·G·R·U·P·O·
SABARÁ

COMMITMENT TO
SUSTAINABILITY

Greenhouse Gas Emission (GHG) Inventory

2021

INTRODUCTION

This inventory presents the results of the quantitative and qualitative analysis of the Sabará Group's Greenhouse Gas Emissions (GHG). All emission sources from the company's six operating units were considered in the development of this document, which covers the base year of 2021. The purpose of this report is to **disclose the Group's profile regarding GHG emissions, and thus enable the development of strategies for the continuous reduction of gas emissions and to mitigate the impacts** generated by them.

By absorbing part of the solar radiation in the atmosphere, the GHG trap the radiation's energy within the Earth's atmosphere, thus transforming it into heat. Hence, there is an increase in the planet's temperature, which contributes to making the Greenhouse Effect worse. Although this is a natural phenomenon that regulates the Earth's temperature and makes life possible on the planet, if it is highly stimulated by excessive gas emissions from human activities it can completely imbalance in the climate system, and consequently ecosystems.

Therefore, because Sabará Group understands its environmental responsibility and is taking on a leading role where it operates, it recognizes the relevance of the actions it takes and the need for transparency in GHG management processes. From that context, this inventory – which is defined by the Group's operational control approach – is disclosed; in that approach, the company is responsible for the emission sources of all the operations under its control. Those sources were allocated into categories that will be explained throughout this

document. The identified gases were calculated using the GHG Protocol methodology and converted into tons of CO_2-eq (carbon equivalent), respecting the due parities of each gas.

There is a growing demand from the Group's stakeholders (clients, society, markets, employees) for information regarding the intensity of emissions, which demonstrates the importance of the process of accounting for and presenting indicators (e.g. tCO_2eq/production). In this way, future actions to reduce emissions will always be based on information derived from the inventory.

Contemplated Facilities

Production

Anápolis

Itapissuma

Pacatuba

Santa Bárbara D'Oeste (SBO)

Administrative

Riachuelo - Administrative office (SBO)

Vilela - Corporate office (SP)

Activities Summary

1. Project mobilization
2. Work plan presentation
3. Definition of the work methodology
4. Identification and selection of emission sources
5. Information collection and transfer
6. Qualitative analysis of emission sources
7. Quantitative analysis of emission sources
8. Development of the GHG emissions report

Carbon equivalent is a concept created to represent all the different Greenhouse Gases in a single unit of measurement, and thus enable the operation of the carbon market and actions to reduce and mitigate emissions in a standardized manner.

COMPANY POSITION

The Sabará Group has a history of over 66 years; it is authentically Brazilian and recognized for its ability to innovate and adapt. With operations all over Brazil and in South America, North America, Europe, and the Middle East, the company specializes in the development of high-performance technologies, solutions, and raw materials for the following sectors: sewage and industrial water treatment; animal nutrition and health; and food and beverage.

The development of the Group's products relies on 100% national expertise and technology. In addition to ensuring traceability, safety, and quality in all processes, thus generating value for the company's stakeholders, the company is concerned with developing and applying solutions to prevent and control environmental impacts.

SABARÁ QUÍMICOS E INGREDIENTES

It produces, sells, and distributes chemical products, equipment and technical assistance for the sanitation and water treatment markets for human, industrial and animal consumption.

BioE

It produces solutions, mainly sodium chlorite, to increase the efficiency at all stages of the production process in various manufacturing sectors such as the energy, beverage, leather, paper and pulp, sugar and alcohol industries.

CONCEPTA INGREDIENTS

It offers a line of more than 100 natural, organic, sustainable, and traceable ingredients for the food, beverage, animal nutrition, veterinary pharmaceuticals, flavoring, chemical, and nutraceutical industries.

The Sabará Group's business is directly linked to some of life's basic pillars, such as water and food. Thus, the company is constantly looking for processes that generate value not only internally, but especially for the products and solutions it offers. The search for better initiatives goes beyond generating less environmental impact, as the company's guidelines produce positive impact throughout the Group's value chain. In this respect, the Gases Inventory is a strategic material for the brand's operation, allowing it to look from the inside of its facilities out and plan its next steps in line with the corporate vision.

> Sustainably using natural resources and engaging employees, partners, suppliers, and customers are actions that are part of the Sabará Group's priorities.

STRATEGY

For the Sabará Group, sustainability goes beyond the company's Mission, Vision and Values; it is ultimately a business value. It guides the daily activities of employees, the relationship with the value chain, and the way the company sets itself apart from other brands in the market.

Part of these actions are based on global corporate guidelines, such as the UN Sustainable Development Goals (SDGs). A signatory of the Global Compact since 2007, the Sabará Group is also part of Caring For Climate, a global initiative with more than 400 companies around the world to discuss the issue of climate change, and the Brazilian Business Commitment to Biodiversity, which emphasizes the role of companies in the conservation and sustainable use of resources and ecosystem services.

In order to structure the Group's sustainability management, a corporate ESG area was consolidated in 2020, from the merge of the previously existing biodiversity and social responsibility areas. The strengthening of the ESG area made it possible, in the same year, for the company to approach the Brazilian Business Council for Sustainable Development (CEBDS) and the CDP (Carbon Disclosure Project) through its Climate Change and Water Security Benchmark Club.

The factories have the following certifications: PRODIR, ISO 9001 (quality), 14001 (environment), 45001 (health and safety), FSSC 22000, and organic certification.

Possible risks are contemplated by a Management Committee, in addition to being managed by the Sabará Group's Strategic Plan, which develops mitigation measures for each of the five main ones: climate change; work and customer safety; integrity and corruption; protection and preservation of the environment and biodiversity; water security.

Ensuring the environmental safety of the involved employees and nearby communities is a fundamental concern in the chemical value chains. As all of the Sabará Group's factories handle chlorine-based products, industrial processes are continuously monitored, and equipment regularly checked. The company also trains its employees to act in accordance with safety protocols and only operates with carriers that are qualified and certified to handle chemicals.

Abundant, good quality water is essential for the Sabará Group's activities and value chain. For that reason, the company is a member of the CEO Water Mandate and adopts internal measures to maximize efficiency in its own water consumption. While managing suppliers, several guidelines are provided to ensure that they maintain the balance of microclimates and preserve biomes that are the source of biodiversity, an essential aspect for the company's solutions.

According to the CDP, US$ 970 billion is the estimated value of the additional costs that will be disbursed by the largest companies in the world due to the likely climate risks for the next 5 years. Because it is aware of this issue and of the consequences of GHG emissions for the environment, the Sabará Group seeks to invest in a low-carbon economy and in the mitigation of impact.

In 2019, the company developed internally the first GHG Emissions Inventory (base year: 2018). In the following year, this practice was continued with the aim of improving the monitoring of emitting sources and data calculation. Also in 2020, in October, the Sabará Group became the first Brazilian company and the first chemical industry in Latin America to approve an emission reduction target under the Science Based Targets initiative (SBTi), a global initiative coordinated by CDP, the UN, the WRI, and WWF.

Aligned with the objectives of the Paris Agreement, established in 2015 during the United Nations Framework Convention on Climate Change (COP 21), the SBTi stipulates a scientific methodology for organizations to define robust targets to reduce the emissions of Greenhouse Gases. In 2022, the Sabará Group increased its previously defined ambition and committed to reducing 42% of absolute GHG emissions by 2030, in line with 2020 emissions, predicting an annual reduction of 4.2%.

Joining the SBTi and having its goals approved by the initiative mark an important achievement for the restructuring process of the Sabará Group's corporate ESG area, which consists of company representatives from various backgrounds. This team is responsible for monthly monitoring the developments of the corporate sustainability management, identifying socio-environmental risks and opportunities, and analyzing the consumption of natural resources and the disposal of waste at the factories; it also works to implement improvement projects together with the factory leaders.

With the socio-environmental topic strengthened, the Sabará Group began to identify climate change-related risks with greater confidence. In this sense, developing and conducting mitigation actions to handle the harmful effects that GHG emissions cause on biodiversity and water resources, for example, has become more tangible and objective.

The Sabará Group's commitment to the well-being of people around the world goes beyond offering innovative products and services. Its activities take future generations into account, focusing on solutions that guarantee their stability and a more sustainable world.

