



## Greenhouse Gas Emissions Inventory - 2021



**Grupo Equatorial Energia**

**Version: v03**

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## Contacts

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## Glossary

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Operational Control – An approach based on a company's limits, in which it is responsible for all GHG emissions and/or removals at the operating units it has operational or financial control.

DEFRA – Department for Environment, Food and Rural Affairs.

Scope 1 – GHG emissions from sources belonging to the company or controlled by it. This category includes emissions arising from the burning of fuels to generate energy from electric, thermal or mechanic sources, as well as emissions from chemical processes and fugitive emissions.

Scope 2 – GHG emissions arising from energy generated by electric or thermal sources that are imported from the distribution network and consumed.

Scope 3 – Indirect emissions not associated with imported energy, which are related to the company's activities, but rather from sources that belong, or are controlled, by other companies.

GHG – Greenhouse Gases.

GWP – Global Warming Potential.

Uncertainty – A parameter that is associated with the quantification of results that characterize the dispersion of values that can be reasonably attributed to the quantified amount (ABNT NBR ISO 14.064-2: 2007).

iNDC – Intended Nationally Determined Contribution.

UNFCCC – United National Framework Convention on Climate Change.

Inmetro – National Institute of Metrology, Quality and Technology (Instituto Nacional de Metrologia, Qualidade e Tecnologia).

IPCC – Intergovernmental Panel on Climate Change.

CDM – Clean Development Mechanism.

MRV – Measurement, Reporting and Verification.

Equity Share – An approach based on a company's limits, in which it is responsible for the GHG emissions and/or removals at its operating units in the proportion of the equity share held in said units.

## Executive Summary

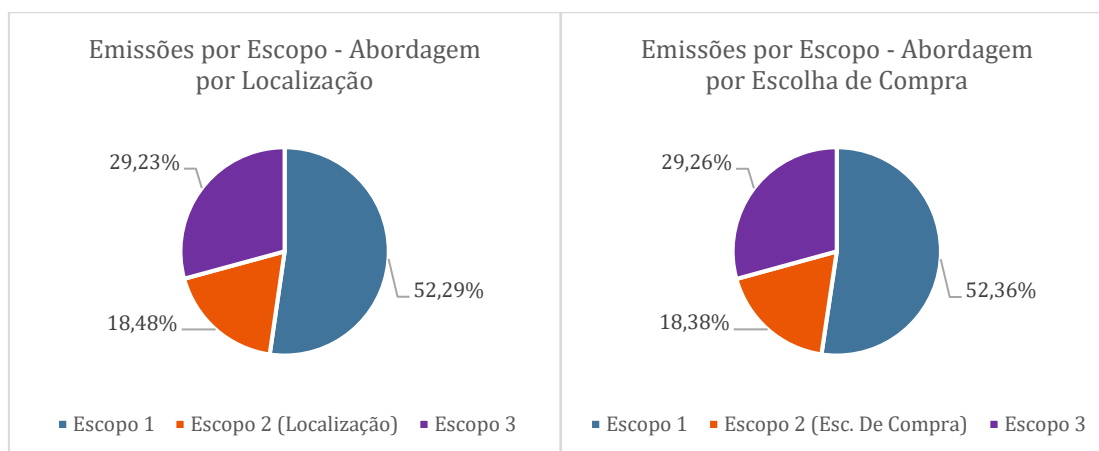
This inventory presents the **Equatorial's** GHG emissions from January 1 to December 31, 2021. The units considered in this inventory were: EQTL AL, EQTL MA, EQTL PI, EQTL PA, EQTL AP, EQTL RS, EQTL Serviços, EQTL Telecom, EQTL Transmissão and EQTL INTESA.

The survey considered emission sources for Scopes 1, 2 (Location and Purchase Choice) and Scope 3.

The table below illustrates total emissions for Scopes 1, 2 (Location and Purchase Choice) and Scope 3, including the percentages of each scope in relation to the total emissions amount.

Scopes	Emissions - tCO <sub>2</sub> e
Scope 1	1,628,468.81
Scope 2 (Location)	575,524.98
Scope 2 (Purchase Choice)	571,640.56
Scope 3	910,161.70
Biogenic CO <sub>2</sub> Emissions - By Location	2,001.37
Biogenic CO <sub>2</sub> Emissions - By Purchase Choice	8,805.98

Note: CO<sub>2</sub> emissions from renewable fuels are reported separately as Biogenic CO<sub>2</sub> Emissions.



As illustrated in the table and charts above, Scope 2 can be analyzed by two approaches, Location and Purchase Choice, which is explained in more detail in the Summary of GHG Emissions section.

In view of what is presented in this inventory for the Location approach, we concluded that Scope 1 emissions were responsible for the largest part of Equatorial's emissions, with **1,628,468.81 tCO<sub>2</sub>e** and corresponding to **52.29%** of the total emissions amount. Scope 3 is responsible for **29.23%** of the Company's total emissions, corresponding to **910,161.70 tCO<sub>2</sub>e**. Scope 2 (Location), which derives from the purchase of electricity from the National Interconnected System (SIN), was responsible for **18.48%** of total GHG emissions, corresponding to **575,524.98 tCO<sub>2</sub>e**. In the Location approach, we accounted for all electricity consumed from the distribution network, without discounting any of the purchases of RECs or certificates of purchase in the free market.

In the Purchase Choice approach, we concluded that Scope 1 emissions were responsible for the largest part of Equatorial's emissions, with **1,628,468.81 tCO<sub>2</sub>e** and corresponding to **52.36%** of the total emissions amount. Scope 3 was responsible for **29.26%** of the Company's total emissions, accounting for **910,161.70 tCO<sub>2</sub>e**. Scope 2 (Purchase Choice), which derives from the purchase of traced electricity from untraced renewable sources, was responsible for **18.38%** of total GHG emissions, corresponding to **571,640.56 tCO<sub>2</sub>e**.

BIOMES	Removal of Biogenic tCO <sub>2</sub> e	Hectare
Amazon	270.99	9.38
<b>TOTAL REMOVAL</b>	<b>270.99</b>	<b>9.38</b>

The total calculated removal was **270.99 tCO<sub>2</sub>e**. Details of the calculations are available in the Soil Change and Usage section.

Based on the diagnosis presented in this inventory, we can establish corporate management strategies for GHG emissions to guide Equatorial's activities towards a low-carbon scenario.

# Table of Contents

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## Introduction

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The greenhouse effect is a natural phenomenon in which heat reflected by the surface of the planet is retained in the atmosphere, therefore promoting an increase in temperatures. This retention is done through GHGs (Greenhouse Gases), to a greater or lesser extent, depending on their concentration.

The greenhouse effect, when naturally balanced, facilitates the maintenance of life due to its ability to reduce variations in temperature. Without the greenhouse effect, temperature in sunny and shady areas would vary in hundreds of degrees (centigrade), making the environment very hostile and unfavorable for all forms of life adapted to our planet's climate.

The climate change appeal results from the significant increase in GHG emissions arising from human activity, which has raised the concentration of these gases to unprecedented levels in the Earth's history, having intensified since the industrial revolution, mainly from the burning of fossil fuels.

The increase of GHG concentration in the atmosphere promotes the phenomenon known as global warming, unbalancing the climate and making predictions difficult in terms of the need for adaptation.

IPCC reports indicate that the manageable limit is a 2°C increase in temperature by the end of the century. This limit would allow most living species and current social economic systems to adapt to temperature changes.

According to the latest Emissions Report by the United Nations Environment Program (UNEP), GHG emissions need to drop by 7.6% per year, from 2020 to 2030.

To achieve this, targeted measures and cuts in national plans needs to be five times higher. This means that emissions must be reduced by 45% by 2030, and neutral emission status must be achieved by 2050.

According to the NDC (2019), Brazil must reduce its emissions by 37% by 2025, and by 43% by 2030, using 2005 as the base year.

In this context, global concern has increased the importance of this matter in international and national discussions. Studies on pricing, mitigation, adaptation, authorizations, cap emissions (limits), and trading of certificates are topics that directly impact the economy and have gained relevance as the problem worsens.

Therefore, it is imperative that companies address the matter and establish GHG emissions management strategies. For proper decision-making processes, it is essential to have quality information on corporate emissions, including consolidated methodologies and clear results.

The emissions inventory is the process that generates relevant information for emissions to be properly management and, therefore, has the role of providing clarity and supporting corporate decisions on the specific context in which it was prepared.

The GHG Emissions Inventory includes all gases regulated by the Kyoto Protocol, namely:

- Carbon Dioxide (CO<sub>2</sub>);
- Methane (CH<sub>4</sub>);
- Nitrous Oxide (N<sub>2</sub>O);
- Sulfur Hexafluoride (SF<sub>6</sub>);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs);
- Nitrogen Trifluoride (NF<sub>3</sub>).

