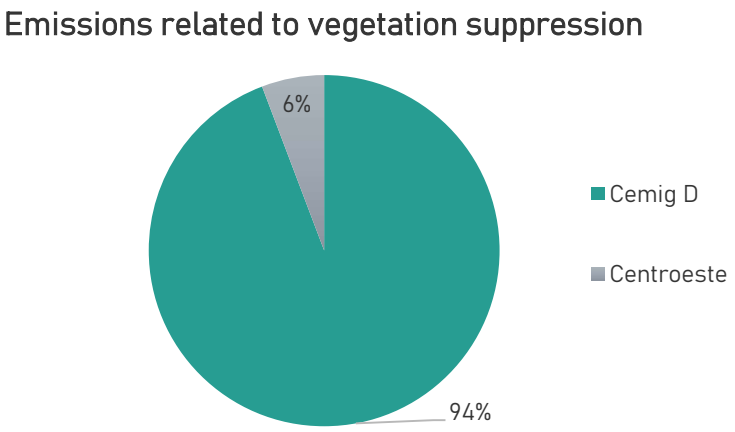

Figure 9 - Direct emissions from land use change by Cemig's operational unit

In 2022, Cemig accounted for a total of **10,156 tCO2e** removed from planting and recomposing vegetation in Cerrado and Atlantic Forest areas. Vegetation recomposition in the Atlantic Forest biome was responsible for **60%** of the removals, or **6,113 tCO2e**. The vegetation recomposition in the Cerrado was responsible for carbon sequestration of **4,043 tCO2e** or **40%**, as presented in the Table 8.

Tabela 8 - Parcela das emissões removidas por bioma

Biome	Removal (tCO2e)	Representativity (%)
Cerrado	4,043,27	39.81%
Atlantic Rainforest	6,113.11	60.18%
TOTAL	**10,156.39**	**100%**

Fugitive Emissions

The 'Fugitive emissions' category comprises emissions by the exhaust of SF6, refrigerant gases or natural gas during Cemig's operations. In 2022, total emissions were **6,314 tCO2e**, representing **8%** of scope 1 emissions.

Cemig D was responsible for most of the fugitive emissions, with **4,144 tCO2e** or **65% of** this category. The emissions related to the use of SF6 presented the highest percentage of emissions of Cemig D in this category, with **2,618 tCO2e**, totaling **63%** of the emissions of the operational unit for fugitive emissions. Table 9 shows Cemig's historical emissions of SF6. The refrigerant gas R-22 represented the second highest percentage of emissions from the operational unit, **22%** or **928 tCO2e.** The R-410a gas contributed **382 tCO2e**, which

comprises **9%** of the operational unit's emissions for the category. The HFC-134 refrigerant gas was responsible for **216 tCO2e**, which represents **5%** of Cemig D's fugitive emissions.

Cemig GT and SPEs, had the second largest share of emissions, **1,433 tCO2e**, representing **22%** of the emissions of this category, all from the use of SF6. Gasmig had **738 tCO2e of emissions**, totaling **12%** of Cemig's fugitive emissions, of which the precursor was natural gas losses in distribution.

Table 9 - Historical SF6 emissions

SF6 (emissions)	2019	2020	2021	2022
SF6 (tons)	0.217	0.141	0.155	0.172
SF6 (tCO2)	4,959	3,215	3,541	4,042
Percentage loss (SF6 loss (t)/total mass (t) of SF6 installed)	0.6	0.37	0.37	0.33

The emissions were broken down by operational unit and are presented in Figure 10.

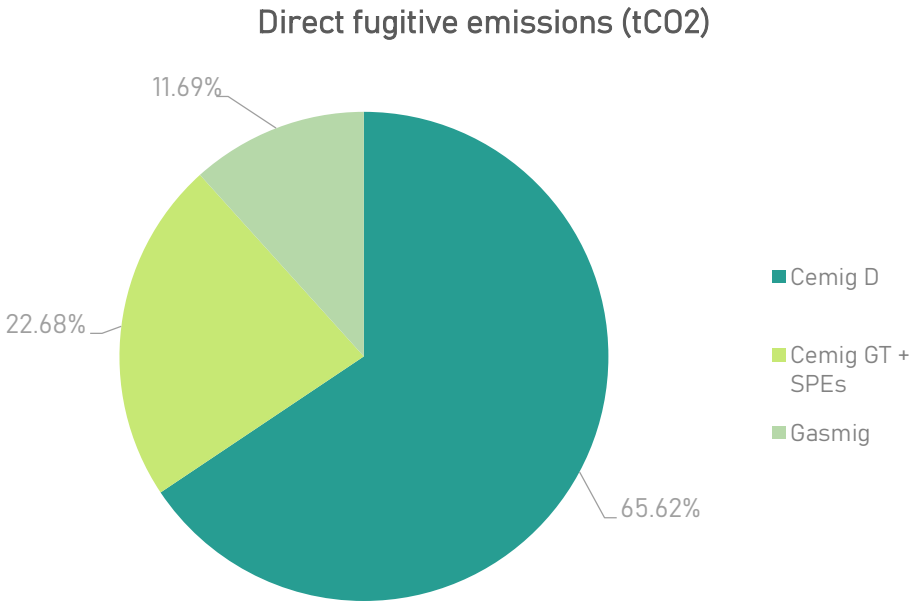

Figure 10 - Direct fugitive emissions by Cemig's operational unit

Scope 2

Scope 2 aggregates the indirect emissions related to 'Electric energy consumption', 'Losses in the Generation, Transmission and Distribution Systems' and 'Thermal Energy Consumption'. In 2022, the emissions related to scope 2 corresponded to **291.766 tCO2e**, representing **5% of** total emissions.

Among scope 2 emission categories, Losses in Transmission and Distribution Systems accounted for the largest share of emissions, totaling **290,031 tCO2e** or **99%** of total scope 2 emissions, followed by emissions from electricity consumption, which contributed with **1,735 tCO2e** or **1%** of scope emissions. No thermal energy consumption was reported by Cemig (Figure 11).