AUDIT

To develop this inventory, the Sabará Group hired BSI Brasil Sistemas de Gestão Ltda. to carry out an audit of data relating to the company's GHG emissions using the criteria established by the Brazilian GHG Protocol Program. The verification was carried out for almost a month, from 8 April to 2 May 2022, in a hybrid format: on the first day, it happened on-site at the Santa Bárbara d'Oeste facility; from the second day onwards it was carried out remotely through a virtual platform.

This verification was put place in order to analyze Scopes 1 and 2 plus the Business Travel category of Scope 3, related to O_2, CH_4, N_2O, PFC, HFC, SF_6, and NF_3 gas emissions. The entire process was carried out without any connectivity problems, and the desired outcomes were fully achieved.

The evidence needed to confirm the emissions was provided by the Sabará Group, which provided invoices and management reports. Since the audit took place before the company purchased the I-REC certification, the location-based methodology was chosen to audit Scope 2 emissions.

To verify the emissions data the ISO 14064-3 standard was adopted as a sample. The general inspection level I was also considered, and the results were audited according to the GHG Protocol tool version 2022.0.1.

SCOPE	PROCESS	VERIFICATION OF:
1	Stationary combustion	Fuel consumption
	Mobile combustion	Fuel consumption
	Fugitive emissions	Recharging of fire extinguishers and refrigeration equipment
2	Electricity	Electricity consumption
3	Business travel	Trips taken/Sections

The Sabará Group facilities that generated the most Greenhouse Gas emissions were Santa Bárbara d'Oeste and Itapissuma. Together, they represent 90% of GHG releases in 2021. As the audit calculations were carried out using the location-based methodology, it is important to point out that the Scope 2's total volume differs from the other calculations shown in the Inventory; this is due to the fact that the purchase of the I-REC occurred after this verification, thus allowing the Group to change the methodology for scope calculation.

FACILITY	TOTAL EMISSIONS (TCO2EQ)	% OF TOTAL EMISSIONS
Santa Bárbara d'Oeste*	555.60	73%
Pacatuba*	23.76	3%
Itapissuma*	129.07	17%
Anápolis*	44.94	6%
Vilela	10.68	1%

*The calculation referring to these facilities considers the volume of Scope 2 emissions using the location-based approach.

METHODOLOGY AND GUIDELINES

Every year, GHG calculation methodologies go through small changes; thus, companies need to prepare and update the emissions inventory at the same pace. The changes with greatest annual variation occur in the emission factor of Brazil's power grid's National Interconnected System (SIN) and in relation to the amount of biofuel blended with gasoline and diesel.

However, in 2021 there was an additional change in the methodology: the GHG Global Warming Potential (GWP) values were updated. They correspond to an equivalent measure that determines how much a gas that causes the Greenhouse Effect contributes to global warming.

> The calculation of GHG emissions measures the emission of a gas in tons of carbon dioxide equivalent (tCO_2eq) based on its Global Warming Potential (GWP). Thus, it is possible to compare the impact generated by each emitted GHG.

Another change that affected the development of this inventory relates to an IPCC update, which releases reports containing the most current and reliable information on climate science. Recently, in line with the Paris Agreement and Decision 18/CMA 1, paragraph 37, it was defined that starting from the base year of 2021 the reference for the values used for the GWP will be the 5th IPCC report (AR5), while inventories referring up to the base year of 2020 used the 4th IPCC Report (AR4) instead.

The table below shows how each gas' GWP changed from the AR4 to the AR5:

GREENHOUSE GAS	GWP - AR4	GWP - AR5
CO_2	1	1
CH_4	25	28
N_2O	298	265
SF_6	22,800	23,500
HFCs	124 – 14,800	4 – 12,400
PFCs	7,390 – 12,200	6,630 – 23,500
NF_3	17,200	16,100

To ensure the quality of this inventory, the following principles were considered:

Relevance

Selection of the necessary information so that this inventory reflects the company's GHG emissions and meets the decision-making needs of the Sabará Group..

Integrity

Inclusion of all GHG emission sources and activities within the chosen inventory scope and justification for any exclusions.

Consistency

Credible methodologies to allow meaningful comparisons between emissions over time.

Accuracy

Quantification of GHG emissions in values that are close to reality and reduction of uncertainties as much as practically possible.

Transparency

Disclosure of sufficient and appropriate information regarding GHG emissions and of the respective used methodologies.

Following the Brazilian GHG Protocol Program and the IPCC Guidelines for GHG Inventories as guidelines, this inventory maps out all the Sabará Group's GHG emission sources and their impact. Each one was organized according to a scope and a category, and only then the emissions were calculated.

SCOPE 1
Direct GHG Emissions – Emissions from sources that are either owned or controlled by the company.

SCOPE 2
Indirect GHG emissions resulting from the purchase of energy – Emissions from the generation of electricity that is purchased by the company.

SCOPO 3
Indirect GHG emissions – These are a consequence of the company's activities but occur in sources that either do not belong or are not controlled by the company.

Categories

Scope 1:

Stationary Combustion | Direct emissions from fuel consumption in sources that are activated without the intention of travel. Examples: generators, brush cutters, cutting gas, stoves.

Mobile Combustion | Emissions related to the burning of fuel in vehicles and equipment controlled by the company whose purpose is to transport people or cargo. Examples: automobiles and forklifts.

Fugitive Emissions | Emissions that occur due to involuntary gas leaks in equipment. Examples: CO_2 fire extinguishers, replacement of refrigerant gases in equipment.

Industrial Processes | Emissions from the carbon dioxide used to measure the dew point of compressed air in the production filling system.

Scope 2:

Electricity Consumption | The generation of electricity emits GHG; these emissions are considered from the point where the company takes charge of the consumption of the purchased electricity.

Scope 3:

Goods and Services | Emissions from fuel burn in equipment that is used in outsourced services performed in the company.

Commuting | Emissions from the employees' commute to and from work including regular and charter buses and private cars.

Outsourced Upstream Transportation – Transportation emissions by outsourced vendors hired by the company to transport the Sabará Group's raw materials and products.

Solid Waste | Emissions from the landfilling, incineration, co-processing, and anaerobic composting of organic solid waste generated by the company in 2021.

Business Travel | GHG emissions from business trips taken by Sabará Group employees on buses, ferries, and third-party planes.

RESULTS

In this chapter, the main results regarding the calculation of the Sabará Group's GHG emissions in 2021 will be disclosed. The collected data will be organized in graphs and tables in different formats to help visualize the categories and emission sources, in addition to assessing each one's impact. In this way, it will be possible to analyze how the company's emissions profile aligns with the scopes of the Inventory.

Before introducing the results, it is important to point out that Scope 2 GHG emissions were calculated using two methodologies: location- and market-based. In 2021, the location-based approach was already being used, even though the Group cannot assess whether its renewable energy sources – which amount to approximately 85% of the total – meet the criteria. In 2022, the market-based approach was introduced after the Sabará Group acquired the I-REC certification, thus ensuring that the energy used by the company is clean and sourced from wind farms.

The International Renewable Energy Certificate, or I-REC, serves as proof that the electricity consumed comes from a renewable energy source, signaling a consumer's commitment to reduce the environmental impact caused by non-renewable energy sources. In addition to attesting that the energy is renewable, the certificate shows an engagement with the reduction of harmful gases and of the impact generated by energy consumption, which make up the Scope 2 emissions.

The location-based approach uses as a calculation factor the average emissions for electricity generation in a given electrical grid, geographical limit and period of time, and it is applied when there is no certainty regarding the energy matrix that was used. The market-based methodology associates the emission factor with each source of electricity generation that the organization in question explores or acquires; it considers the electricity's production source, which needs to be traced and certified.

In this inventory, emphasis will be given to the analysis of calculations referring to Scopes 1 and 3; we will only analyze Scope 2 emissions through the market-based approach, to highlight the importance and benefits of purchasing clean energy.