## Regulatory Environment in Brazil

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By undertaking commitments with the UNFCCC (United National Framework Convention on Climate Change), Brazil should promote the emission reductions presented in the iNDC (Intended Nationally Determined Contribution). The legal

framework for emissions is still being formed and is supported by national and state-level entities and legislation, in which we highlight:

### **CIMGC - Interministerial Commission on Global Climate Change (Comissão Interministerial de Mudança Global do Clima)**

The CIMGC was created on July 7, 1999, aimed at meeting the requirements proposed by the Kyoto Protocol, as well as promote the guidelines proposed in the Clean Development Mechanism – CDM.

According to article 6, item V, of Law 12,187/2009, the resolutions issued by the Interministerial Commission on Global Climate Change are considered instruments of the National Policy on Climate Change.

### **National Policy on Climate Change - Law 12,187/2009**

The National Policy on Climate Change (PNMC), instituted in December 2009 and regulated by Decree 7,390/2010, revoked by Decree 9,578/2018, takes the first steps in regulating climate issues in Brazil. The PNMC is aimed at, among other objectives, reconciling socioeconomic development with the protection of the climate system, reducing GHG emissions, implementing measures that promote adapting to climate change, expanding protected areas and encouraging reforestation, and encouraging the development of the Brazilian Emissions Reduction Market (MBRE - Mercado Brasileiro de Redução das Emissões).

### **Policy on Climate Change of the State of São Paulo - Law 13,798/2009**

This policy's objectives are very similar to the PNMC and also include the promotion of projects that reduce, capture or sink GHG emissions, the establishing of productive transitions that generate changes in behavior focusing on reducing GHG emissions, the encouragement of research and the participation of different segments of society in managing legal instruments, and the promotion of a sustainable urban planning system with low environmental and energy impact.

### **FNMC - National Fund on Climate Change (Fundo Nacional sobre Mudança do Clima) - Law 12,114/2009**

Created by Law 12,114/2009, and regulated by Decree 7,343/2010, FNMC is linked to the Ministry of the Environment and the National Bank for Economic Development (BNDES) and aims to ensure resources that support projects or studies and that finance initiatives targeted towards the mitigation and adaptation to climate change.



**INEA - State Environmental Institute of the State of Rio de Janeiro  
(Instituto Estadual do Ambiente do Estado do Rio de Janeiro) -  
State Law 5,101/2007**

On December 18, 2012, INEA published Resolution 64 in the Official Gazette, establishing the requirement of a GHG emissions inventory for obtaining environmental licenses in the State of Rio de Janeiro.

**CETESB - Environmental Company of the State of São Paulo  
(Companhia Ambiental do Estado de São Paulo)**

On August 24, 2012, CETESB published Decision No. 254, establishing the requirement to prepare a GHG emission inventory for certain industries.

**SEMA - Municipal Environmental Secretary of Paraná (Secretaria  
Municipal de Meio Ambiente do Paraná)**

On December 22, 2014, SEMA published Resolution No. 58, establishing the State Public Registry of Greenhouse Gas Emissions, with procedures and criteria to be adopted for: Protocol of Intent, Declaration of Emissions, Inventory of Emissions and granting of Public Recognition Seals.

**ABRAVERI - Brazilian Association of Verification and Certification  
Companies for GHG Emissions Inventories and Social and  
Environmental Reports (Associação Brasileira das Empresas de  
Verificação e Certificação de Inventários de Emissões de Gases de  
Efeito Estufa e Relatórios Socioambientais)**

ABRAVERI was founded in June 2013, with the objective of:

- Providing technical support for the formulation of programs and public, government, or private records for emission inventories, in addition to suggesting practices that strengthen the MRV;
- Becoming a guiding entity that promotes consistency of information regarding socio-environmental emissions and reports, disclosing the regulatory environment on the topic.
- Working with Municipal, State and Federal authorities on carbon emissions programs, participating in working groups, committees and events, and providing technical support for policies related to emissions reporting to be carried out successfully.

Working with Municipal, State and Federal authorities on carbon emissions programs, participating in working groups, committees and events, and providing technical support for the successful outcome of policies related to emissions reporting.

## The Company

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Grupo Equatorial Energia has established itself in the Brazilian scenario as a Holding for companies with high performance indicators and strong results, with solid cases studies illustrating how these companies operated prior to being acquired by the Group and their operational evolution over a short period of time. With the recent acquisition of CEEE, Companhia Estadual de Energia Elétrica – RS, the Group now serves almost 13% of Brazil's total consumers and accounts for 7% of the country's distribution market.

Grupo Equatorial Energia has a strong presence in the electricity sector for the distribution, transmission and commercialization segments, in addition to other segments such as distributed generation, telecommunications, services, and sanitation. The following companies are part of the Group: Equatorial Maranhão, Equatorial Pará, Equatorial Piauí, Equatorial Alagoas, Companhia Estadual de Energia Elétrica – RS, Companhia de Eletricidade do Amapá, Equatorial Transmissão, Intesa, Equatorial Telecom, Equatorial Serviços, Enova and Echoenergia.

Equatorial Energia Maranhão, the only electricity distribution company authorized by the National Electric Energy Agency - ANEEL to operate in the entire concession area of the State of Maranhão, has been managed by Grupo Equatorial Energia since 2004. The company is subdivided into four regions, with headquarters in the cities of São Luís, Bacabal, Timon and Imperatriz, and serves all the 217 municipalities in the State, totaling more than 2.7 million customers. It has over 1,300 employees and around 6,000 service and product suppliers. The company's mission is to distribute energy with quality to ensure the development of Maranhão, and it has a talented team that is engaged in a management model based on Focus on People, Emphasis on Meritocracy, Strive for Profit, and Dedication to Customers, and Safety, Ethics, Sustainability and Transparency, resulting in many national awards and recognition.

Equatorial Energia Pará, the only electricity distribution company authorized by the National Electric Energy Agency - ANEEL to operate in the entire concession

area of the State of Pará, has been managed by Grupo Equatorial Energia since November 3, 2012. The company is subdivided into five regions, with headquarters in the cities of Belém, Castanhal, Marabá, Santarém and Altamira, and serves all the 144 municipalities in the State, totaling more than 2.7 million customers. Its mission is to distribute electricity with quality and social and environmental responsibility to ensure the development of the State, being a reference in Brazil. The company has over 1,200 own employees and around 8,000 service and product suppliers. Grupo Equatorial Energia's management model is aimed at enhancing its processes and continuously improving the supply of electricity and customer services, while valuing and recognizing the efforts of its employees. Values such as Focus on People, Emphasis on Meritocracy, Strive for Profit, and Dedication to Customers, and Safety, Ethics, Sustainability and Transparency, guide the company's actions and encourages the construction of solid results and a corporate climate that favors the well-being of all.

Grupo Equatorial acquired the controlling shares of Equatorial Piauí, an energy distributor that serves the entire State of Piauí, in October 2018. The concession area totals 251,000 km<sup>2</sup>, and serves 1.4 million consumers across the State's 224 municipalities. Equatorial Piauí is subdivided into three regions, with headquarters in the cities of Teresina, Floriano and Parnaíba. Our employees work in a very synergistic environment, with values such as safety, focus on people, dedication to customers, and safety, ethics, sustainability and transparency, guide the company's actions and encourages the construction of a corporate climate that favors the well-being of all and significant results in all areas.

Grupo Equatorial acquired the controlling shares of Equatorial Alagoas, an energy distributor covering the entire State of Alagoas, in March 2019. The company currently serves over 1 million customers. Equatorial Alagoas is subdivided in two regions, with headquarters in the cities of Maceió (metropolitan region) and Arapiraca (countryside), and serves 102 municipalities in the State. Through its pillars of safety, quality, sustainability and reliability, the company has invested more than half a billion reais in the state since its arrival. Equatorial Alagoas favors the development of Alagoas through tourism, its main economic sector, and encourages activities that drive industry, commerce, and agriculture. Our mission is to work with transparency and commitment, always looking to the future to ensure the satisfaction of the population of Alagoas.

Companhia de Eletricidade do Amapá, was founded in 1956 as a state-owned company, serves a population of nearly 845,000 people, supplying energy to around 209,000 consumer units in all of the 16 municipalities of the State of

Amapá. Grupo Equatorial won the auction held by the National Bank for Economic and Social Development (BNDES), on June 25, 2021, for the privatization of Companhia de Eletricidade do Amapá, with a concession to provide public electricity distribution service in the State during the next 30 years. Companhia de Eletricidade do Amapá has been controlled by Grupo Equatorial Energia since November 23, 2021, where it is implementing a 100-day Plan to serve the 16 municipalities in its concession area. Grupo Equatorial Energia, an active player in energy segments such as electric distribution (where it is one of the leaders), generation, transmission and services, has a history of recovering and improving the performance of privatized state-owned companies, such as Companhia de Eletricidade do Amapá, with a management model that values efficiency and the better allocation of resources, always focusing on safety and the environment. Grupo Equatorial's objective is to recover the current gap in service in the state of Amapá by carrying out works that strengthen the electrical system in its concession area, promoting improvements in energy supply and customer service. With headquarters in Macapá, the State capital, its services cover all the 209,000 customers equally in all of the State's municipalities, according to the characteristics and needs of each region.