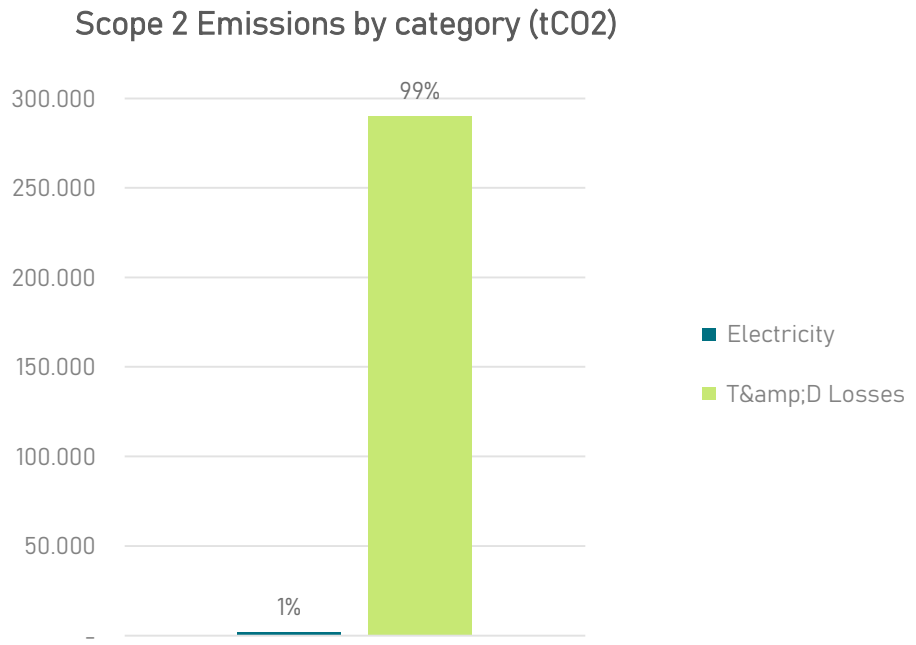

Figure 11 - Scope 2 indirect emissions by emission category

Cemig D was the operational unit with the largest emissions totaling **285,019 tCO2e** or **98%** of scope 2 emissions. In the sequence, Cemig GT and SPEs accounted for the second highest emissions totaling **6,730 tCO2e**, representing **2%** of scope 2 emissions. Gasmig had emissions of **10 tCO2e**, representing less than **1%** for this scope. Cemig H presented **2,73 tCO2e** and Cemig SIM **4,1 tCO2e**. Cemig Centroeste did not present emissions for this scope.

Electricity Consumption

In 2022, emissions related to Cemig's electricity consumption were **1,735 tCO2e**, which amounted to **0.59% of** scope 2 emissions. Cemig D was responsible for the largest emissions

in this category, with **1,494 tCO2e or 72%** of emissions from electricity consumption. Followed by Cemig GT and SPEs was the second largest responsible for emissions in this category, with **223 tCO2e** or **13%** of emissions in this category. Gasmig had emissions in the order of **10 tCO2e**, which means a percentage of **0.66%** of emissions by electricity consumption. Cemig SIM had emissions of **4.1 tCO2e** which represents 0.27% of the emissions of this category. Cemig H totaled **3 tCO2e** or **0.18% of** emissions related to electricity consumption. Finally, Cemig Centroeste totaled **0.1 tCO2e** which represents a percentage of **0.006%.** The emissions were divided by operational unit and are presented in Figure 12.

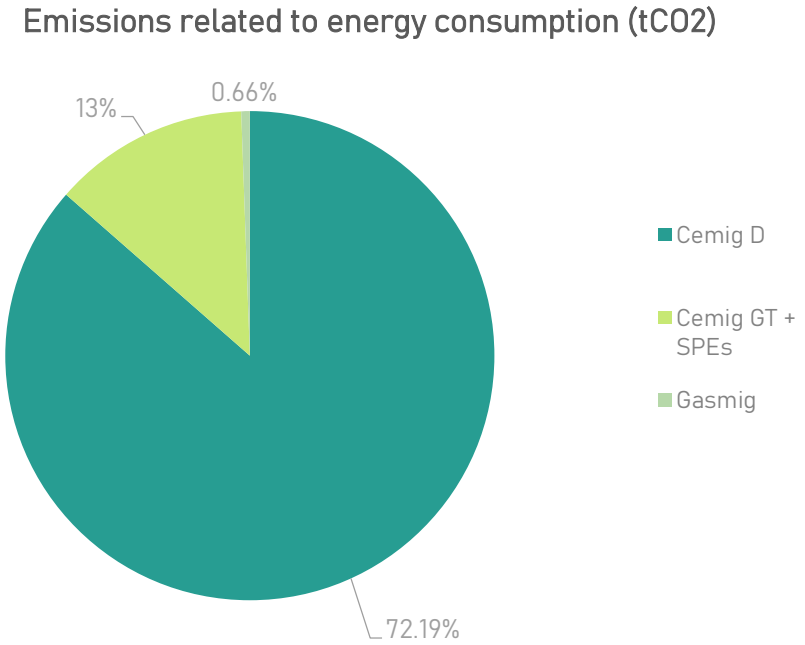

Figure 12 - Emissions from electric energy consumption by Cemig's operational unit

Transmission, Generation and Distribution System Losses

Technical losses in the transmission, generation and distribution systems were responsible for the largest portion of scope 2 emissions, totaling **290,031 tCO2e** or **99%** of scope emissions. Losses in Cemig D's distribution system represented the largest emissions for this category, totaling **283,525 tCO2e** or **98%** of emissions in this category. Cemig GT and SPEs presented the rest of the emissions related to losses in the transmission and generation systems, with **6,506 tCO2e**, or **2%** of the emissions in this category.

The emissions were broken down by operational unit and are presented in Figure 13.

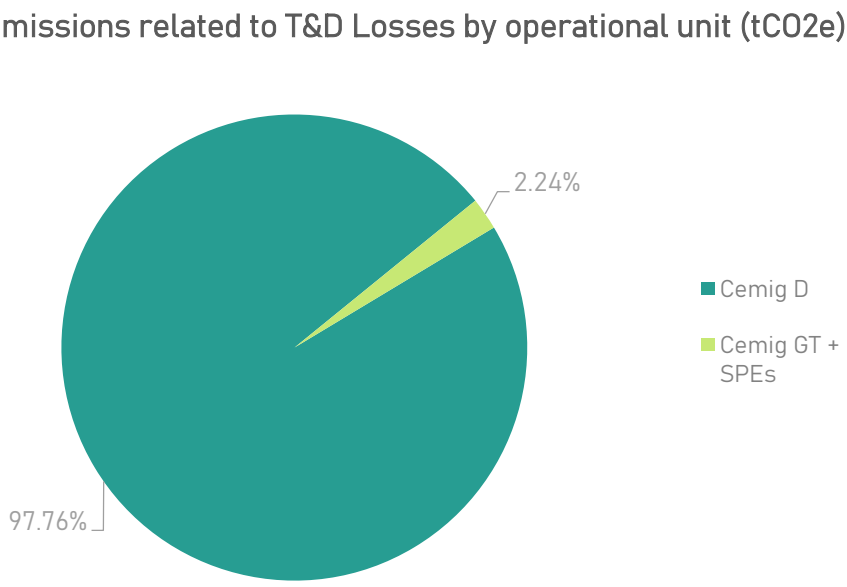

Figure 13 - T&D Losses Emissions by Cemig's Operational Unit

Scope 3

Scope 3 emissions are indirect and result from activities that are not directly controlled by Cemig. In the GHG emissions inventory, the following categories were accounted for: 'Goods and services purchased', 'Transport and distribution (upstream)', 'Waste generated in operations', 'Business travel', 'Employee commuting (home to work)' and 'Use of goods and services sold'. Cemig emitted **4,921,854 tCO2e**, which represents **86%** of total emissions.

Table 10 - Scope 3 emissions by emission category

Scope	Category	Emissions (tCO2e)	Representativeness (%)
Scope 3	Goods and services purchased	3.17	0.00%
	Waste generated in operations	582.98	0.01%
	Business travel	328.91	0.01%
	Employee home-work commuting	141.09	0.00%
	Upstream transport and distribution	33,012.14	0.67%
	Use of goods and products sold	4,887,785.80	99.36%
	TOTAL SCOPE 3	**4,921,854.09**	**100%**

Gasmig had the highest scope 3 emissions, accounting for **2,092,213 tCO2e** or **42%** of scope 3 emissions. Cemig D was responsible for **1,321,603 tCO2e** or **27%** of total scope 3

emissions. Cemig GT and SPEs were responsible for **902,134 tCO2e**, which represents **18%** of scope 3. Cemig H was responsible for **12%** of scope 3 emissions or **605,903 tCO2e**. Cemig Sim emitted **1.14 tCO2e**, which represents less than 1% of scope 3 emissions.