Total Emissions by Category

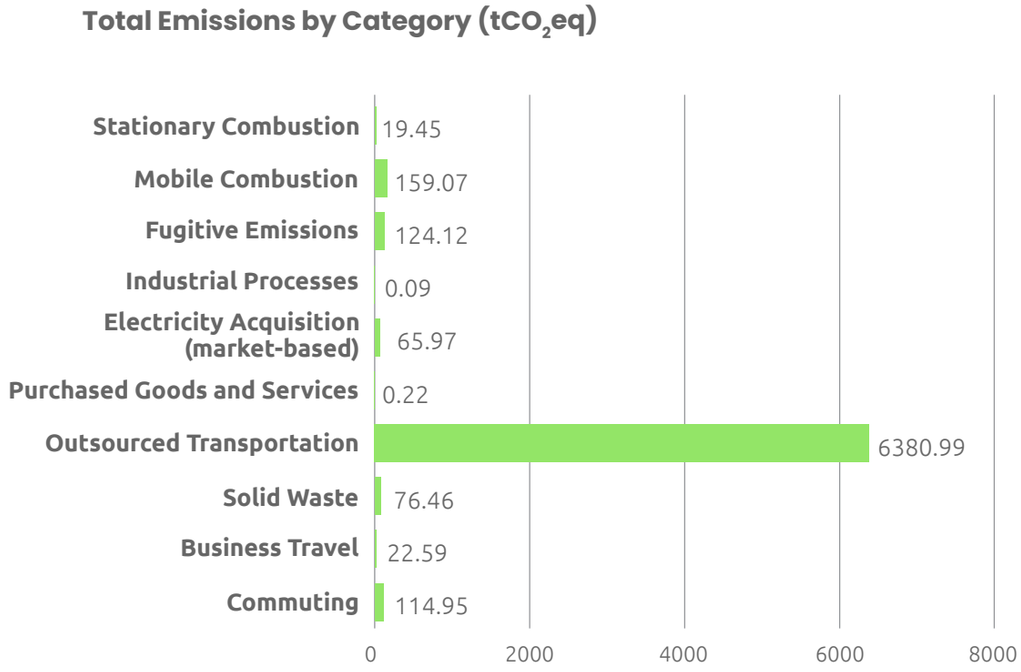
The following tables and graphs show the results of the Sabará Group's GHG emissions, which were accounted for using the market-based methodology for Scope 2. It is worth noting that the company chose to calculate the emissions for this scope by considering the total energy acquisition, highlighting both consumption and loss of electricity during transmission and distribution.

Total Emissions by Category – Base Year 2021

	CO2 (T)	CH4 (T)	N2O (T)	HFCS (T)	TOTAL EMISSION (TCO2EQ)
Scope 1					
Stationary combustion	19.45	-	-	-	19.45
Mobile combustion	152.63	0.04	0.02		159.07
Fugitive emissions	0.18	-	-		124.12
Industrial processes	0.08	-	-		0.08
Scope 2					
Electricity acquisition	65.97	-	-		65.97
Scope 3					
Purchased goods and services	0.22	-	-		0.22
Outsourced transportation	6,278.79	0.43	0.34		6,380.99
Solid waste	0.03	2.53	0.02		76.46
Business travel	22.59	-	-		22.59
Commuting	110.41	0.02	0.02		114.95
Total Emission (tCO_2eq)					**6,963.88**

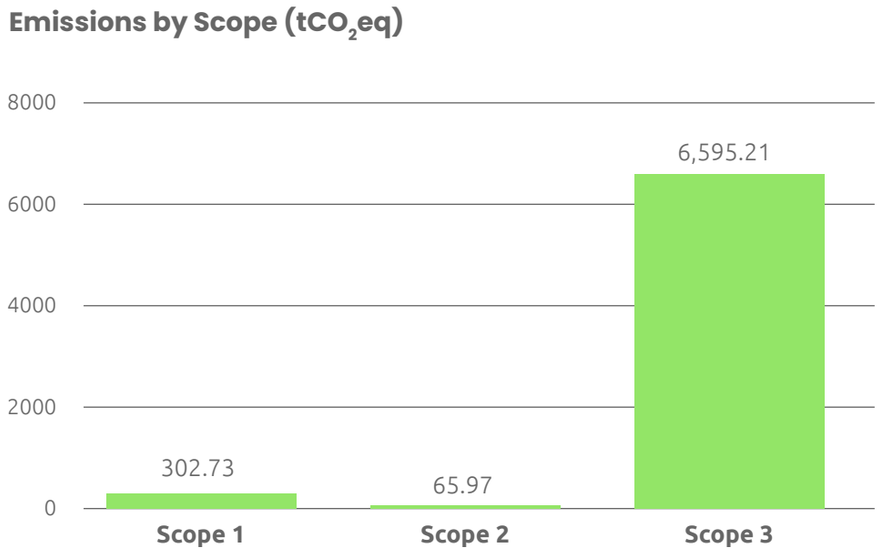
Total Emissions by Category (tCO_2eq)

The following chart shows all the emission categories identified in 2021 together with a comparison between their respective emissions. With the acquisition of wind energy and consequently the market-based approach, Scope 2 accounted for less emissions, and the Electricity Acquisition category ceased to be the company's second largest emission source. This position was taken by Mobile Combustion, an extremely important category for the Sabará Group, which, through Global Service, has a significant fleet of vehicles that serves several Brazilian states. The first place is taken by the Outsourced Transportation category.



Emissions by Scope (tCO_2eq)

Below is the graphical representation of the amount of GHG emissions per scope. We can see that Scope 3 stands out; it is the Sabará Group's largest emitter of Greenhouse Gases in 2021.



Scope 1

The highest emissions related to this scope occurred in the Mobile Combustion category, due to the burning of fuels by the Sabará Group's permanent fleet. The second largest emissions come from the Fugitive Emissions category and are related to the recharging of fire extinguishers and refrigerant gases in equipment such as air conditioners and chillers. Third place is occupied by the Stationary Combustion category.

In 2021, an unexpected leak of R134a – a gas with a high potential for destroying the ozone layer – in a chiller at the Santa Bárbara d'Oeste (SBO) facility also contributed to an increase in emissions in the Fugitive Emissions category by 274%. In general terms, the results of Scope 1 emissions grew due to the expansion of production at the Sabará Group factories and the increase in the area covered by Global Service, which currently serves more than 750 municipalities.

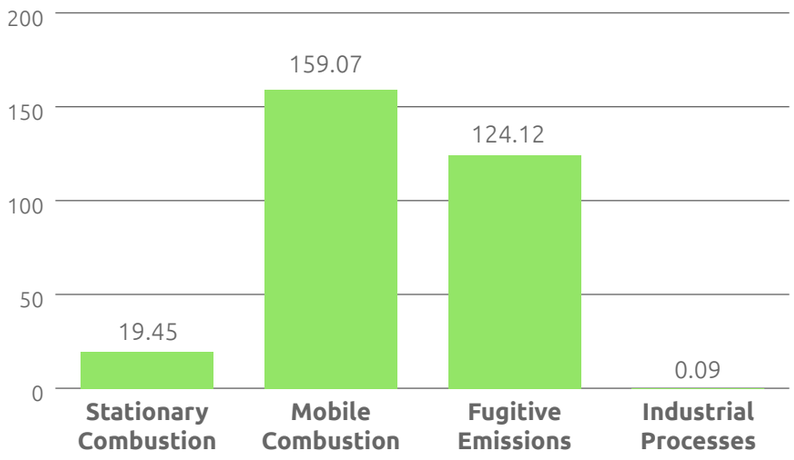
Despite the increase in the number of locations served by Global Service – thus generating greater fuel burning – and the improvement in the data reporting from these vehicles, the reduction of emissions from this scope – which was expected – did not happen due to the R134a gas leak. To keep the incident from happening again, preventive maintenance is being carried out more frequently on the equipment. With this measure, combined with the joint effort to raise awareness about the use of biofuels in the fleet, it is expected that Scope 1 emissions will significantly decrease in years to come.

As a way of offsetting Scopes 1 and 2 emissions, the Sabará Group invested in purchasing carbon credits. Each credit is equivalent to one ton of CO_2-eq, which further reinforces the company's commitment to reducing and mitigating its emissions.