## Corporate and Operating Limits

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This inventory presents the Equatorial's GHG emissions, from January 1 to December 31, 2021, for:

**EQTL AL** – Avenida Fernandes Lima, 3.349, Gruta de Lourdes – Maceió/AL

**EQTL MA** – Alameda A, QD SQS 100, Loteamento Quitandinha Altos do Calhau – São Luís/MA

**EQTL PI** – Rua João Cabral, 730 - Centro Sul – Teresina/PI

**EQTL PA** – RD. Augusto Montenegro, km 8,5 - Coqueiro – Belém/PA

**EQTL AP** – Avenida Pe Julio Maria Lombaerd, 1900 – Macapá/AP

**EQTL RS** - Avenida Joaquim Porto Villanova, 201 - Jardim do Salso – Porto Alegre/RS

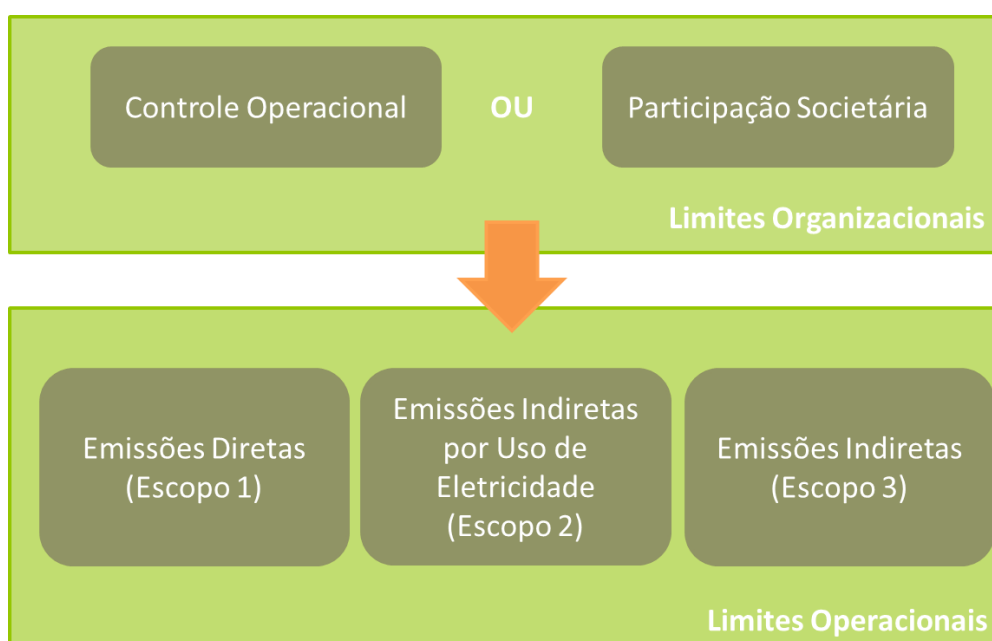
**EQTL Services** – Alameda A, Quadra SQS, loteamento Quitandinha, Bairro Quitandinha – São Luís/MA

**EQTL Telecom** – Alameda A, Quadra SQS, loteamento Quitandinha, Bairro Quitandinha – São Luís/MA

**EQTL Transmissão** – Alameda A, Quadra SQS, loteamento Quitandinha, Bairro Quitandinha – São Luís/MA

**EQTL INTESA** – Rua Voluntários da Pátria, 126 - Botafogo, 22270-010 – Rio de Janeiro/RJ

Corporate and operating limits were defined in accordance with the GHG Protocol, as follows:



### Corporate Limits:

**Operational Control:** The company is responsible for all GHG emissions and/or removals at the operating units it has operational or financial control.

**Equity Interest:** The company is responsible for the GHG emissions and/or removals at its operating units in the proportion of the equity share held in said units.

## Corporate Limits:

**Scope 1:** GHG emissions from sources belonging to the company or controlled by it. This category includes emissions arising from the burning of fuels to generate energy from electric, thermal or mechanic sources, as well as emissions from chemical processes and fugitive emissions. CO<sub>2</sub> emissions from renewable fuels are measured and reported separately.

**Scope 2:** GHG emissions arising from energy generated by electric or thermal sources that are imported from the distribution network and consumed.

**Scope 3:** Indirect emissions not associated with imported energy, which are related to the company's activities, but rather from sources that belong, or are controlled, by other companies.

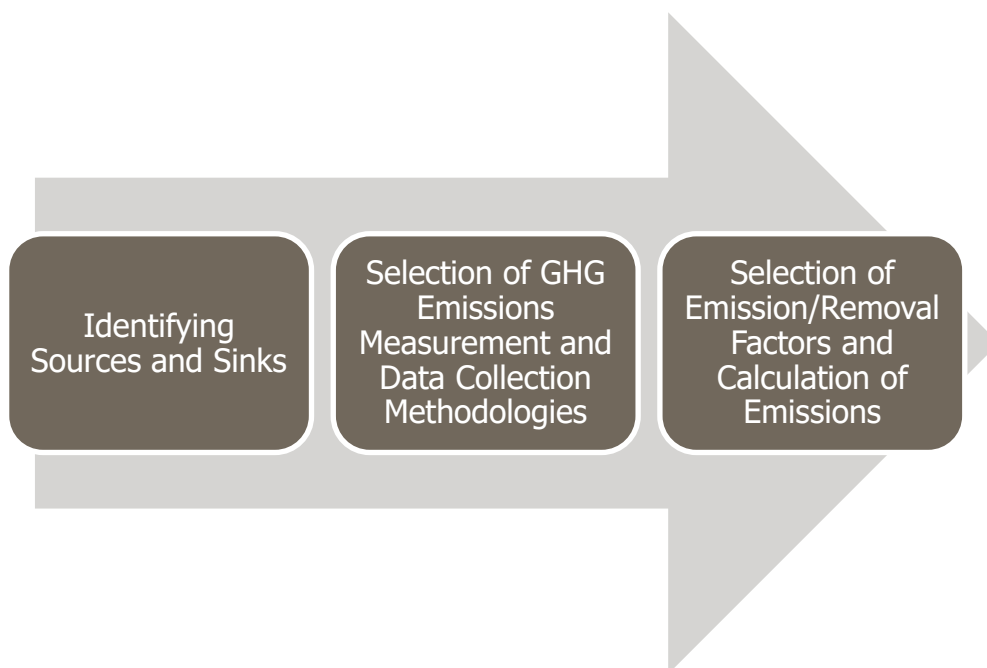
Equatorial's inventory considered the following limits:

Corporate Limits	
Operational Control	Scope 1, 2 and 3

## Work Flow

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Measurements for GHG emissions were carried out through the following process:



## Measurement Methodologies

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- Specifications of the Brazilian GHG Protocol Program – Accounting, Measurement and Publication of Corporate GHG Emissions.
- Calculation tool of the Brazilian GHG Protocol Program Version v2022 0.1
- Calculation tool “tese\_ferramenta-de-calculo\_v1-0\_v2” – Removal

## Selection of Factors of Emission

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Parameters, emission factors, and reference sources used can be found in the calculation tool of the Brazilian GHG Protocol Program.

Due to gaps in the tool, it may be necessary to use additional parameters and emission factors. If this occurs, it will be referenced in the calculation section in which they were used.

## Uncertainties

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The process of preparing an emissions inventory is subject to changes in the quality of the reported data due to inherent uncertainties.

The analysis of these uncertainties allows us to understand the existence of relevant quantification risk and is essential to ensure that the emissions inventory adheres to the desired levels of materiality.

The analysis below evaluated the emissions process and calculation against the causes of uncertainties identified by the IPCC, which can potentially impact the quantification of GHG emissions and is organized in such a way that uncertainties by source of emissions can be assessed.

- **Lack of Integrity:** Occurs when there is a lack of available data, either due to a non-recognized process or lack of measurement methods. Lack of integrity can generally lead to a trend of incomplete concepts, but it can also contribute to random errors depending on the situation.
- **Model:** Can be referred to a simple multiplication factor or, depending on the degree of complexity, the model can become a complicated process. The use of models to estimate GHG emissions and removals may have uncertainties, either in trend or random error.
- **Lack of Data:** In certain situations, there is simply not enough data available to characterize a particular removal or emission. In these situations, information from similar categories can be used to substitute the missing data, or they can be estimated through interpolation and extrapolation exercises.
- **Lack of Data Representativeness:** Occurs when the available data does not fully correspond to the actual GHG emission/removal conditions.



- **Random Statistical Sampling Error:** This source of uncertainty is associated with random sample data of limited size and generally relies on the population variance from which the sample was taken, as well as the size of the sample itself.
- **Uncertainties in Measurement:** These uncertainties can be due to: random or systemic reasons; archiving and transmission of information; resolution of finite instruments; inaccuracy of standard measurement amounts and relevant references; inaccuracy of constant amounts and other parameters, obtained from external sources, used in the mathematical reductions; approximations and assumptions used in measurement methods and estimation procedures; and/or variations in repeated observations for emissions or removals, or related variables under apparently identical conditions.
- **Incorrect Presentation or Classification Errors:** In this situation, uncertainties are due to wrong, incomplete, or confusing definitions for emissions or removals.
- **Lost Data:** When a measurement is attempted, however, no amounts are available.