The table below presents the emissions per precursor, and it can be observed that Electricity (**57%**) and Natural Gas (NG) (**43%**) are the main responsible for the Scope 3 emissions (Table 11).

Table 11 - Scope 3 emissions by precursor

Emission source	Emission (tCO2e)	Representativity (%)
Diesel oil	30,300.99	0.63%
Petrol	2,702.30	0.05%
Ethanol	8.77	0.00%
Electricity	2,795,583.00	56.80%
Aviation paraffin	328.94	0.01%
LPG	145.09	0.00%
GN	2,092,203.00	42.51%
Solid waste	582	0.01%

Goods and services purchased

The emission category 'Goods and services purchased' refers to indirect emissions related to products and services that the company purchases from third parties. The category presented a total emission of **3.17 tCO2e** in 2022, with only Cemig D operating unit contributing to this result.

Upstream transport and distribution

The scope 3 emission category 'Transport and upstream distribution' comprises the indirect emissions arising from the transport and distribution of products purchased or acquired by the inventory-taker organization in vehicles and facilities that are neither owned nor operated by it.

The total emissions of the category, in 2022, were **33,012 tCO2e**, which represents **0.67%** of scope 3 emissions. Cemig D presented the highest emissions of the category adding **32,930 tCO2e** or **99%** of the category emissions. In sequence, Cemig GT was responsible for **82 tCO2e**, contributing to less than **1% of** the total.

The emissions were broken down by operational unit and are presented in Figure 14.

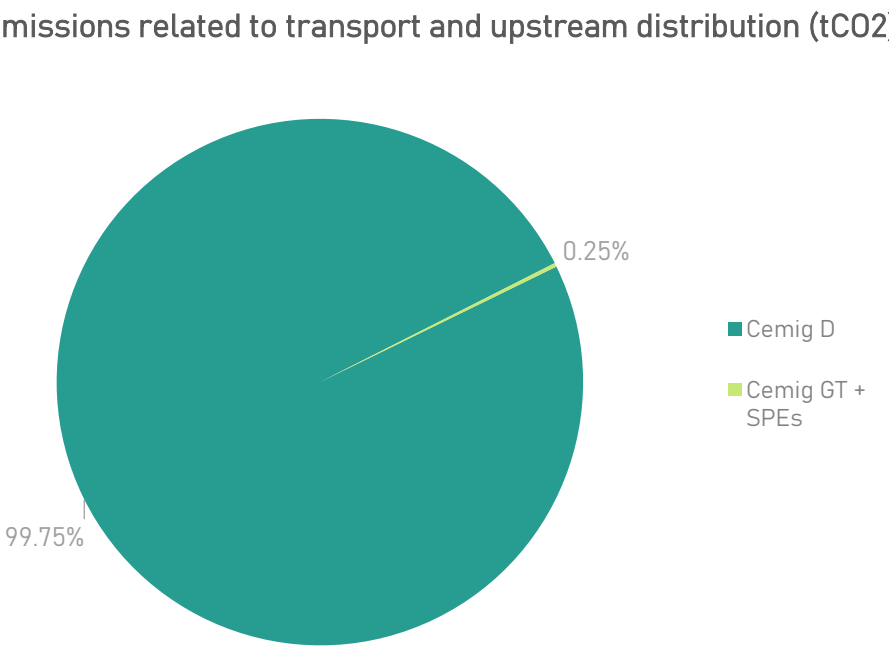

Figure 14 - Indirect emissions from upstream transport and distribution by Cemig's operational unit

Waste generated in the operation

Scope 3 emission category 'Waste generated in the operation' refers to indirect emissions resulting from the management of waste generated during the organization's activities. Waste generated in the operation totaled **582 tCO2e** or **0.01%** of the Scope 3 emissions. Cemig GT was the largest emitter in the category, contributing with **310 tCO2e**, which represents **53%** of the category's emissions. Cemig D was responsible for the rest of the emissions related to waste generated in the operation, totaling **260 tCO2e** or **45%** of the emissions of the category.

The emissions were broken down by operational unit and are presented in Figure 15.

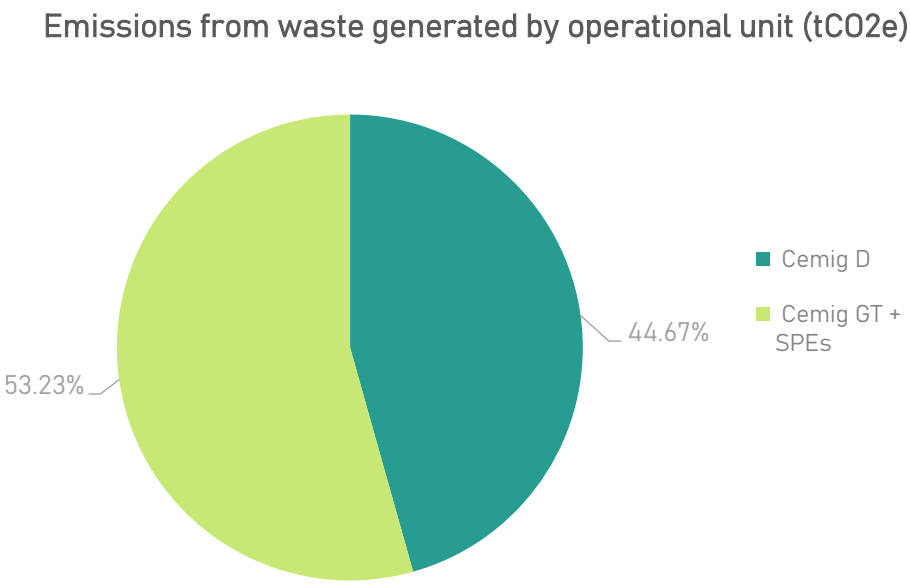

Figure 15 - Indirect emissions from waste generated in the operation per operational unit

Business travel

The emission category 'Business travel' comprises the GHG emissions from travel undertaken by employees of the organization for business purposes. The travel emissions were **329 tCO2e**, which represents a very small portion of the total Scope 3 emissions, **0.01%.**

Cemig D was responsible for the largest emissions in the category totalling **145 tCO2e**, which represents **45%** of the emissions related to business travel, followed by Cemig H which was responsible for **110 tCO2e** or **34% of** the emissions for the category. Cemig GT and SPEs was responsible for **62 tCO2e** adding up to **19% of emissions** from business travel, being the third largest emitter for the category in question. Gasmig presented **10 tCO2e of** the emissions of the business trips, which represents **3%** of the emissions of the category.

The emissions were broken down by operational unit and are presented in Figure 16.