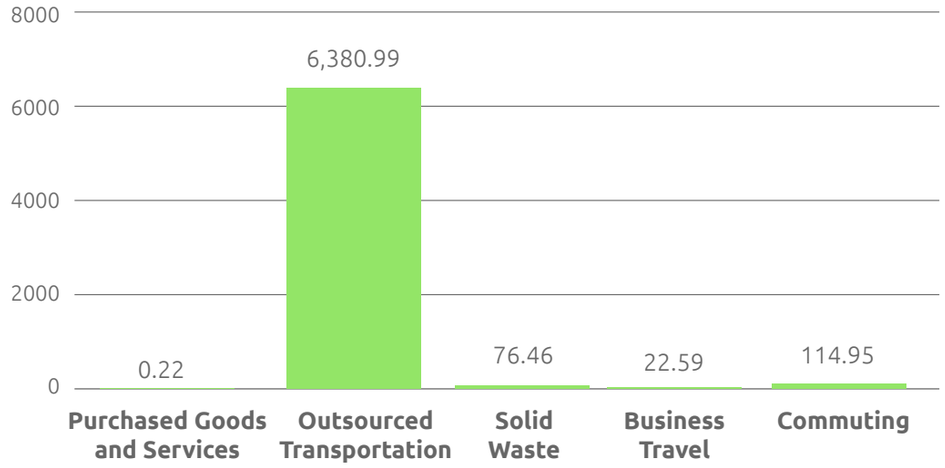
Scope 3

As previously shown, the category with the most significant amount of Scope 3 emissions is Outsourced Transportation, due to the improvement in data reporting, the increase in sales, and consequently the need to transport the company's raw materials and products. The emissions accounted for in this category only refer to upstream transportation, for which the company is responsible. In order to reduce the amount of GHG emitted, in 2021 a multimodal transportation contract was signed.

Scope 1 Emissions (tCO_2eq)



Scope 3 Emissions (tCO_2eq)



Emissions by type of gas

In addition to total emissions, emissions by category, and by scope, emissions by type of Greenhouse Gases were also accounted for. Among the identified GHGs are CO_2 (carbon dioxide), CH_4 (methane), N_2O (nitrous oxide) and HFCs (hydrofluorocarbons). After setting them apart, they were converted into CO_2-eq (carbon dioxide equivalent) based on their global warming potentials. The table below presents each one's contribution and the corresponding conversions into tCO_2eq (tons of CO_2 equivalent).

Contribution per Gas

GAS	TGEE	TCO2EQ	PERCENTAGE
CO_2*	6,650.33	6,650.33	95.49%
CH_4	3.02	84.68	1.22%
N_2O	0.40	104.94	1.51%
HFCs	0.10	123.95	1.78%

* Scope 2 measured by the market-based methodology.

Biogenic CO_2 is the carbon dioxide that is emitted through the burning of biofuels, such as biodiesel blended with commercial diesel or ethanol combined with gasoline. This type of CO_2 is absorbed by the plant itself during its growth process; therefore, even though the GHG Protocol and the IPCC recommend that these emissions be reported, they are considered neutral. CH_4 and N_2O emissions from these emission sources were taken into account as they were not previously absorbed.

Regarding the Sabará Group, the categories that were responsible for the emission of biogenic CO_2 plus their contributions are presented in the table below:

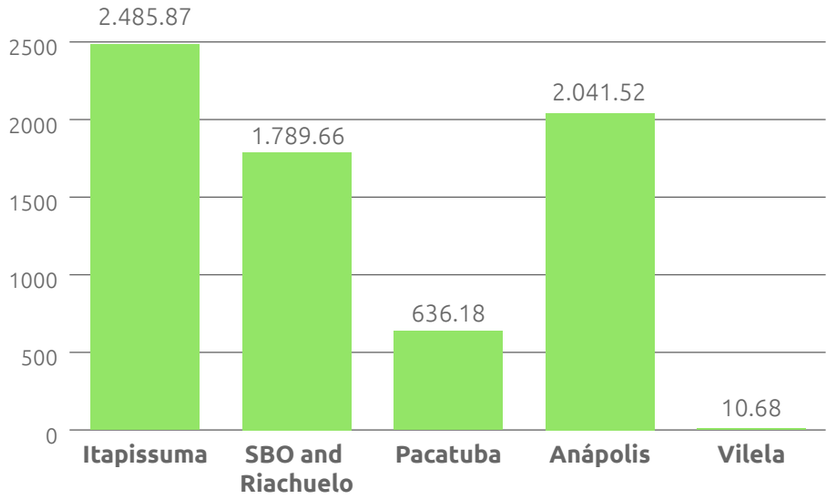
Categories that were responsible for the emission of biogenic CO_2 and their contributions

CATEGORY	BIOGENIC TCO2
Stationary Combustion	0.35
Mobile Combustion	52.51
Fugitive Emissions	0.00
Industrial Processes	0.00
Electricity Acquisition	0.00
Purchased Goods and Services	0.06
Outsourced Transportation	730.47
Solid Waste	5.21
Business Travel	0.01
Commuting	37.50
Total:	**826.11**

Emissions per Facility (tCO_2eq)

In addition to observing the Sabará Group's GHG emissions as a whole, it is important to pay attention to the emissions of the company's industrial facilities in order to develop individual objectives and action plans according to each one's profile. The chart below shows the total emissions per facility in tCO_2eq; the table shows the emissions of each type of GHG in relation to the facilities.

Emissions per Facility (tCO_2eq)



Emissions of each type of GHG in relation to the facilities

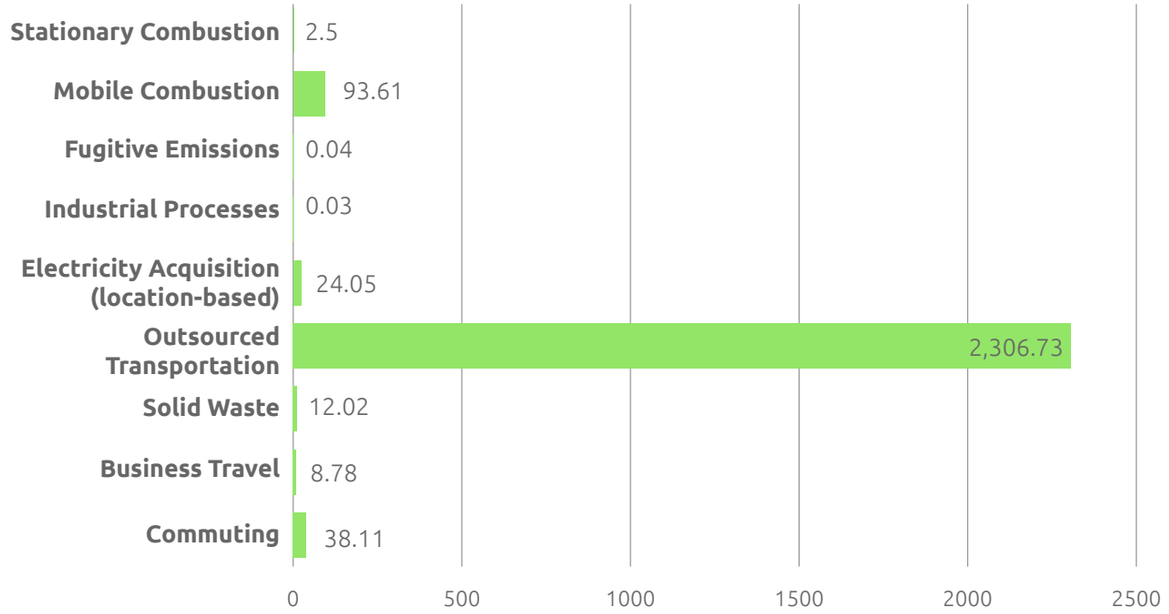
FACILITY	TCO2*	TCH4	TN2O	THFCS	TCO2EQ
Itapissuma	2,431.82	0.58	0.14	-	2,485.88
SBO and Riachuelo	1,601.45	1.27	0.11	0.10	1,789.65
Pacatuba	623.58	0.14	0.03	-	636.16
Anápolis	1,982.85	1.04	0.11	-	2,041.51
Vilela	10.62	-	-	-	10.68
Total	**6,650.33**	**3.02**	**0.40**	**0.10**	**6,963.88**

*Scope 2 was calculated through the market-based methodology.