The uncertainties in this emissions inventory are related to the collection of data and calculation of emission factors.

## Analysis of Uncertainties

Nature of the Uncertainty	Origin of the Uncertainty	Analysis
Emission Factors	Building of Factors	Inherent to the emission factors used in the calculation tool, in which the agents are responsible for publishing.
Measurement Method	Scales	The inherent uncertainty is established by the deviation allowed by INMETRO for scales ( $\pm 2\%$ ).
	Gas Pumps	Inaccuracy in gas pumps is established by INMETRO ( $\pm 0.5\%$ ).
	Gas Cylinders	Inaccuracy in the exact weight of each gas cylinder is established by INMETRO ( $\pm 2.3\%$ ).

	Fire Extinguishers	Recharging may only be done with the nominal charge of the extinguishing agent, with a tolerance of 5% or less (INMETRO Ordinance No. 005, of January 4, 2011).
	Liquid Effluent Flow Meters	Flow of effluents is obtained through flow meters, with an accuracy of $\pm 1\%$ , and other characteristics are obtained through specific and precise meters, which must be calibrated periodically to not lose their accuracy.
	Natural Gas Meters	The accuracy of measuring devices for natural gas consumption is established at $\pm 1.5\%$ (INMETRO ANP Ordinance No. 1, of June 19, 2000).
	Electricity Meters	The accuracy of measurements is subject to control by the user and government agencies. Therefore, within these parameters, uncertainties are very low – under 3.5% (ANEEL).
Records	Data Collection and Transcription	The company's records are subject to recurring audits in such a way that deviations can be reviewed in a timely manner to remain accurate and complete for the emissions inventory.

## Quality Management

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### Management of GHG Data

Green Domus's conduct is to guide the company preparing the inventory and ensure that GHG data is being properly managed, aimed at promoting:

- Materiality of the inventory, selecting sources, sinks, GHG reservoir, as well as data and appropriate methodologies for the user's intended needs;
- Integrity of the inventory, including relevant GHG emissions and removals and documenting any exclusions and their justification;
- Consistency, ensuring that information related to GHGs can be significantly compared;

- Precision, mitigating uncertainties and asymmetries within the principle of reasonableness; and
- Transparency, disclosing enough and appropriate GHG information that allow the user to make decisions based on quality information.

The procedures and management of GHG data consider:

- Definition and critical analysis of the responsibility and authority of the parties responsible for developing the GHG inventory;
- That parties responsible for developing the GHG inventory have been properly trained;
- Identification and critical analysis of corporate limits;
- Identification and critical analysis of GHG sources and sinks;
- Selection and review of quantification methodology, including GHG activities and data, and GHG emission and removal factors that are consistent with the inventory's intended use;
- Critical analysis of the application of quantification methodologies to ensure consistency in all units.

### **Procedures, Document Retention, and Record Keeping**

The company preparing the inventory affirms that the procedures used to manage GHG data considered the following:

- Usage, maintenance and calibration of measuring equipment;
- Development and maintenance of an efficient data collection system;
- Regular checking of accuracy;
- Periodic critical review of opportunities to improve data management processes.

The company preparing the inventory undertakes to maintain the supporting documents for the planning, development and maintenance of the GHG inventory to enable an independent verification in the future.

## Selecting and Establishing the Base Year

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The company must establish a historical base year for its GHG emissions and removals for comparison purposes, to meet GHG program mandates, or for other intended uses of the emissions inventory.

Equatorial adopted the year of 2021 as the base year for its first GHG emissions inventory. The report considers the availability of verifiable GHG emissions data.

## Identifying Sources and Sinks

The quantities used to calculate each of the identified emission sources were provided by the company preparing the inventory.

Scope	Category	Source of Emission
<b>Scope 1</b>	Stationary Combustion	Diesel
	Mobile Combustion	Gasoline
		Diesel
		LPG
		Ethanol
	Fugitive Emissions	Carbon Dioxide
		SF6
	Soil Change and Usage	Suppression of Vegetation
		Removal
<b>Scope 2</b>	Import of Electric Energy	Network Energy
<b>Scope 3</b>	Commuting (Home to Work)	Public Transportation
		Private Transportation
	Fuel and Energy Activities (not included in Scopes 1 and 2)	Transmission and Distribution Losses - Commercial
		Purchase of Thermoelectric Energy
	Business Trips	Air Travel
	Waste	Sanitary Landfill

## Quantification of Emissions

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The amounts used to calculate GHG emissions referring to each of the considered sources were obtained or calculated according to the company's records.

### Scope 1: Direct Emissions

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To determine other indirect GHG emissions by type of source, we used emission factors, equations, parameters and calculations according to the ABNT NBR ISO 14064:2007 norm and the Brazilian GHG Protocol.

#### **Stationary Combustion**

Stationary combustion is the burning of different fuels to generate energy through stationary equipment (boilers, furnaces, burners, turbines, heaters, incinerators, engines, torches, etc.).

The data for calculating emissions were provided by Equatorial's corporate area.

### **EMISSIONS FROM FOSSIL FUELS**

#### **GHG Emissions Resulting from the Burning of Diesel**

**Definition:** Diesel is a fossil fuel derived from petroleum. It is a compound formed mainly by carbon atoms, hydrogen and low concentrations of sulfur, nitrogen and oxygen. This is produced at high temperatures through the atmospheric distillation of crude oil.

**Uncertainty:** Inaccuracy in gas pumps.

**Data Considered:** Amount of Diesel consumed in 2021: 117,919.13 liters.

Source: Equatorial

Summary of GHG Emissions							
Source of Emission	Quantity	Unit	Emissions				
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	Biogenic CO <sub>2</sub> Emissions
Diesel (crude)	104,751.53	Liters	275.59	0.01	0.00	276.60	*
Biodiesel (B100)	13,167.60	Liters	32.34	0.00	0.00	*	32.34

Note: Diesel commercialized in Brazil has a percentage of biodiesel. CO<sub>2</sub> emissions from biodiesel (renewable) added to diesel are reported separately as Biogenic CO<sub>2</sub> Emissions.

## Mobile Combustion

Mobile combustion results from the burning of different fuels, for general transportation purposes (operating the company's fleet) and off-road vehicles, such as those used for construction, agriculture and forestry purposes.

### GHG Emissions Resulting from the Burning of Diesel

**Definition:** Diesel is a fossil fuel derived from petroleum. It is a compound formed mainly by carbon atoms, hydrogen and low concentrations of sulfur, nitrogen and oxygen. This is produced at high temperatures through the atmospheric distillation of crude oil.

**Uncertainty:** Inaccuracy in gas pumps.

**Data Considered:** Amount of Diesel consumed in 2021: 2,200,243.91 liters.

Source: Equatorial

Summary of GHG Emissions							
Source of Emission	Quantity	Unit	Emissions				Biogenic CO <sub>2</sub> Emissions
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	
Diesel (crude)	1,954,550.01	Liters	5,087.69	0.35	0.28	5,170.60	*
Biodiesel	245,693.90	Liters	*	*	*	*	597.28

### GHG Emissions Resulting from the Burning of Gasoline

**Definition:** Gasoline is a mixture of hydrocarbons, being a fossil fuel derived from crude oil and produced through refining processes, which is generally done by oil distillation.

**Uncertainty:** Inaccuracy in gas pumps.

**Data Considered:** Amount of Gasoline consumed in 2021: 1,020,093.86 liters.

Source: Equatorial

Summary of GHG Emissions							
Source of Emission	Quantity	Unit	Emissions				Biogenic CO <sub>2</sub> Emissions
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	
Automotive Gasoline (pure)	744,668.52	Liters	1,647.21	0.66	0.2	1,717.76	*
Anhydrous Ethanol	275,425.34	Liters	*	*	*	*	420.30

Note: Gasoline commercialized in Brazil has a percentage of ethanol. CO<sub>2</sub> emissions from ethanol (renewable) are reported separately as Biogenic CO<sub>2</sub> Emissions.



## GHG Emissions Resulting from the Burning of Hydrated Ethanol

**Definition:** Ethanol (ethyl alcohol) is an organic substance obtained from the fermentation of sugars, hydration of ethylene, or reduction to acetaldehyde. In Brazil, sugar cane is used to produce ethanol.

**Uncertainty:** Inaccuracy in gas pumps.

**Data Considered:** Amount of Ethanol consumed in 2021: 727.60 liters.

Source: Equatorial

Summary of GHG Emissions							
Source of Emission	Quantity	Unit	Emissions				
Hydrated Ethanol	727.60	Liters	tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	Biogenic CO <sub>2</sub> Emissions
			*	0.00	0.00	0.01	1.06

Note: Ethanol is a renewable fuel and, therefore, its CO<sub>2</sub> emissions are classified as Biogenic CO<sub>2</sub> Emissions.

## GHG Emissions Resulting from the Burning of Liquefied Petroleum Gas (LPG)

**Definition:** LPG (Liquefied Petroleum Gas) is a hydrocarbons gas mixture obtained from natural gas from underground reserves, or from the oil refining process. This is produced in the crude oil refining process and the processing natural gas containing propane and butane.