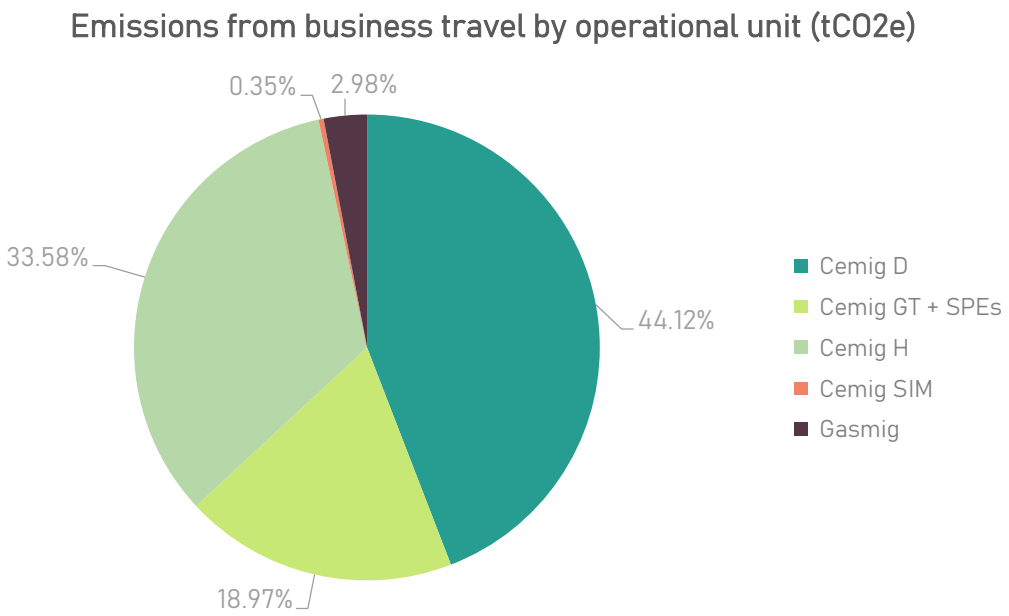

Figure 16 - Indirect emissions from business travel category by operating unit

Employee commuting

The emission category 'Employee commuting' includes GHG emissions associated with the daily commuting of employees between their homes and workplaces.

In 2022, the total emissions from commuting by employees was **141 tCO2e** which represents a very low percentage of scope 3, amounting to **0.002%.** Among the operational units, Cemig GT and SPEs represented **59%** of the emissions of the category, totaling **84 tCO2e**. Cemig D was responsible for **57 tCO2e** or **41%** of the category's emissions, the second largest emitter of business travel.

The emissions were broken down by operational unit and are presented in Figure 17.

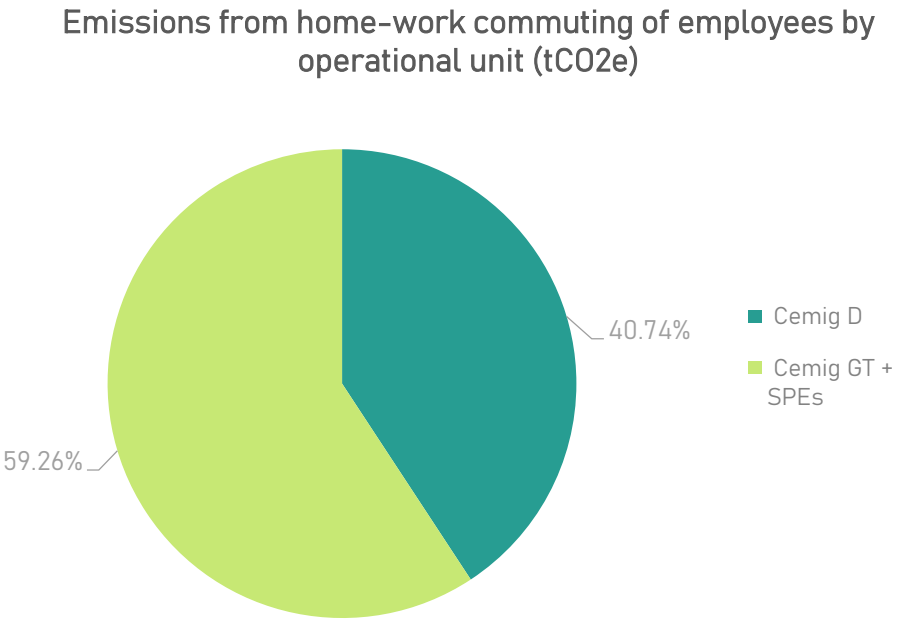

Figure 17 - Indirect emissions of the home to work commuting category by Cemig's operational unit

Use of goods and services sold

The 'Use of goods and services sold' category of GHG scope 3 refers to the indirect emissions generated by the end use of goods and services sold by the organization. At Cemig, the goods and services sold consist of the sale of electricity and natural gas.

In 2022, Cemig had a total of **4,887,786 tCO2e** of emissions in the category, representing a significant percentage of the company's scope 3, amounting to **93%.** The emissions related to the sale of electricity were **2,795,583 tCO2e**, representing most emissions in this category **57%**. The emissions related to the sale of natural gas were **2,092,203 tCO2e**, corresponding to **43%** of emissions from the use of goods and services sold.

Gasmig, which is responsible for the commercialization of natural gas in the state of Minas Gerais, presented the highest emissions for the category by operational unit **2,092,203 tCO2e** which represents **43%.** In the sequence, Cemig D was responsible for **1,288,208 tCO2e** or **26%** of the emissions related to the use of goods and products sold. Cemig GT and SPEs were responsible for the third largest volume of emissions in this category, **901,582 tCO2e** or **18%**. Cemig H, which has its emissions in the category related to the sale of electricity, was responsible for **605,792 tCO2e** or **12%** of the category.

In addition, Cemig traded emission-free renewable electricity, of which **1,795,939 MWh** of Cemig REC and **1,423,007 MWh** of I-REC.

The emissions were divided by operational unit and are presented in Figure 18.

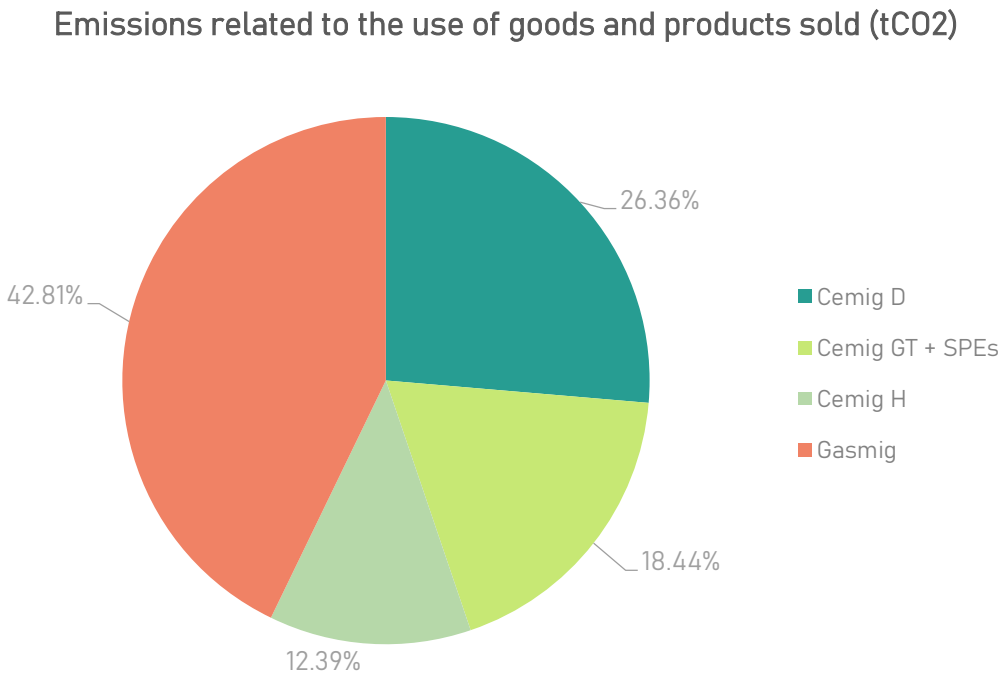

Figure 18 - Indirect emissions from the category Use of goods and services by Cemig's operational unit

COMPARATIVE ANALYSIS: YEARS 2019-2022

This section presents a comparative analysis of GHG emissions between the years 2019 and 2022. By comparing data collected over a four-year period, it is possible to identify trends, patterns, and variations in the company's emissions, allowing it to monitor its emissions and outline reduction strategies. In addition, a comparative analysis for this period can help identify the impact of external factors, such as changes in the economy, politics, technology, climate, and other variables that may affect a company's performance.