In the following charts and tables, information regarding the emissions of each facility will be presented separately, based on the market-based approach and considering the categories by scope. It is important to point out that the SBO facility is the only one to possess the I-REC certification as a source of clean energy; the results of all others were calculated through the SIN.

Emissions per Facility
Itapissuma

Emissions per Facility – Itapissuma (tCO_2eq)



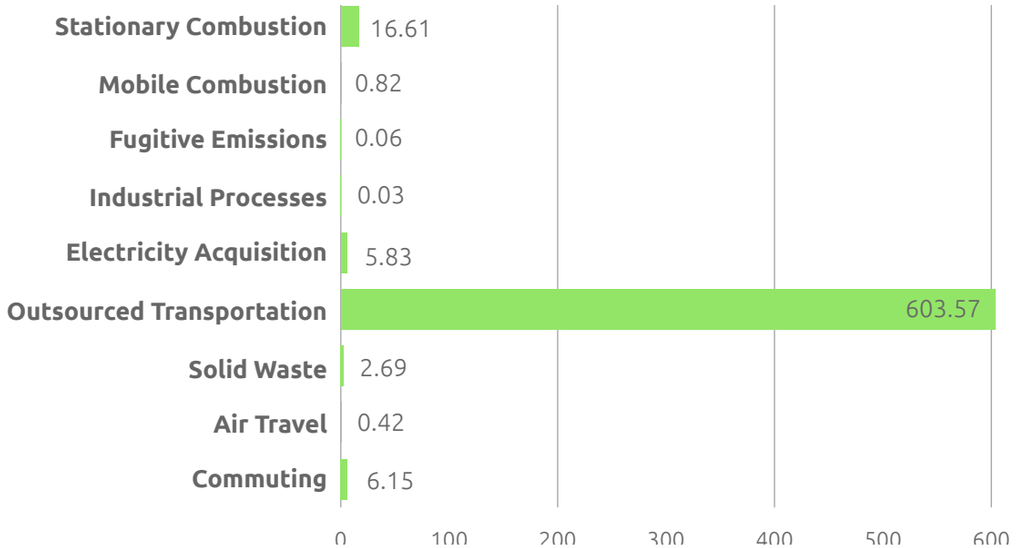
The Itapissuma facility serves most of the North and Northeast regions of the country, which explains why emissions from the Outsourced Transportation category are so representative.

Emissions per Facility – Itapissuma – Base Year 2021

	CO2 (T)	CH4 (T)	N2O (T)	HFCS (T)	TOTAL EMISSION (TCO2EQ)
Scope 1					
Stationary Combustion	2.50	-	-	-	2.50
Mobile Combustion	89.72	0.02	0.01	-	93.61
Fugitive Emissions	0.04	-	-	-	0.04
Industrial Processes	0.03	-	-	-	0.03
Scope 2					
Electricity Acquisition	24.05	-	-	-	24.05
Scope 3					
Outsourced Transportation	2.269.74	0.16	0.12	-	2,306.73
Solid Waste	0.03	0.40	0.003	-	12.02
Air Travel	8.78	-	-	-	8.78
Commuting	36.94	0.004	0.004	-	38.11
Total Emission (tCO_2eq)	**2.431.83**	**0.58**	**0.14**	**-**	**2,485.88**

Emissions per Facility
Pacatuba

Emissions per Facility – Pacatuba (tCO_2eq)



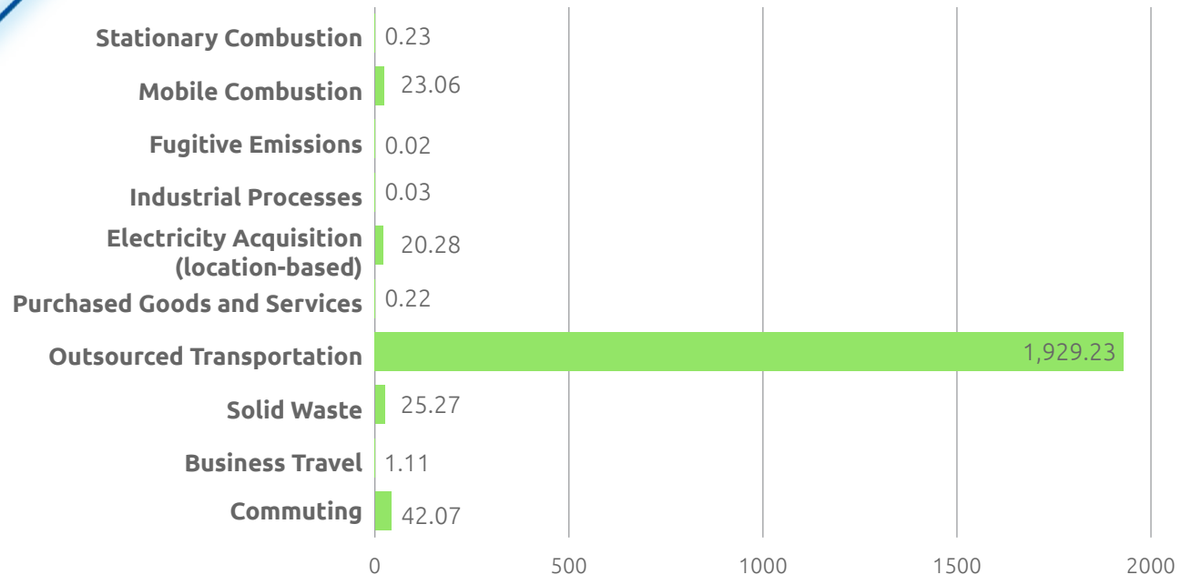
Pacatuba serves the Northeast region with products from Itapissuma. The facility operates with a liquefied petroleum gas (LPG)-based burner. Despite playing a significant part in the facility's emissions, the volume of used LPG is considered low.

Emissions per Facility – Pacatuba – Base Year 2021

	CO2 (T)	CH4 (T)	N2O (T)	HFCS (T)	TOTAL EMISSION (TCO2EQ)
Scope 1					
Stationary Combustion	16.61	-	-	-	16.61
Mobile Combustion	0.82	-	-	-	0.82
Fugitive Emissions	0.06	-	-	-	0.06
Industrial Processes	0.03	-	-	-	0.03
Scope 2					
Electricity Acquisition	5.83	-	-	-	5.83
Scope 3					
Outsourced Transportation	593.94	0.04	0.03	-	603.57
Solid Waste	-	0.10	-	-	2.69
Air Travel	0.42	-	-	-	0.42
Commuting	5.89	-	0.001	-	6.15
Total Emission (tCO_2eq)	**623.58**	**0.14**	**0.03**	**-**	**636.16**

Emissions per Facility
Anápolis

Emissions per Facility – Anápolis (tCO_2eq)