**Uncertainty:** Inaccuracy in the exact weight of each gas cylinder.

**Data Considered:** Amount of LPG consumed in 2021: 19,125.00 kilograms.

Source: Equatorial

Summary of GHG Emissions						
Source of Emission	Quantity	Unit	Emissions			
Liquefied Petroleum Gas (LPG)	19,125.00	Kg	tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e
			56.08	0.06	0.00	57.67

## Fugitive Emissions

Fugitive emissions may be due to: (i) releases from the production, processing, transmission, storage and use of fuels, and (ii) unintentional releases of substances that do not pass through chimneys, drains, exhaust pipes, or other functionally equivalent openings, such as release of sulfur hexafluoride (SF<sub>6</sub>) in electric equipment, leakage of hydrofluorocarbons (HFCs) during use of refrigeration equipment and air conditioners, and leakage of methane (CH<sub>4</sub>) during the transportation of natural gas.

## GHG Emissions Resulting from the Refrigeration Gases

**Definition:** Gases used for refrigeration have different GWP amounts, which vary according to their composition. HFCs (several) are the main refrigeration gases.

**Uncertainty:** Inherent to the permitted deviation in scales.

**Data Considered:** Amount of refrigeration gases consumed in 2021: 213.00 kilograms.

Summary of GHG Emissions		
Source of Emission	Quantity	Total Emissions
	Kgs	tCO <sub>2</sub> e
SF <sub>6</sub>	213.00	5,005.50
<b>Total</b>	<b>213.00</b>	<b>5,005.50</b>

## GHG Emissions Resulting from CO<sub>2</sub> Recharged in Fire Extinguishers

**Definition:** Carbon dioxide (CO<sub>2</sub>) is the gas used in certain types of fire extinguishers, which are recharged regularly.

**Uncertainty:** Inherent to the permitted deviation in CO<sub>2</sub> extinguishers.

**Data Considered:** Amount considered for 2021: 5,794.00 kilograms.

Summary of GHG Emissions	
Source of Emission	Total Emissions
Carbon Dioxide (CO <sub>2</sub> )	tCO <sub>2</sub> e
	5.79

## Soil Change and Usage

Changes in land use occur when conversions are required for different usage categories, which may consequently generate CO<sub>2</sub> flows (emissions and removals). This category consolidates, within the scope of the Brazilian GHG Protocol Program, emissions such as those related to deforestation of forest areas for the construction of a production facility, etc.

## Suppressions Due to Changes in Soil Usage

**Definition:** Removal is calculated by using the TESE tool (GVCES), considering data from the area and applied projects.

**Uncertainty:** Inherent to the inaccuracy of the reported data.

**Data Considered:** Suppression of Vegetation in a total area of 2,401.10 ha.

Source: Equatorial

Summary of GHG Emissions		
Source of Emission	Quantity	Total Emissions
	ha	tCO <sub>2</sub> e
Suppression of Vegetation	2,401.10	1,616,234.87
<b>Total</b>	<b>2,401.10</b>	<b>1,616,234.87</b>

## Removals Due to Changes in Soil Usage

**Definition:** Removal is calculated by using the TESE tool (GVCES), considering data from the area and applied projects.

**Uncertainty:** Inherent to the inaccuracy of the reported data.

**Data Considered:** Preservation and reforestation project in the Amazon biome, in a total area of 9.38 ha.

Source: Equatorial

Summary of Removals			
Unit	Project	Area ha	Total Removals tCOe
EQTL PA	Area Preservation and Reforestation	9.38	270.99
Total		9.38	270.99

## Calculation Details

### 1. Calculation of Net Emissions

Average carbon inventory of <b>secondary vegetation by phytophysiology</b>	250.50	tCO <sub>2</sub> e/ha
Average carbon inventory before the project is implemented:	0.0	tCO <sub>2</sub> e/ha
Average carbon inventory of secondary vegetation with the project:		
Consolidation:	100.20	tCO <sub>2</sub> e/ha
Enrichment:	150.30	tCO <sub>2</sub> e/ha
Isolation:	200.40	tCO <sub>2</sub> e/ha
Total Planting:	250.50	tCO <sub>2</sub> e/ha
Discount of final carbon inventory for the project's quality	55%	%
Average volume of carbon captured by the project (per ha):		tCO <sub>2</sub> e/ha
<b>R<sub>CO2</sub> = Permanent removal of CO<sub>2</sub> (weighing the different types of restoration)</b>	<b>270.99</b>	<b>tCO<sub>2</sub>e</b>

### 2. Calculation of Emissions Avoided from Deforestation, factors and assumptions

Entry Data	Amount	
Total area	9	ha
Baseline deforestation rate	0.41%	%/year
Deforestation rate with the project	0.00%	%/year
Average carbon inventory in phytophysiology	569.32	tCO <sub>2</sub> e/ha
Carbon inventory considering the stage of vegetation	250.50	tCO <sub>2</sub> e/ha
Average carbon inventory after area conversion		tCO <sub>2</sub> e/ha
Project duration	25	years
Non-performance provisions for the project	40%	

Results		
Total avoided deforestation area	0.92	ha
Net avoided emissions (Eev)		tCO <sub>2</sub> e per period for the total area

Note: The baseline deforestation rate used was obtained from the Atlas da Mata Atlântica 2020, a report prepared by Fundação SOS Mata Atlântica and Instituto Nacional de Pesquisas Espaciais (INPE).

## Scope 2: Indirect Emissions

To determine indirect GHG emissions from the consumption of electric energy, we used emission factors, equations, parameters and calculations according to the GHG Protocol Tool Version v2022 0.1.

### GHG Emissions Arising from the Use of Electric Energy Imported from the Distribution Network

**Uncertainty:** Inherent to the electricity meter.

**Data Considered:** Amount of Electric Energy imported from the distribution network in 2021: 35,040.54 MWh.

Source: Equatorial

Summary of GHG Emissions			
Source of Emission	Quantity	Unit	Emissions
Electricity - By Location	35,040.54	MWh	tCO <sub>2</sub> e
			4,429.71

**Data Considered:** Amount of transmission and/or distribution technical losses from Electric Energy imported from the distribution network in 2021: 4,517,563.10 MWh.

Source: Equatorial

Summary of GHG Emissions			
Source of Emission	Quantity	Unit	Emissions
Transmission and Distribution Losses - Technical	4,517,563.10	MWh	tCO <sub>2</sub> e
			571,095.27

## Scope 3: Other Indirect Emissions

To determine other indirect GHG emissions by type of source, we used emission factors, equations, parameters and calculations according to the GHG Protocol Tool – Version 2022 0.1.

The emission sources not covered by the tool (it only has reporting spaces) were calculated according to IPCC and UNFCCC methodologies, among others. Explanations are provided for each item of each source (as applicable).

### GHG Emissions from Commuting (Home to Work) - Road Transportation

**Uncertainty:** Inaccuracy in the number of kilometers traveled.

**Data Considered:**

Vehicle: Public Transportation

Number of kilometers traveled in 2021: 720 km per day in public transportation, considering 1,161 employees.

Source: Equatorial

Summary of GHG Emissions							
Source of Emission	Quantity	Unit	Emissions				
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	Biogenic CO <sub>2</sub> Emissions
Public Transportation	720.00	Km	516.07	0.04	0.03	524.48	60.58

Vehicle: Private Vehicles

Number of kilometers traveled in 2021: 106,103.82 km daily through private vehicles.

Source: Equatorial

Summary of GHG Emissions							
Source of Emission	Quantity	Unit	Emissions				
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	Biogenic CO <sub>2</sub> Emissions
Vehicles/gasoline	106,103.82	Km	3,487.29	0.63	0.51	3,640.87	889.81

### GHG Emissions from Business Trips

**Uncertainty:** Inaccuracy in gas pumps.

**Data Considered:** Air Travel - Kilometers traveled in 2021: 10,871,547.00 km (annual).

Source: Equatorial

Summary of GHG Emissions							
Source	Quantity	Unit	Emissions				
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	Biogenic CO <sub>2</sub> Emissions
Air Travel	10,871,547.00	Km	923.78	0.03	0.03	932.44	*

### Fuel and Energy Activities (not included in Scopes 1 and 2)

**Uncertainty:** Inherent to the electricity meter.

**Data Considered:** Amount of transmission and/or distribution commercial losses from Electric Energy imported from the distribution network in 2021: 5,834,516.75 MWh.