Between the years 2019 and 2020 there was a significant drop in emissions. In 2019, the emissions were **7,101,919 tCO2e**, decreasing to **5,706,171 tCO2e** in 2020, that is, a drop of **20%.** Between 2020 and 2021, Cemig's emissions grew by **79%**, jumping from **5,706,171 tCO2e**, in 2020, to **10,200,950 tCO2e**, in 2021. This growth is mainly related to the increase in the national energy grid emission factor, which had an increase of **104%** between the years. The variation between the emission factors is related to the change in the rainfall regime, since in years with lower rainfall occurrence (total precipitation volume) the hydroelectric plants lose their capacity to produce electric energy and the Operador Nacional do Sistema Elétrico (ONS) needs to "trigger" the thermoelectric plants, which generate higher emissions given the use of fossil sources. Finally, between the years 2021 and 2022, there was a reduction in total emissions by **43%,** from **10,200,950 tCO2e** (2021) to **5,296,977 tCO2e** (2022), caused mainly by the reduction of the emission factor (**0.1264 tCO2e/MWh** in 2021 and **0.0426 tCO2e/MWh in** 2022). The results on emissions from 2019 to 2022 are highlighted in Figure 19.

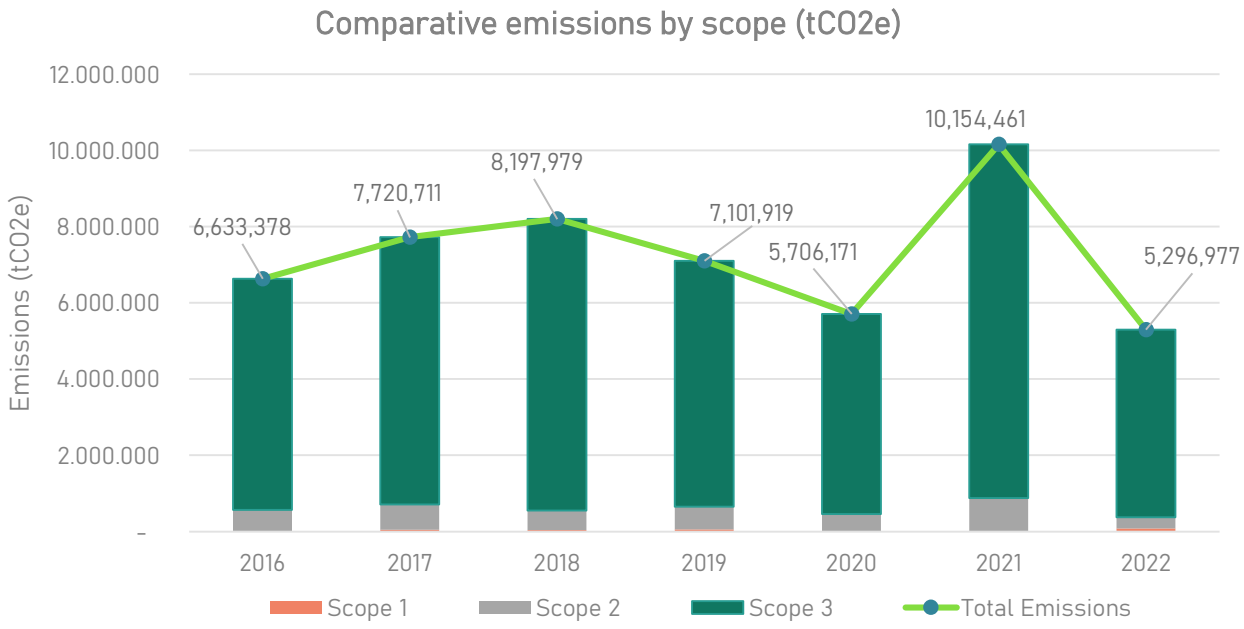

Figure 19 - Historical series of total emissions

Between 2019 and 2020, scope 1 emissions fell by approximately **40,000 tCO2e,** mainly due to the decommissioning of the Igarapé thermoelectric plant. Between 2020 and 2021, there was an increase in emissions of **12%** or **1.5 thousand tCO2e**. In 2022, Scope 1 emissions grew again, reaching **83,357** tCO2e, an increase of **549%.** The increase in emissions between 2021 and 2022 is explained by the increase of vegetal suppression due to the expansion works of the energy distribution network**.** The results on scope 1 emissions from 2019 to 2022 are highlighted in Figure 20 and in Table 12.

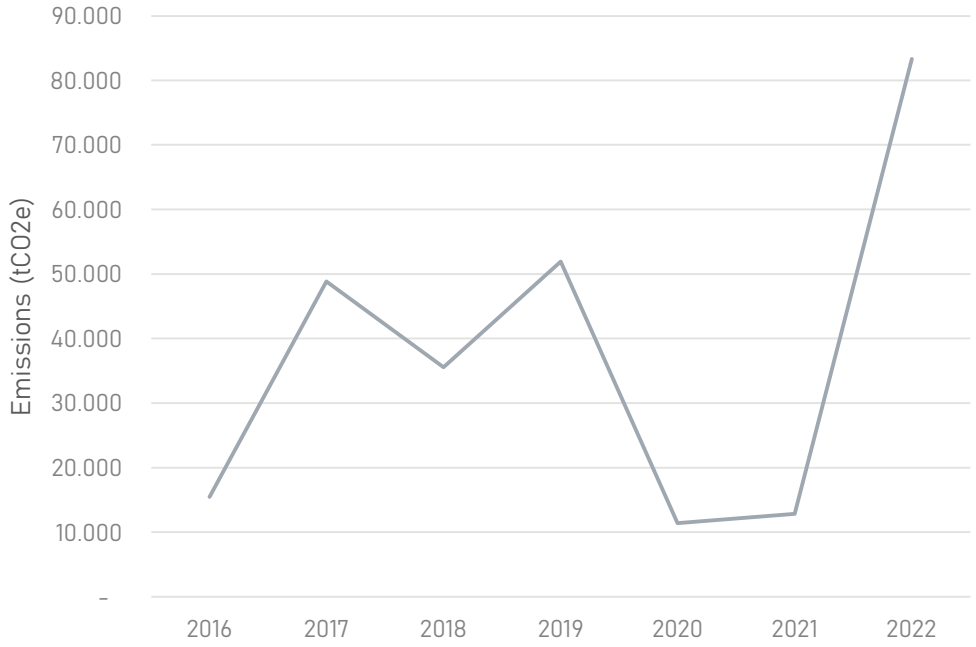

Figura 20 - Historical series of Scope 1 emissions

Table 12 - Distribution of historical emissions in Scope 1 and variation in the period 2021-2022