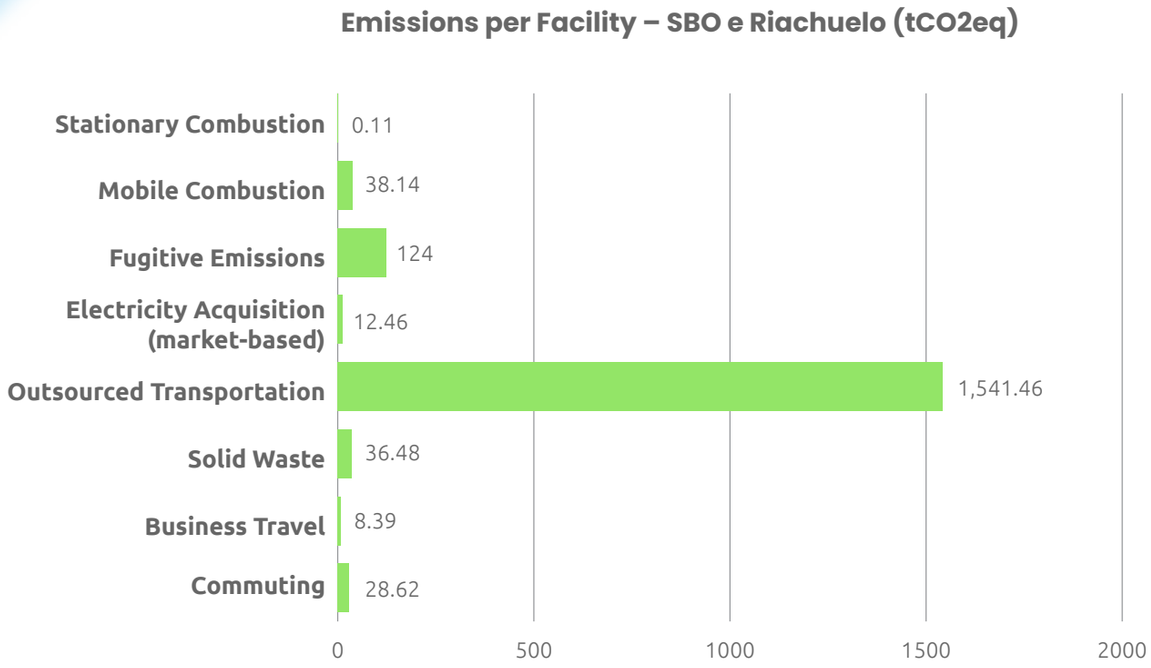


The Anápolis facility is responsible for supplying the Midwest and South-east parts of the country; this is why the Outsourced Transportation category has the most significant result in emissions. Additionally, access to the region is only possible by road.

Emissions per Facility – Anápolis – Base Year 2021

	CO2 (T)	CH4 (T)	N2O (T)	HFCS (T)	TOTAL EMISSION (TCO2EQ)
Scope 1					
Stationary Combustion	0.23	-	-	-	0.23
Mobile Combustion	22.10	0.01	0.003	-	23.06
Fugitive Emissions	0.02	-	-	-	0.02
Industrial Processes	0.03	-	-	-	0.03
Scope 2					
Electricity Acquisition	20.28	-	-	-	20.28
Scope 3					
Purchased Goods and Services	0.22	-	-	-	0.22
Outsourced Transportation	1,898.26	0.13	0.10	-	1,929.23
Solid Waste	-	0.89	0.001	-	25.27
Air Travel	1.11	-	-	-	1.11
Commuting	40.61	0.01	0.01	-	42.07
Total Emission (tCO_2eq)	**1,982.85**	**1.04**	**0.11**	**-**	**2,041.51**

Emissions per Facility
SBO e Riachuelo

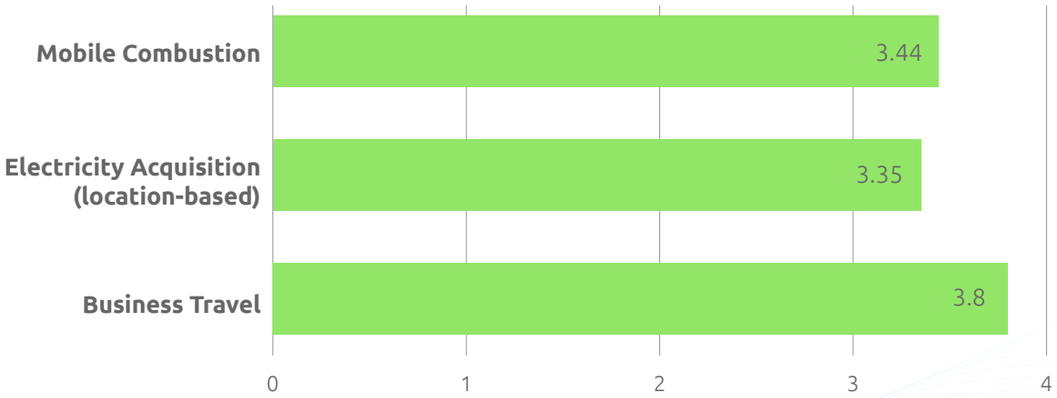


Emissions per Facility – SBO and Riachuelo – Base Year 2021 – Purchase

	CO2 (T)	CH4 (T)	N2O (T)	HFCS (T)	TOTAL EMISSION (TCO2EQ)
Scope 1					
Stationary Combustion	0.11	-	-	-	0.11
Mobile Combustion	36.61	0.02	0.004	-	38.14
Fugitive Emissions	0.05	-	-	0.10	124.00
Scope 2*					
Electricity Acquisition	12.46	-	-	-	12.46
Scope 3					
Outsourced Transportation	1,516.84	0.10	0.08	-	1,541.46
Solid Waste	-	1.14	0.02	-	36.48
Air Travel	8.39	-	-	-	8.39
Commuting	26.98	0.01	0.005	-	28.62
Total Emission (tCO_2eq)	**1,601.45**	**1.27**	**0.11**	**0.10**	**1,789.65**

Emissions per Facility
Vilela

Emissions per Facility - Vilela (tCO_2eq)



As the Group's corporate office, the Vilela facility will see an even greater increase in emissions related to Business Travel in the coming years, as the numbers in this category are gradually recovering from a reduction between 2020 and 2021 due to the global Covid-19 pandemic.

Emissions per Facility – Vilela – Base Year 2021

	CO2 (T)	CH4 (T)	N2O (T)	HFCS (T)	TOTAL EMISSION (TCO2EQ)
Scope 1					
Mobile Combustion	3.39	0.002	-	-	3.44
Scope 2					
Electricity Acquisition	3.35	-	-	-	3.35
Scope 3					
Air Travel	3.89	-	-	-	3.89
Total Emission (tCO_2eq)	**10.62**	**0.002**	**-**	**-**	**10.68**

EMISSIONS INDICATOR

An indicator of emissions per ton produced was created to verify the evolution of the GHG emitted by the Sabará Group. Although the reduction target comprises net (total) emissions, emissions per ton produced are also analyzed so that performance can be fully understood.

The indicator works as an essential management tool so that the organization can monitor and evaluate its activities. It allows the company to track the achievement of goals, identify progress, promote quality improvements, correct problems, create comparisons with market competitors, detect needs for change, and ensure information security and compliance with possible requests by environmental agencies.

The table below presents the data for the indicator considering the market-based approach for Scope 2.

Indicator of emissions per ton produced (market-based approach for Scope 2) – 2021:

INDICATOR	ANÁPOLIS	ITAPISSUMA	PACATUBA	SBO AND RIACHUELO	TOTAL
Total Emission (tCO_2eq)	2,041.51	2,485.88	636.16	1,789.65	**6,963.88**
Total Units Produced (t)*	14.011	10.559	653	11.456	**36,680**
Emission indicator per production (Scopes 1 and 2)	0.003	0.011	0.036	0.015	**0.010**
Emission indicator per production (Scopes 1. 2. and 3)	0.146	0.235	0.974	0.156	**0.190**

* The total value of emissions also considers office emissions.

COMPARATIVE OF EMISSIONS

With the objective of continuously monitoring the environmental impact caused by the GHG emissions from the Sabará Group's operations and to improve climate management, a comparison was made among the company's Scopes 1, 2, and 3 emissions from the base years of 2019, 2020, and 2021.

A series of comparative tables and charts will be presented below, both by category of emissions and by scopes and indicators. The purpose of this comparison is to observe the company's evolution by providing a complete and robust emissions history.

It is important to note that emissions from base years 2019 and 2020 were calculated according to the AR4's GWP, while the base year 2021 emissions were calculated using the AR5's GWP. The entire comparison was performed considering Scope 2 emissions through the market-based approach, so that it was possible to draw an analysis over a period of three years.