Source: Equatorial

Summary of GHG Emissions				
Unit	Source of Emission	Quantity	Unit	Emissions
Transmission and Distribution Losses - Commercial	Electricity	5,834,516.75	MWh	737,580.16

**Data Considered:** Amount of Electric Energy Purchased from Thermoelectric Plants in 2021: 275,440.31 MWh.

Source: Equatorial

Summary of GHG Emissions				
Unit	Source of Emission	Quantity	Unit	Emissions
Purchase of Thermoelectric Energy	Electricity	275,440.31	MWh	167,464.92

## GHG Emissions from Solid Waste Generated

**Uncertainty:** Inaccuracy in weights.

**Data Considered:** Amount of waste sent to landfills in 2021: 9.68 tons

Source: Equatorial

Summary of GHG Emissions							
Source	Quantity	Unit	Emissions				
			tCO <sub>2</sub>	tCH <sub>4</sub>	tN <sub>2</sub> O	tCO <sub>2</sub> e	Biogenic CO <sub>2</sub> Emissions
Waste sent to Landfills	9.68	Ton	*	0.67	*	18.84	*

# Summary of GHG Emissions

## Scope 1: Direct GHS Emissions

SCOPE 1	Emissions - tCO <sub>2</sub> e	% of Emissions in the Category	% of Emissions over the Current Scope	% tCO <sub>2</sub> e in Scopes 1, 2 (Location) and 3	% tCO <sub>2</sub> e in Scopes 1, 2 (Purchase Choice) and 3
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### Stationary Combustion:

Diesel	276.60	100%	0.02%	0.01%	0.01%
<b>Total</b>	<b>276.60</b>	<b>100%</b>	<b>0.02%</b>	<b>0.01%</b>	<b>0.01%</b>

### Mobile Combustion

Commercial Gasoline	1,717.76	25%	0.11%	0.06%	0.06%
Diesel	5,170.60	74%	0.32%	0.17%	0.17%
LPG	57.67	1%	0.00%	0.00%	0.00%
Hydrated Ethanol	0.01	0%	0.00%	0.00%	0.00%
<b>Total</b>	<b>6,946.05</b>	<b>100%</b>	<b>0.43%</b>	<b>0.22%</b>	<b>0.22%</b>

### Fugitive Emissions

Carbon Dioxide	5.79	0.12%	0.00%	0.00%	0.00%
SF <sub>6</sub>	5,005.50	99.88%	0.31%	0.16%	0.16%
<b>Total</b>	<b>5,011.29</b>	<b>100%</b>	<b>0.31%</b>	<b>0.16%</b>	<b>0.16%</b>

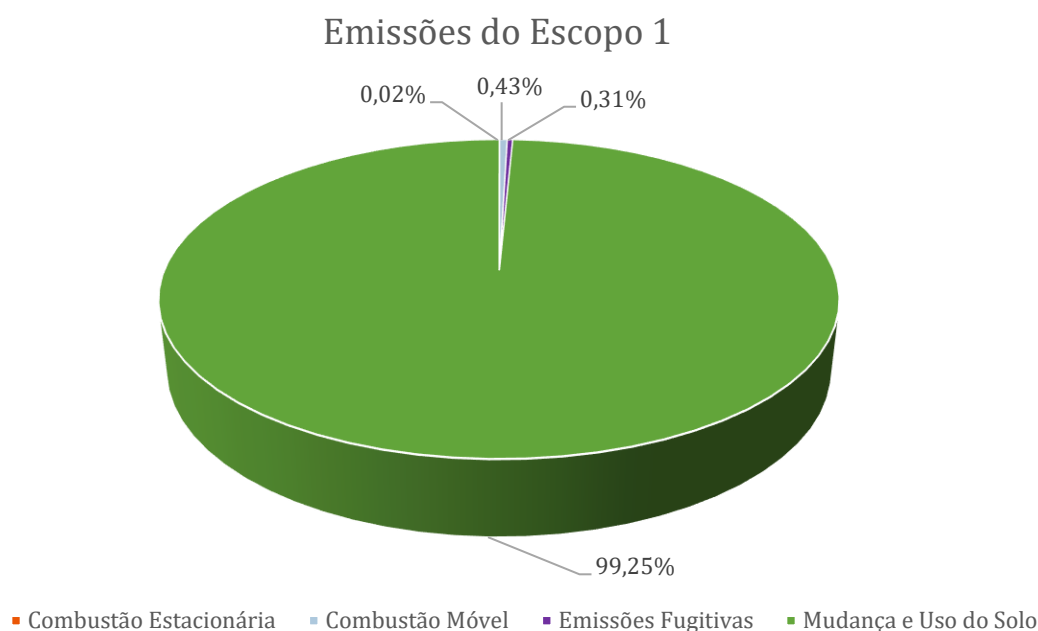
### Soil Change and Usage

Suppression of Vegetation	1,616,234.87	100%	99.25%	51.90%	51.96%
<b>Total</b>	<b>1,616,234.87</b>	<b>100%</b>	<b>99.25%</b>	<b>51.90%</b>	<b>51.96%</b>

<b>TOTAL OF SCOPE 1</b>	<b>1,628,468.81</b>	<b>*</b>	<b>100%</b>	<b>52.29%</b>	<b>52.36%</b>
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### Soil Change and Usage

Removal - Amazon Biome	270.99	100.00%
<b>Total</b>	<b>270.99</b>	<b>100.00%</b>



The table and chart above illustrate that the Soil Change and Usage category is responsible for **99.25%** of Scope 1 GHG emissions, followed by Mobile Combustion, with **0.43%**. Fugitive Emissions correspond to about **0.31%** of the total emissions in this scope and Stationary Combustion accounts for **0.02%**.

The Soil Change and Usage category had total removals of **270.99 tCO<sub>2</sub>e**.

## Scope 2: Indirect GHS Emissions - By Location

The location approach is the model adopted by the Brazilian GHG Protocol Program for Scope 2 emission, in which the measurement factor considers the average emissions of electricity generation from the National Interconnected System (SIN).

In the Location approach, we accounted for all electricity consumed from the distribution network, without discounting any of the purchases of RECs or certificate of purchase in the free market. This approach reflects the actual physical situation of the distribution network to which the Company is connected.

SCOPE 2	Emissions - tCO <sub>2</sub> e	Consumption (MWh)	% of Emissions over the Current Scope	% of Emissions over All Scopes
<b>Approach based on Location</b>				
By Location (Captive)	416.13	3,291.77	0.07%	0.01%
By Location (Free)	4,013.57	31,748.77	0.70%	0.13%
Transmission and Distribution Losses - Technical	571,095.27	4,517,563.10	99.23%	18.34%
<b>TOTAL OF SCOPE 2</b>	<b>575,524.98</b>	<b>4,552,603.64</b>	<b>100%</b>	<b>18.48%</b>

Scope 2, which considers the purchase of electric energy by the Location approach, is responsible for **18.48%** of the Company's total emissions, corresponding to **575,524.98 tCO<sub>2</sub>e**.

### Scope 2: Indirect GHS Emissions - By Purchase Choice

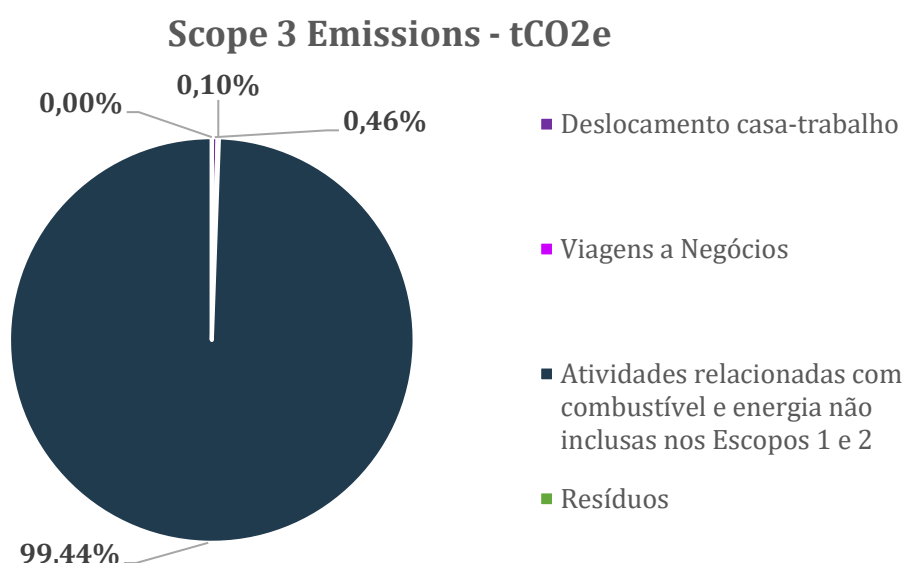
The approach based on purchase choice assumes that the decisions made for the purchase of electricity are recognized differently given the Company chooses less intensive energies in terms of GHG emissions.

SCOPE 2	Emissions - tCO <sub>2</sub> e	Consumption (MWh)	% of Emissions over the Current Scope	% of Emissions over All Scopes
<b>Approach based on Purchase Choice</b>				
Untracked Electric Energy (AP + RS)	416.13	3,291.77	0.07%	0.01%
Tracked Electric Energy	129.16	31,748.77	0.02%	0.00%
Transmission and Distribution Losses - Technical	571,095.27	4,517,563.10	99.90%	18.36%
<b>TOTAL OF SCOPE 2</b>	<b>571,640.56</b>	<b>4,552,603.64</b>	<b>100%</b>	<b>18.38%</b>

Scope 2, which considers the purchase of electric energy by the Purchase Choice approach, is responsible for **18.38%** of the Company's total emissions, corresponding to **571,640.56 tCO<sub>2</sub>e**.