SCOPE 1						
CATEGORY	**Source**	**2019**	**2020**	**2021**	**2022**	**Variation (2021-2022)**
Stationary combustion	Natural Gas (NG)	45.04	13.64	9.3	7.47	-19.67%
	Diesel oil	37,551.87	184.79	104.96	133.08	26.79%
	Total	37,582.05	198.43	114.27	140.79	23.20%
Mobile combustion	Liquefied Petroleum Gas (LPG)	0.8	1.35	1.33	72.38	5,342%
	Diesel oil	8,026.00	6,834.52	7,189.22	6,085.23	-15.35%
	Hydrous Ethanol	5.37	3.26	2.39	0.96	-59.83%
	Petrol	1,294.81	1,022.38	1,586.24	1,107.55	-30.17%
	Aviation Kerosene	409.17	197.64	143.32	131	-8.59%
	Natural gas (CNG)	80.7	53.46	34.35	-	-

SCOPE 1						
CATEGORY	Source	2019	2020	2021	2022	Variation (2021-2022)
	Total	9,068.00	7,927.83	8,956.83	7,307.85	18.43%
Fugitive emissions	Carbon dioxide (CO2)	-	-	-	-	-
	R-22	-	-	98.56	927.8	841.35%
	R-407c	-	-	15.43	-	-
	R-410a	-	-	17.31	381.66	2,104.85%
	Sf6	4,958.54	2,953.51	3,542.46	4,042	14.10%
	HFC-134a	-	-	14,3	216,4	1.413,28%
	Total	5,239.42	3,262.22	3,688.06	6,314.00	71.2%
Agricultural activity	Limestone	9	1.44	1.77	0.0012	-99.93%
	Synthetic fertilizers	40.17	2.73	45.21	5,852.00	12,844%
	Total	49.17	4.17	46.98	5,852.00	12,844%
Land use change	Plant suppression	-	30.88	41.5	63,836.50	153,722.89%
	Total	-	30.88	41.5	63,836.50	153,722.89%
TOTAL		51,939.00	11,419.36	12,847.64	83,356.59	548.80%

Between 2019 and 2020, there was a reduction of **150,000 tCO2e** in scope 2 emissions, caused by the reduction in losses in the transmission and distribution systems. In 2021, emissions grow **92%** due to the change in the emission factor of electricity and, in 2022, this value reduced by **66%**, again due to the change in the emission factor. The results on scope 2 emissions from 2019 to 2022 are highlighted in Figure 21 and in the Table 13.

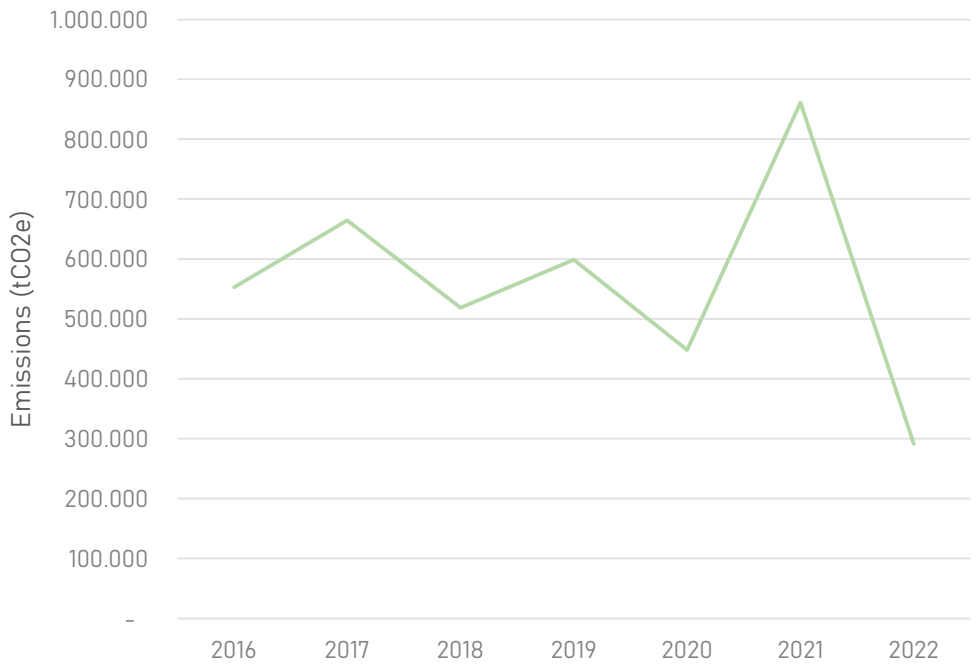

Figure 21 - Historical series of Scope 2 emissions

Table 13 - Historical series of Scope 2 emissions

SCOPE 2						
CATEGORY	Source	2019	2020	2021	2022	Variation (2021-2022)
Electricity (location)	Energy consumption	3,153.68	2,386.00	4,707.95	1,734.83	-63%
T&D losses (location)	Energy Losses	595,518.28	445,698.00	856,525.09	290,031.42	-66%
TOTAL		598,518.00	448,084.00	861,233.04	291,766.24	-66%

In scope 3, we observed a reduction in the commercialization of electricity between 2019 and 2020, the main precursor of scope 3, representing a drop of **1,200,000 tCO2e**, or **19%.** A factor that may have contributed to the drop in energy commercialization, between the years 2019 and 2020, is the lockdown related to the COVID19 pandemic in 2020, where trades and industry had their activities reduced and consequently reduced their energy consumption. In 2021, emissions rose by **77%,** given the change in the electricity emission factor. Between 2021 and 2022, scope 3 presented a reduction of **4,358,526 tCO2e** or **46%.** The results on scope 3 emissions from 2019 to 2022 are highlighted in Figure 22 and in Table 14.

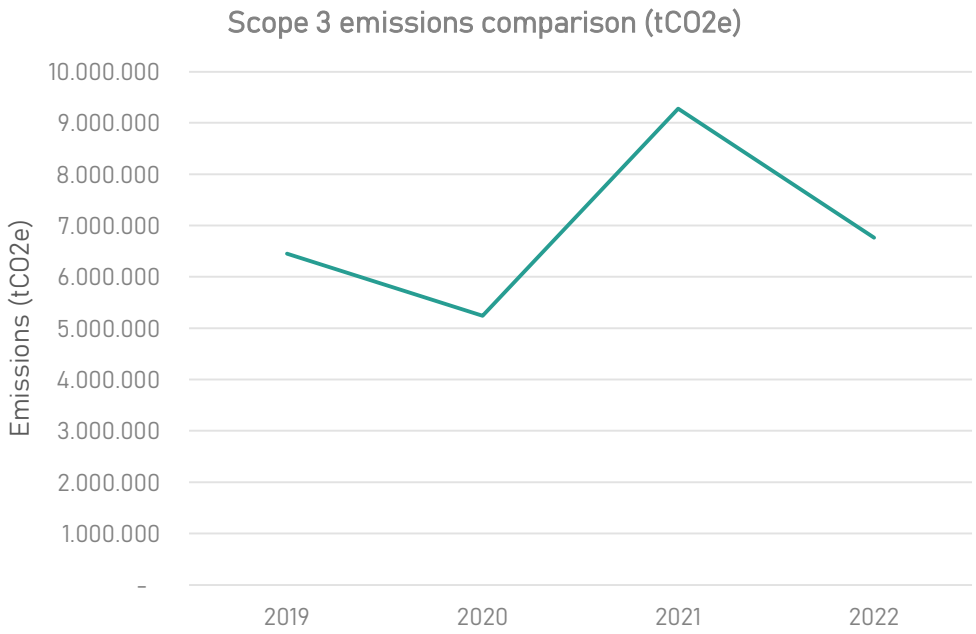

Figure 22 - Historical series of Scope 3 emissions

Table 14 - Historical series of Scope 3 emissions

SCOPE 3					
CATEGORY	2019	2020	2021	2022	Variation (2021-2022)
Solid waste	616	1,004.00	558.17	582.98	4%
Business travel	428	99	96.52	328.91	241%
Commuting to work	215	174	533.58	141.09	-74%
Goods and services purchased	63	43	244.06	3.17	-99%
Transport & distribution	23,491.00	21,798.00	2,726.37	33,012.14	1111%
Goods and services sold	6,426,649.00	5,223,550.00	9,276,221.56	4,887,785.80	-47%
TOTAL	**6,451,462.00**	**5,246,668.00**	**9,280,380.25**	**4,921,854.09**	**-47%**