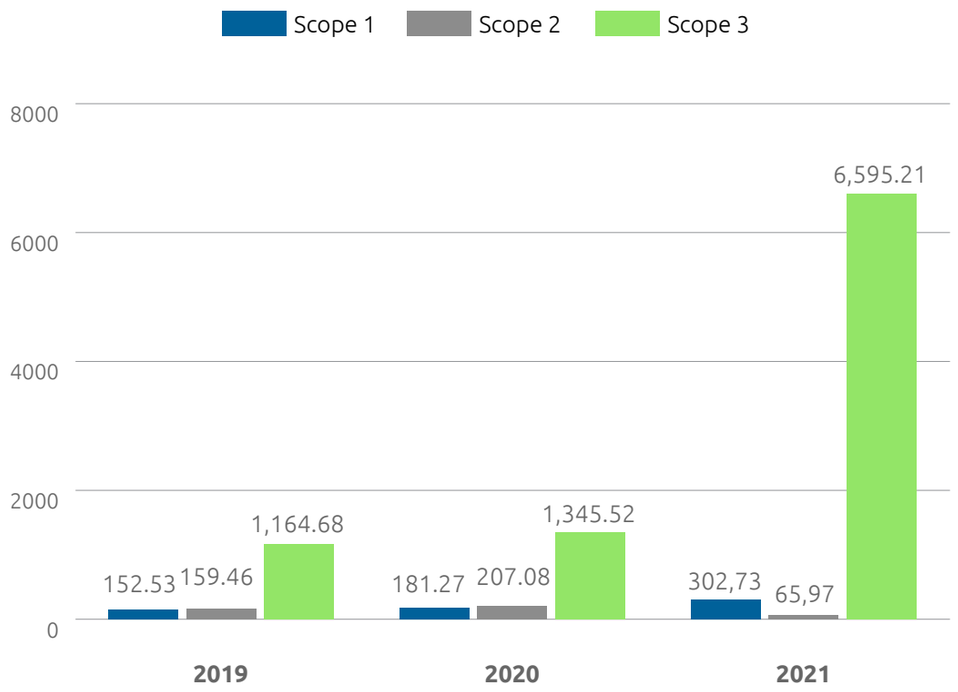
History of Total Emissions (tCO_2eq)

Observing the company's history through these years, it is possible to say that in general terms the 2021 emissions saw reductions corresponding to the target and increases if we consider Scope 3. The reasons for this will be better discussed in the following pages.

The following chart shows that the company's Scopes 1 and 3 emissions have grown over the past year. This result is due not only to the emissions of GHG but mainly to the leakage of the SBO chiller (Scope 1) and the improvement in measurement control by the Sabará Group. In 2021, an internal, specific system was implemented for the monthly monitoring of the company's indicators, which includes attachment of evidence, verification of numbers, and an approval flow. Data began to be obtained with minute precision and calculated with greater accuracy.

Despite the R134a leak, Scope 1 together with Scope 2 saw a 5% reduction. Although being higher in previous years, around 80% of these emissions (which correspond to the energy purchased at SBO) came from renewable sources, encouraged by the free energy market.

History of Total Emissions (tCO_2eq) – Comparison between 2019, 2020, and 2021



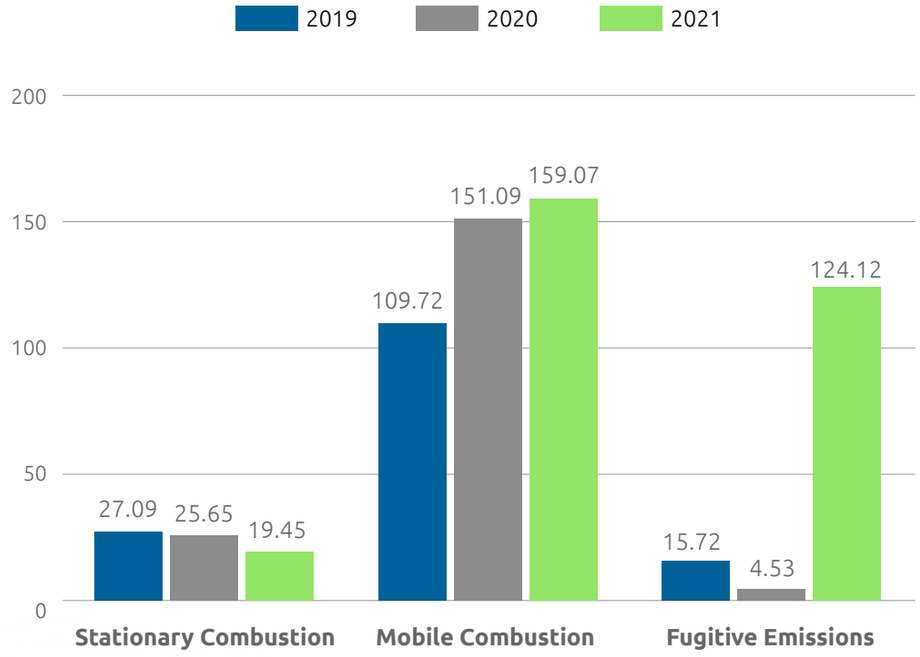
Emissions Comparison Scope 1

The biggest difference seen in Scope 1 occurred in the Fugitive Emissions category, mainly due to the gas recharge in the SBO facility's chiller. The increase was 274% compared to 2020.

There was an increase of 5.28% compared to 2020 in the Mobile Combustion category caused by the improvement in data control and the increase in the number of serviced cities. The reduction in the Stationary Combustion category was 24.18%; this decrease was possible thanks to the occurrence of fewer power outages, which saved fuel in the generators.

In this sense, the Awareness Program for the Use of Biofuels has been contributing to the goal of expanding the reduction in emissions, which already saw a 142% increase in the use of ethanol and a 4% reduction in the use of gasoline.

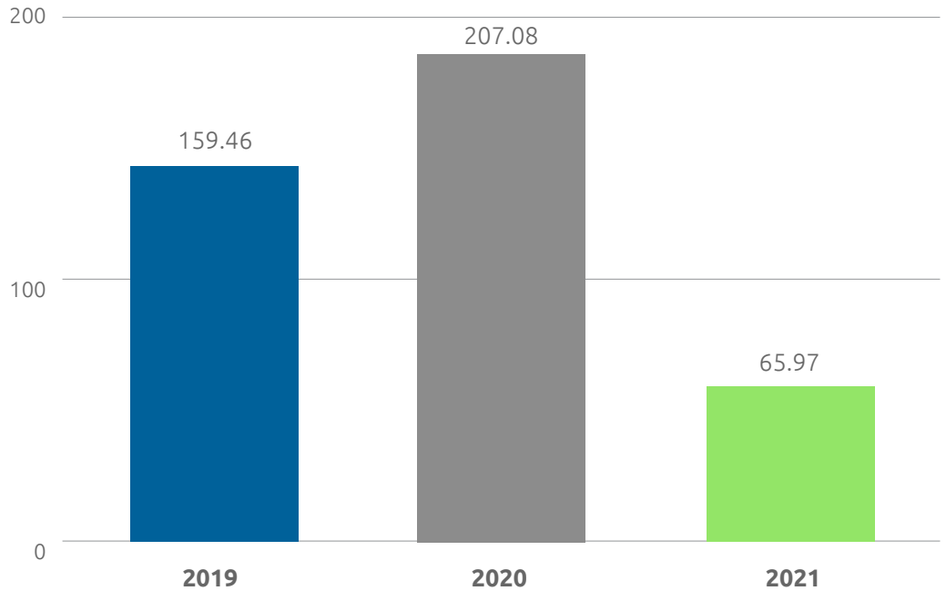
Comparison of Emissions – Scope 1



Emissions Comparison Scope 2

Due to the purchase of the I-REC in 2021 there was a large difference between the total Scope 2 emissions compared to previous years – which, despite the use of the market-based approach, were calculated through the SIN. After acquiring the certification, the Sabará Group ensured that the consumed energy came from clean sources, such as wind farms. Before that, emissions were not calculated through the market-based methodology because it was not possible to verify the energy source.