## Scope 3: Other Indirect GHG Emissions

SCOPE 3	Emissions - tCO <sub>2</sub> e	% of Emissions in the Category	% of Emissions over the Current Scope	% tCO <sub>2</sub> e in Scopes 1, 2 (Location) and Scope 3	% tCO <sub>2</sub> e in Scopes 1, 2 (Purchase Choice) and Scope 3
<b>Commuting (Home to Work)</b>					
Public Transportation	524.48	12.59%	0.06%	0.02%	0.02%
Private Transportation	3,640.87	87.41%	0.40%	0.12%	0.12%
Total	4,165.34	100%	0.46%	0.13%	0.13%
<b>Business Trips</b>					
Air Travel	932.44	100.00%	0.10%	0.03%	0.03%
Total	932.44	100%	0.10%	0.03%	0.03%
<b>Fuel and Energy Activities (not included in Scopes 1 and 2)</b>					
Transmission and Distribution Losses - Commercial	737,580.16	81.50%	81.04%	23.68%	23.71%
Purchase of Thermal Energy	167,464.92	18.50%	18.40%	5.38%	5.38%
Total	905,045.08	100%	99.44%	29.06%	29.10%
<b>Waste</b>					
Sanitary Landfill	18.84	100.00%	0.00%	0.00%	0.00%
Total	18.84	100%	0.00%	0.00%	0.00%
<b>TOTAL OF SCOPE 3</b>	<b>910,161.70</b>	<b>*</b>	<b>100%</b>	<b>29.23%</b>	<b>29.26%</b>

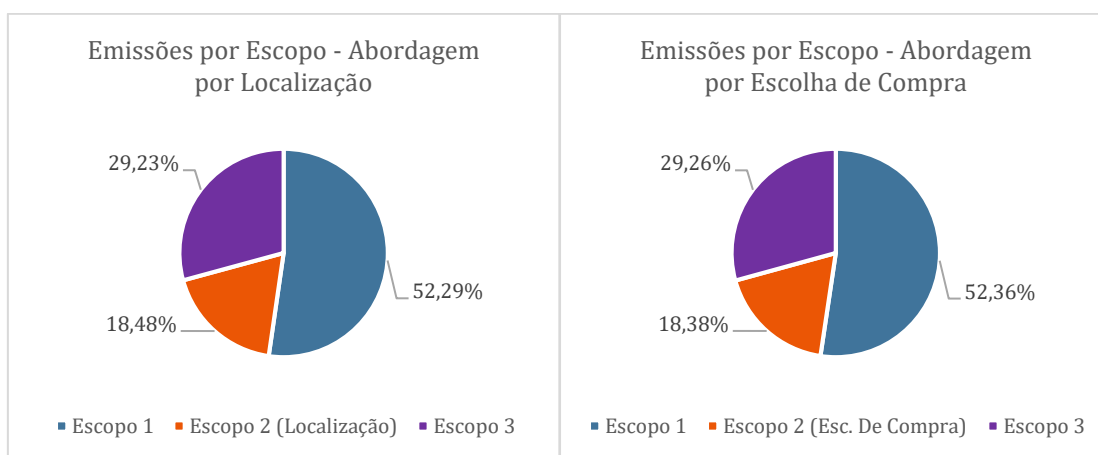


The table and chart above illustrate that Fuel and Energy Activities (not included in Scopes 1 and 2) are responsible for **99.44%** of Scope 3 GHG emissions, followed by Community (Home to Work), with **0.46%**. Business Trips correspond to about **0.10%** of the total emissions in this scope and Waste accounts for **0.00%**.

## Total Emissions

Scopes	Emissions - tCO <sub>2</sub> e
Scope 1	1,628,468.81
Scope 2 (Location)	575,524.98
Scope 2 (Purchase Choice)	571,640.56
Scope 3	910,161.70
Biogenic CO <sub>2</sub> Emissions - By Location	2,001.37
Biogenic CO <sub>2</sub> Emissions - By Purchase Choice	8,805.98

Note: CO<sub>2</sub> emissions from renewable fuels are reported separately as Biogenic CO<sub>2</sub> Emissions.



According to the table and charts above, Scope 2 can be analyzed using two approaches, by Location or Purchase Choice, which is explained in more detail in the "Summary of GHG Emissions" section.

In view of what is presented in this inventory for the Location approach, we concluded that Scope 1 emissions were responsible for the largest part of Equatorial's emissions, with **1,628,468.81 tCO<sub>2</sub>e** and corresponding to **52.29%** of the total emissions amount. Scope 3 is responsible for **29.23%** of the Company's total emissions, corresponding to **910,161.70 tCO<sub>2</sub>e**. Scope 2 (Location), which derives from the purchase of electricity from the National Interconnected System (SIN), was responsible for **18.48%** of total GHG emissions, corresponding to **575,524.98 tCO<sub>2</sub>e**. In the Location approach, we accounted for all electricity consumed from the distribution network, without discounting any of the purchases of RECs or certificate of purchase in the free market.

In the Purchase Choice approach, we concluded that Scope 1 emissions were responsible for the largest part of Equatorial's emissions, with **1,628,468.81 tCO<sub>2</sub>e** and corresponding to **52.36%** of the total emissions amount. Scope 3 was responsible for **29.26%** of the Company's total emissions, accounting for **910,161.70 tCO<sub>2</sub>e**. Scope 2 (Purchase Choice), which is from the purchase of traced electricity from untraced renewable sources, was responsible for **18.38%** of total GHG emissions, corresponding to **571,640.56 tCO<sub>2</sub>e**.

BIOMES	Removal of Biogenic tCO <sub>2</sub> e	Hectare
Amazon	270.99	9.38
<b>TOTAL REMOVAL</b>	<b>270.99</b>	<b>9.38</b>

The total calculated removal was **270.99 tCO<sub>2</sub>e**. Details of the calculations are available in the Soil Change and Usage section.

Based on the diagnosis presented in this inventory, we can establish corporate management strategies for GHG emissions to guide Equatorial's activities towards a low-carbon scenario.

## Summary of GHG Emissions by Unit

### Scope 1: Direct GHS Emissions

Category	Source	EQTL AL Emissions - tCO <sub>2</sub> e	EQTL MA Emissions - tCO <sub>2</sub> e	EQTL PA Emissions - tCO <sub>2</sub> e	EQTL PI Emissions - tCO <sub>2</sub> e	EQTL Serviços Emissions - tCO <sub>2</sub> e	EQTL Telecom Emissions - tCO <sub>2</sub> e	EQTL Transmissão Emissions - tCO <sub>2</sub> e	EQTL INTESA Emissions - tCO <sub>2</sub> e	EQTL AP (CEA) Emissions - tCO <sub>2</sub> e	EQTL RS (CEE-E-D) Emissions - tCO <sub>2</sub> e
Stationary Combustion	Diesel	0.25	243.11	-	1.50	-	-	16.10	12.83	1.64	1.17
Mobile Combustion	Commercial Gasoline	198.41	538.69	506.75	156.98	15.46	41.13	71.55	8.29	49.37	131.11
	Diesel	352.06	789.59	1,320.55	1,006.66	-	1.41	118.17	66.98	50.89	1,464.30
	LPG	4.84	21.71	25.99	5.13	-	-	-	-	-	-
	Ethanol	-	-	-	0.00	-	-	0.01	0.00	-	0.00
Fugitive Emissions	Carbon Dioxide (CO <sub>2</sub> )	0.36	1.44	2.36	0.45	0.08	-	0.27	0.01	0.64	0.17
	SF <sub>6</sub>	1,175.00	2,350.00	352.50	1,128.00	-	-	-	-	-	-
Soil Change and Usage	Suppression of Vegetation	316.01	21,509.47	1,583,523.71	10,885.68	-	-	-	-	-	-
<b>TOTAL</b>		<b>2,046.93</b>	<b>25,454.01</b>	<b>1,585,731.87</b>	<b>13,184.39</b>	<b>15.54</b>	<b>42.54</b>	<b>206.10</b>	<b>88.12</b>	<b>102.54</b>	<b>1,596.76</b>



#### Scope 1 - Indirect Biogenic GHS Emissions in 2021

Category	Source	EQTL AL Biogenic tCO <sub>2</sub> e Emissions	EQTL MA Biogenic tCO <sub>2</sub> e Emissions	EQTL PA Biogenic tCO <sub>2</sub> e Emissions	EQTL PI Biogenic tCO <sub>2</sub> e Emissions	EQTL Serviços Biogenic tCO <sub>2</sub> e Emissions	EQTL Telecom Biogenic tCO <sub>2</sub> e Emissions	EQTL Transmissão Biogenic tCO <sub>2</sub> e Emissions	EQTL INTESA Biogenic tCO <sub>2</sub> e Emissions	EQTL AP (CEA) Emissions - tCO <sub>2</sub> e	EQTL RS (CEEE-D) Emissions - tCO <sub>2</sub> e
Stationary Combustion	Diesel	0.03	28.42	-	0.17	-	-	1.88	1.50	0.19	0.14
Mobile Combustion	Commercial Gasoline	48.55	131.81	123.99	38.41	3.78	10.06	17.51	2.03	12.08	32.08
	Diesel	40.67	91.21	152.54	116.28	-	0.16	13.65	7.74	5.88	169.15
	LPG	0.00	0.00	0.00	0.00	-	-	-	-	-	-
	Ethanol	-	-	-	0.11	-	-	0.56	0.25	-	0.15
Fugitive Emissions	Carbon Dioxide (CO <sub>2</sub> )	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SF <sub>6</sub>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-
Soil Change and Usage	Suppression of Vegetation	0.00	0.00	0.00	0.00	-	-	-	-	-	-
<b>TOTAL</b>		89.24	251.44	276.53	154.97	3.78	10.23	33.60	11.51	18.15	201.52