ANNEX I – TOTAL EMISSIONS IN TONS OF GAS AND TONS OF CO_2 EQUIVALENT – 2022

Below are a series of tables detailing the results.

Tabela 15 - Cemig - Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	72.758,62	291.766,24	4.920.671,24
CH_4	27,336	-	23,97
N_2O	16,064	-	1,931
HFCs	0,364		-
PFCs	-		-
SF_6	0,172		-
NF_3	-		-
HCFC-2(R22)	0,52		

Tabela 16 - Cemig - Emissions in metric tons, by type of GHG (tCO2e)

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	72,766.20	291,766.24	4,920,671.24
CH_4	765.41	-	671.13
N_2O	4,256.96	-	511.71
HFCs	598.06		-
PFCs	-		-
SF_6	4,042.00		-
NF_3	-		-
HCFC-2(R22)	927.8		
TOTAL	**83,356.67**	**291,766.24**	**4,921,854.09**

Tabela 17 - Cemig - Biogenic Emissions (tCO2e)

GEE (t)	Escopo 1	Escopo 2	Escopo 3
CO_2	999,97	-	4.736,01
CH_4			
N_2O			
HFCs			
PFCs			

GEE (t)	Escopo 1	Escopo 2	Escopo 3
SF_6			
NF_3			
TOTAL	999,97	-	4.736,01

Tabela 18 - Cemig - Emissions of other GHG not regulated by the Kyoto Protocol

	GHG Emissions (t)	Emissions in CO2e (t)
CFC-11	-	-
CFC-12	-	-
CFC-13	-	-
CFC-113	-	-
CFC-114	-	-
CFC-115	-	-
Halon-1301	-	-
Halon-1211	-	-
Halon-2402	-	-
Tetracloreto de carbono (CCl_4)	-	-
Bromometano (CH_3Br)	-	-
Methyl chloroform (CH_3CCl_3)	-	-
HCFC-21	-	-
HCFC-22 (R22)	0.52	915.20
HCFC-123	-	-
HCFC-124	-	-
HCFC-141b	-	-
HCFC-142b	-	-
HCFC-225ca	-	-
HCFC-225cb	-	-

Table 19 - Emissions by operational unit

Operational Unit	Scope 1 (tCO2e)	Scope 2 (tCO2e)	Scope 3 (tCO2e)	Total	Total (%)
Cemig D	70,294.03	285,019.21	1,321,603.11	1,676,916.35	31.72%
Cemig GT	2,610.46	5,854.96	866,445.54	874,910.96	16.55%
3 Marias	11.26	854.19	19,798.05	20,663.50	0.39%
Camargos	10.60	0.18	2,102.64	2,113.42	0.04%
Horizonte	96.44	0.36	1	97.80	0.00%

Operational Unit	Scope 1 (tCO2e)	Scope 2 (tCO2e)	Scope 3 (tCO2e)	Total	Total (%)
Itutinga	12.05	0.73	1,130.66	1,143.44	0.02%
Leste	150.51	1.52	1,933.41	2,085.44	0.04%
Oeste	25.24	0.85	376.35	402.44	0.01%
Parajuru	135.22	-	0.31	135.53	0.00%
PCH	0.03	0.85	0	0.88	0.00%
Poço Fundo	1,238.34	0.30	-	1,238.64	0.02%
Rosal	3,242.54	0.11	11	3,253.65	0.06%
Sá Carvalho	4.72	1.96	39.04	45.72	0.00%
Salto Grande	8.51	2.27	9,072.52	9,083.30	0.17%
Sul	962.55	7.678	1,213.12	2,183.34	0.04%
Volta do Rio	35.94	4.34	10.42	50.70	0.00%
Cemig SIM	0.03	4.1	1.14	5.27	0.00%
Cemig H	-	2.73	605,902.88	605,905.61	11.46%
Centroeste	3,676	0.11	-	3,676.11	0.07%
Gasmig	842.13	9.92	2,092,212.85	2,093,064.90	39.59%
TOTAL	**83,356.59**	**291,766.37**	**4,921,854.03**	**5,296,976.99**	**100%**

Cemig D

Table 20 - Cemig D - Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	66,097.98	285,019.21	1,320,744.44
CH_4	0.654	-	12.448
N_2O	0.577	-	1.925
HFCs	0.364		-
PFCs	-		-
SF_6	0.111		-
NF_3	-		-

Table 21 - Cemig D - Emissions in metric tons, by type of GHG (tCO2e)

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	66,097.98	285,019.21	1,320,744.44
CH_4	18.31	-	348.54
N_2O	152.90	-	510.12
HFCs	598.06		-
PFCs	-		-
SF_6	2,608.50		-
NF_3	-		-
TOTAL	69,475.75	285,019.21	1,321,603.11

Cemig GT

Table 22 - Cemig GT - Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	1,144.99	5,854.96	866,429.10
CH_4	0.17	-	0.48
NO_2	0.10	-	0.01
HFCs	-		-
PFCs	-		-
SF_6	0.06		-
NF_3	-		-
TOTAL			

Table 23 - Cemig GT - Emissions in metric tons, by type of GHG (tCO2e)

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	1,144.99	5,854.96	866,429.10
CH_4	4.68	-	13,524
N_2O	27.29	-	2.91
HFCs	-		-
PFCs	-		-
SF_6	1,433.50		-
NF_3	-		-
TOTAL	2,610.46	5,854.96	866,445.541

Gasmig

Table 24 - Gasmig - Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	98,815	9,918	2.090.162,573
CH_4	741,720	-	1.043,280
N_2O	1,590	-	1.007,000
HFCs	-		-
PFCs	-		-
SF_6	-		-
NF_3	-		-
Total	842,125	9,918	2.092.212,853

Table 25 - Gasmig - Emissions in metric tons, by type of GHG (tCO2e)

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	98.815	9.918	2,090,162.573
CH_4	741.720	-	1,043.280
N_2O	1.590	-	1,007.000
HFCs	-		-
PFCs	-		-
SF_6	-		-
NF_3	-		-
TOTAL	**842.125**	**9.918**	**2,092,212.853**

Centroeste

Table 26 - Centroeste- Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	3,676	0.105	-
CH_4	-	-	-
N_2O	-	-	-
HFCs	-		-
PFCs	-		-
SF_6	-		-

GHG (t)	Scope 1	Scope 2	Scope 3
NF_3	-		-
Total			

Table 27 - Centroeste - Emissions in metric tons, by type of GHG (tCO2e)