## Scope 2: Indirect GHS Emissions

### Electric Energy Imported from the Distribution Network

#### Scope 2 - Consumption of Electric Energy in 2021

Category	Approach	EQTL AL Emissions - tCO <sub>2</sub> e	EQTL MA Emissions - tCO <sub>2</sub> e	EQTL PA Emissions - tCO <sub>2</sub> e	EQTL PI Emissions - tCO <sub>2</sub> e	EQTL Serviços Emissions - tCO <sub>2</sub> e	EQTL Telecom Emissions - tCO <sub>2</sub> e	EQTL Transmissão Emissions - tCO <sub>2</sub> e	EQTL INTESA Emissions - tCO <sub>2</sub> e	EQTL AP (CEA) Emissions - tCO <sub>2</sub> e	EQTL RS (CEEE-D) Emissions - tCO <sub>2</sub> e
Energy	Location	719.24	1,268.05	1,389.83	636.45	-	-	-	-	67.73	348.41
	Purchase Choice	11.83	46.86	51.24	19.23	-	-	-	-	-	-
Transmission and Distribution Losses - Technical	Location	66,993.52	117,614.40	196,008.12	78,762.78	-	-	-	-	30,187.42	81,529.04

#### Scope 2 - Consumption of Electric Energy in 2021 - Biogenic

Category	Approach	EQTL AL Biogenic tCO <sub>2</sub> e Emissions	EQTL MA Biogenic tCO <sub>2</sub> e Emissions	EQTL PA Biogenic tCO <sub>2</sub> e Emissions	EQTL PI Biogenic tCO <sub>2</sub> e Emissions	EQTL Serviços Biogenic tCO <sub>2</sub> e Emissions	EQTL Telecom Biogenic tCO <sub>2</sub> e Emissions	EQTL Transmissão Biogenic tCO <sub>2</sub> e Emissions	EQTL INTESA Biogenic tCO <sub>2</sub> e Emissions	EQTL AP (CEA) Emissions - tCO <sub>2</sub> e	EQTL RS (CEEE-D) Emissions - tCO <sub>2</sub> e
Energy	Location	0.00	0.00	0.00	0.00	-	-	-	-	0.00	0.00
	Purchase Choice	623.10	2,468.64	2,699.72	1,013.16	-	-	-	-	-	-
Transmission and Distribution Losses - Technical	Location	-	-	-	-	-	-	-	-	-	-

### Scope 3: Indirect GHS Emissions

#### Scope 3 - Indirect GHS Emissions in 2021

Category	Source	EQTL AL Emissions - tCO <sub>2</sub> e	EQTL MA Emissions - tCO <sub>2</sub> e	EQTL PA Emissions - tCO <sub>2</sub> e	EQTL PI Emissions - tCO <sub>2</sub> e	EQTL Serviços Emissions - tCO <sub>2</sub> e	EQTL Telecom Emissions - tCO <sub>2</sub> e	EQTL Transmissão Emissions - tCO <sub>2</sub> e	EQTL INTESA Emissions - tCO <sub>2</sub> e	EQTL AP (CEA) Emissions - tCO <sub>2</sub> e	EQTL RS (CEEE-D) Emissions - tCO <sub>2</sub> e
Commuting (Home to Work)	Public Transportation	13.44	93.85	78.71	19.19	272.42	7.96	2.61	-	3.92	32.37
	Private Transportation	242.77	728.45	837.82	423.40	489.88	59.06	67.17	3.09	111.01	678.22
Fuel and Energy Activities (not included in Scopes 1 and 2)	Transmission and Distribution Losses - Commercial	77,187.43	84,511.03	291,801.85	48,692.71	-	-	-	-	89,655.76	145,731.38
	Purchase of Thermal Energy	-	-	167,464.92	-	-	-	-	-	-	-
Business Trips	Air Travel	134.07	166.52	106.85	178.68	16.67	12.92	51.14	15.55	12.30	237.74
Waste	Sanitary Landfill	-	18.84	-	-	-	-	-	-	-	-
TOTAL		77,577.72	85,518.68	460,290.15	49,313.97	778.97	79.95	120.92	18.64	89,782.98	146,679.72

## Scope 3 - Indirect Biogenic GHG Emissions in 2021


Category	Source	EQTL AL Emissions - tCO <sub>2</sub> e	EQTL MA Emissions - tCO <sub>2</sub> e	EQTL PA Emissions - tCO <sub>2</sub> e	EQTL PI Emissions - tCO <sub>2</sub> e	EQTL Serviços Emissions - tCO <sub>2</sub> e	EQTL Telecom Emissions - tCO <sub>2</sub> e	EQTL Transmissão Emissions - tCO <sub>2</sub> e	EQTL INTESA Emissions - tCO <sub>2</sub> e	EQTL AP (CEA) Emissions - tCO <sub>2</sub> e	EQTL RS (CEEE-D) Emissions - tCO <sub>2</sub> e
Commuting (Home to Work)	Public Transportation	1.55	10.84	9.09	2.22	31.47	0.92	0.30	-	0.45	3.74
	Private Transportation	59.33	178.03	204.76	103.48	119.72	14.43	16.42	0.75	27.13	165.75
Fuel and Energy Activities (not included in Scopes 1 and 2)	Transmission and Distribution Losses - Commercial	-	-	-	-	-	-	-	-	-	-
	Purchase of Thermal Energy	-	-	0.00	-	-	-	-	-	-	-
Business Trips	Air Travel	-	-	-	-	-	-	-	-	-	-
Waste	Sanitary Landfill	-	-	-	-	-	-	-	-	-	-
TOTAL		60.88	188.87	213.85	105.70	151.19	15.35	16.72	0.75	27.58	169.49

*THE RESULTS OF GREENHOUSE GAS EMISSIONS (IN tCO<sub>2</sub>e) IN THIS REPORT ARE BASED ON PRECISE CALCULATIONS, ACCORDING TO AVAILABLE DATA AND UNCERTAINTIES DESCRIBED HEREIN. SUMMARY OF AMOUNTS IN THE WORKSHEET GHG PROTOCOL v2022 0.1 MAY BE ROUNDED.*

## Technical Responsibility

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Mr. Nino Sérgio Bottini, enrolled in individual taxpayer ID (CPF) number 667.653.238-72, presents himself as the technical manager responsible for the GHG Emissions Inventory project for Equatorial 2021.



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## References

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**Agência Nacional do Petróleo, Gás Natural e Biocombustíveis – ANP 2015.**  
<http://www.anp.gov.br/>

**AMS III.E. "Avoidance of methane production from decay of biomass through controlled combustion".**

**Department for Environment Food & Rural Affairs – DEFRA.**

**Ministério de Minas e Energia. Balanço Energético Nacional, 2015.**  
[https://ben.epe.gov.br/downloads/Relatorio\\_Final\\_BEN\\_2015.pdf](https://ben.epe.gov.br/downloads/Relatorio_Final_BEN_2015.pdf)

**Guidelines for Measuring and Managing CO<sub>2</sub> Emission from Freight Transport Operations, 2011.** <http://www.cefic.org>

**Greenhouse Gas Protocol – Programa Brasileiro GHG Protocol**  
<http://www.ghgprotocolbrasil.com.br/>

**International Civil Aviation Organization – ICAO**  
<http://www.icao.int/Pages/default.aspx>

**Refinement to the 2006 IPCC Guidelines on National Greenhouse Gas Inventories, 2019.** <https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/>

**Ministério da Ciência e Tecnologia – MCT, 2010. 2º Inventário Brasileiro de Emissões de GEE – Bottom-Up. Anexo Metodológico**

**Ministério da Ciência e Tecnologia – MCT. Fator Médio de Emissão do Sistema Interligado Nacional do Brasil.** <http://www.mct.gov.br/index.php/content/view/74694.html>

**NDC Implementation Plan for Energy, Agriculture, Forestry; Alignment of SDG with NDC Targets - Paris Agreement Ratification, 2016.**  
<https://www.ndcs.undp.org/content/ndc-support-programme/en/home/our-work/geographic/latin-america-and-caribbean/brazil.html>

**United Nations Environment Program – Emissions Gap Report 2019.**  
<https://wedocs.unep.org/bitstream/handle/20.500.11822/30797/EGR2019.pdf?sequence=1&isAllowed=y>

**United Nations Framework Convention on Climate Change – UNFCCC**  
<http://unfccc.int/>

**United Nations Framework Convention on Climate Change – UNFCCC. A/R Methodological tool. "Estimation of direct nitrous oxide emission from nitrogen fertilization" (version 1).**

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