GEE (t)	Escopo 1	Escopo 2	Escopo 3
CO_2	3,676	0,105	-
CH_4	-	-	-
N_2O	-	-	-
HFCs	-		-
PFCs	-		-
SF_6	-		-
NF_3	-		-
TOTAL	3,676	0.105	-

Cemig SIM

Table 28 - Cemig SIM - Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	-	4.1	1.142
CH_4	0.001	-	-
N_2O	-	-	-
HFCs	-		-
PFCs	-		-
SF_6	-		-
NF_3	-		-
TOTAL			

Table 29 - Cemig SIM - Emissions in metric tons, by type of GHG (tCO2e)

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	-	4.1	1.142
CH_4	0.028	-	-
N_2O	-	-	-
HFCs	-		-

GHG (t)	Scope 1	Scope 2	Scope 3
PFCs	-		-
SF_6	-		-
NF_3	-		-
Total	**0.028**	**4.1**	**1.142**

Cemig H

Table 30 - Cemig H - Emissions in metric tons, by type of GHG

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	-	2.728	605,902.055
CH_4	-	-	0.001
N_2O	-	-	0.003
HFCs	-		-
PFCs	-		-
SF_6	-		-
NF_3	-		-
TOTAL			

Table 31 - Cemig H - Emissions in metric tons, by type of GHG (tCO2e)

GHG (t)	Scope 1	Scope 2	Scope 3
CO_2	-	2.728	605,902.055
CH_4	-	-	0.028
N_2O	-	-	0.795
HFCs	-		-
PFCs	-		-
SF_6	-		-
NF_3	-		-
TOTAL	**-**	**2.728**	**605,902.878**

ANNEX - DECLARATION OF VERIFICATION

BUREAU VERITAS Certification

Verification Statement
Nº 23 /2023

This Verification Statement documents that **BVQI DO BRASIL SOCIEDADE CERTIFICADORA LTDA** has carried out the verification activities in accordance with the Verification Specifications of the Brazilian GHG Protocol Program and the ABNT NBR ISO 14064-3:2007 standard.

Inventory Organization:	Companhia Energética de Minas Gerais - CEMIG
CNPJ:	17.155.730/0001-64
Endereço:	Avenue, Barbacena, 1200 - Santo Agostinho, Belo Horizonte - MG, Brazil.
Responsável:	Erika Silveira Torres
E-mail:	estorres@cemig.com.br

The greenhouse gas (GHG) emissions reported by the Inventorying Organization in its emissions inventory from January 1 to December 31, 2022, are verifiable and meet the requirements of the Brazilian GHG Protocol Program, detailed in the Brazilian GHG Protocol Program Specification for Accounting, Quantification, and Publication of Corporate Greenhouse Gas Emissions Inventories (EPB).

Confidence Level

The Verification Organization (OV) has assigned the following level of confidence to the verification process:

X	Verification with reasonable confidence level

"The inventor organization's GHG inventory for the year 2022 is materially correct, is a fair representation of GHG data and information, and has been prepared in accordance with the EPB."

Scope of Verification

The inventory for the year 2022 of the inventor organization was verified within the following scope:

Organizational boundaries		Operational Limits	
X	Operational Control	X	Scope 1
		X	Scope 2 Location-based approach
	Corporate Participation		Scope 2 – purchase choice-based approach
		x	Scope 3
	They were excluded from verification: N/A.		

BUREAU VERITAS

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BUREAU VERITAS
Certification

Conclusion

As the person responsible for the verification activities of the GHG inventory of the inventory-taking organization, we certify that the information contained in this document is true.

Rafael da Silva Caldeira Lead Verifier Data: 06/14/2023

Thiago Emani G. Milagres, Independent Reviewer Data: 06/19/2023

Review (if applicable)

Version:	01
Date:	06/19/2023
Justification:	Emission

Francisco Martins de Almeida Rollo - Technical Manager

Local Office: Rua Piauí, 435, Santa Paula - 09541-150.

São Caetano do Sul/SP, Brazil.

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OVV 0017

Total removals checked throughout the organization - Operational Control Approach

Removal of biogenic CO_2 (tCO_2e)				
GHG	**Scope 1**	**Scope 2 Location-based approach**	**Scope 2 Purchase choice-based approach**	**Scope 3**
CO_2 biogenic	N/A	N/A	N/A	N/A

Other greenhouse gases not covered by the Kyoto Protocol (tCO e)

GEE	Emissions tCO2e
HCFC -22	915.20

Conflict of Interest (CDI)

I, Rafael da Silva Caldeira, certify that no conflict of interest exists between the Inventorying Organization and BVQI DO BRASIL SOCIEDADE CERTIFICADORA LTDA, or any of the individuals who are members of the verification team involved in the verification of the inventory, as defined in chapter 3.2.1 of the Verification Specifications of the Brazilian GHG Protocol Program.

Rafael da Silva Caldeira, Lead Verifier Data: 06/14/2023

BUREAU VERITAS
Certification

Visited Installations

Installation	Relation with the Holding Company	Address	Date of Visit
CEMIG Holding	Holding	Barbacena, 1200, Avenue - Santo Agostinho, Belo Horizonte - MG, 30190-131. (Corporate Headquarters of the companies)	05/03/2023
CEMIG Geração e Transmissão e SPEs;	Controlled Company		04/28/2023
CEMIG Distribuição	Controlled Company		04/27/2023
GASMIG;	Controlled Company		05/03/2023
CEMIG SIM	Controlled Company		04/28/2023
CENTROESTE	Controlled Company		04/27/2023

Total verified emissions across the organization - Operational Control Approach

GHG emission in tonnes of CO_2 equivalent (tCO_2e)				
GHG	**Scope 1**	**Scope 2** Location-based approach	**Scope 2** Purchase choice-based approach	**Scope 3** (if applicable)
CO_2	72,766.20	291,766.24	-	4,920,671.24
CH_4	765.41	-	-	671.13
N_2O	4,256.96	-	-	511.715
HFCs	598.06	-	-	-
PFCs	-	-	-	-
SF_6	4,042.00	-	-	-
NF_3	-	-	-	-
HCFC-2(R22)	927.80	-	-	-
TOTAL	**83,356.67**	**291,766.24**	**-**	**4,921,854.09**
Biogenic CO_2	**999.97**	**-**	**-**	**4,736.01**

[* Kyoto Protocol and Non-Kyoto Protocol/GWP gases from AR 5th IPCC]

BUREAU VERITAS

REFERENCES

IPCC (2021). *Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3-32, doi:10.1017/9781009157896.001. .

Lynas, M. H. (2021). *Greater than 99% consensus on human caused climate change in the peer-reviewed scientic literature.* . Environ. Res. Lett. 16, 114005.

Brazilian GHG Protocol Program - Accounting, Quantification and Publication of Corporate Inventories of Greenhouse Gas Emissions. Available at: https://eaesp.fgv.br/centros/centro-estudos-sustentabilidade/projetos/programa-brasileiro-ghg-protocol. Accessed on: 10 Apr. 2023.

World Resources Institute Brazil. GHG Protocol. Available at: https://www.wribrasil.org.br/projetos/ghg-protocol. Accessed on: 10 Apr. 2023.

Elaboração

ICare

Because our **impact** matters

Companhia Energética de Minas Gerais
https://www.cemig.com.br/
Avenida Barbacena, 1200 - Santo Agostinho – Belo Horizonte/MG