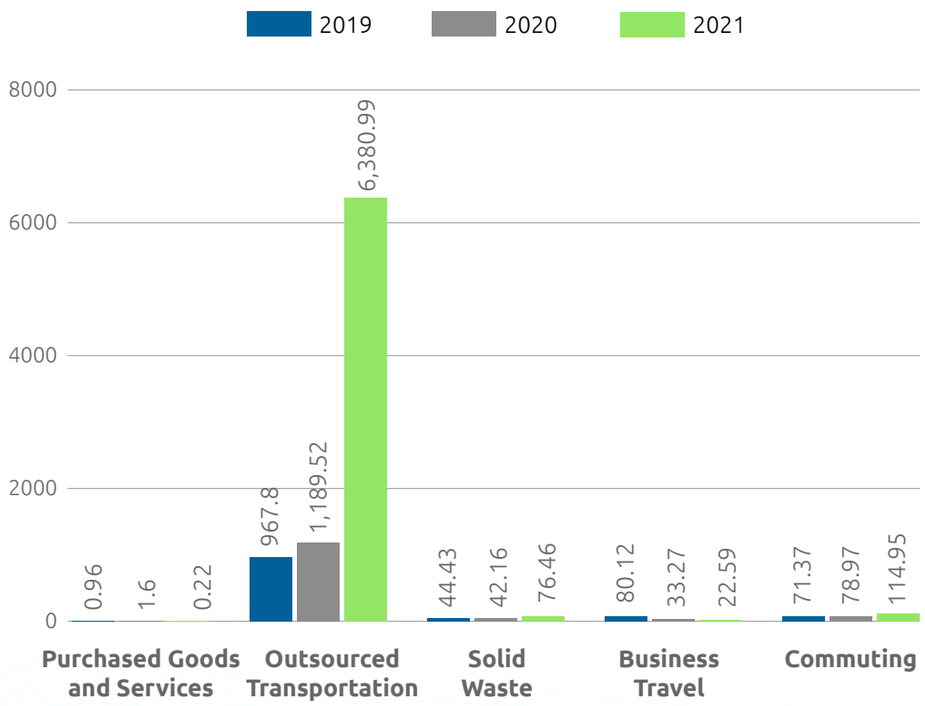
Emissions Comparison – Scope 2



Emissions Comparison Scope 3

In Scope 3, the greatest percentage difference was identified in the Outsourced Transportation category. Between 2020 and 2021 there was a 436.43% increase caused by the growth in production, which required more transportation. The Solid Waste and Commuting categories respectively showed an increase of 81.35% and 45.57% compared to 2020. This was caused by the return of employees to on-site work, as they were mostly working from home due to the Covid-19 pandemic, in addition to increased accuracy in the monthly reporting of industrial waste.

Comparison of Emissions – Scope 3



COMPARISON OF INDICATORS

2019

INDICATOR	ANÁPOLIS	ITAPISSUMA	PACATUBA	SBO	TOTAL
Total Emission (tCO_2eq)	339.37	680.50	137.37	263.55	1,476.67
Total Produced Units (t)	10,995	13,613	558	4,120	29,286
Emission indicator per production (Scopes 1 and 2)	0.002	0.007	0.047	0.041	0.011
Emission indicator per production (Scopes 1, 2, and 3)	0.031	0.050	0.246	0.064	0.050

2020

INDICATOR	ANÁPOLIS	ITAPISSUMA	PACATUBA	SBO	TOTAL
Total Emission (tCO_2eq)	354.96	924.97	125.87	291.51	1,733.87
Total Produced Units (t)	13,037	11,312	510.00	6,514	31,373
Emission indicator per production (Scopes 1 and 2)	0.002	0.010	0.040	0.030	0.012
Emission indicator per production (Scopes 1, 2, and 3)	0.027	0.082	0.247	0.045	0.055

2021

INDICATOR	ANÁPOLIS	ITAPISSUMA	PACATUBA	SBO AND RIACHUELO	TOTAL
Total Emission (tCO_2eq)	2,041.52	2,485.87	636.18	1,789.65	6,963.88
Total Produced Units (t)	14,011	10,559	653	11,456	36,680
Emission indicator per production (Scopes 1 and 2)	0.003	0.011	0.036	0.015	0.098
Emission indicator per production (Scopes 1, 2, and 3)	0.146	0.235	0.974	0.156	0.190

UNCERTAINTY ANALYSIS

As suggested by the ISO 14064-1 standard, the uncertainty assessment of a greenhouse gas emissions inventory should be based on the guidelines presented by the Brazilian GHG Protocol Program. Uncertainties associated with GHG emissions can be categorized as scientific uncertainties and estimation uncertainties, the latter being the result of lack of knowledge about GHG emission processes. An important example is the scientific uncertainty that exists regarding the Global Warming Potential (GWP) values of gases.

As the examination and quantification of these uncertainties are extremely complex and problematic, the GHG Protocol does not recommend their inclusion in the scope of analysis of corporate inventories. For the assessment of uncertainties in this inventory activity data were divided into the following categories:

- Uncertainty in relation to the characterization of the surveyed items: it is possible that the composition of an emission source is incorrectly characterized due to lack of information from suppliers or another source base.

- Uncertainty in relation to the quantification of the surveyed items: it is possible that the base data for the calculations present inconsistencies, for example, due to a measure unit typing error by a collaborator.

- Uncertainties associated with the calculation tables: as the Sabará Group's inventory was composed by the compilation of several items, typing errors in some of them may occur.

- Discrepancy between estimates and reality: some emission sources are based on estimated data and if there is a large difference between the estimates and reality there may be an impact on emissions.

The emission factor of the employed sources has a strong impact on the quantification of emitted gases. If more suppliers develop and disclose their inventories, it is possible that emissions related to Scope 3 will change considerably.

The work of GSS Carbono e Bioinovação and the Sabará Group to prepare this emissions inventory consisted of creating a quality process for information with the objective of reducing as much as possible previously identified uncertainties through a collective effort to acquire and analyze the data. All adopted emission factors come from safe and credible sources.

MITIGATION OF IMPACT

Mitigation actions are extremely important in a company's continuous improvement process. Through them, organizations can demonstrate leadership on global environmental issues, save financial resources, meet the expectations of their stakeholders, and also stimulate a local low-carbon economy. Bearing this in mind, the Sabará Group has developed a series of mitigation projects to handle the impact of its emissions.

Regarding Scope 1, in 2021 the company carried out an awareness campaign on the use of fuels, with the aim of increasing the use of biofuels to replace fossil fuels. The result of this activity could already be seen in that same year: the Sabará Group saw a 4% reduction in the use of fossil fuel – which represents the company's highest direct source of emissions – and a 142% increase in the use of biofuel. Due to the recurring unavailability of ethanol at stations in the North and Northeast regions (large and important areas where the company operates), the complete replacement of fuel at the operations is not currently viable. Despite this, the implementation of a biofuel use policy is already underway at the company.

Regarding Scope 2, the actions developed by the Sabará Group aim at transforming the company's energy matrix into one that relies on clean sources. In 2022, the company acquired the I-REC certification, thus ensuring that energy comes from wind farms. As a result of this acquisition, consideration of the market-based calculation method was resumed. The possibilities of entering the free energy market and installing solar panels at the other facilities are also being considered for the near future.

Regarding the mitigation actions related to Scope 3 – as they fully originate from outsourced operations – the Sabará Group works on getting closer to its suppliers to encourage them and generate awareness so they can develop strategies for sustainability and impact reduction. In 2021, the company also changed carriers and adopted a multimodal transportation system that includes road, railway, and cabotage.

All these plans will continue to be developed while others are being created. The Sabará Group will continue to seek new actions to keep reducing its own emissions. Below we list some examples of mitigation projects that can be put into practice:

AWARENESS, TAKE IT FORWARD

- Raise awareness on the subject in the company;
- Encourage employees to bring new ideas;
- Create a day when employees can take offsetting actions, such as planting trees;
- Make room for the community and local players to get to know the company's projects;
- Consciously disclose your actions.

SUPPLY CHAIN SELECTION

- Raise awareness on the subject among your main suppliers;
- Encourage the supplier to disclose the emissions inventory of the service that will be provided;
- Search for suppliers that are close to the company;
- Search for suppliers that have actions in favor of the environment;
- Encourage small suppliers to understand the importance of sustainable practices for business development.

REDUCE ELECTRICITY CONSUMPTION

- Perform periodic equipment maintenance;
- Install motion sensors;
- Use LED lamps;
- Hire a specialized company to assess energy efficiency;
- Avoid dark colors indoors;
- Take advantage of sunlight (ceilings, modules, heaters).

CONSCIOUSLY AIR TRAVEL

- Check the real need for the trip;
- Search for companies that offset your flight emissions;
- Optimize your trip to avoid excess transfers.

Development of the GHG Emissions Inventory

In order to develop this Inventory of Greenhouse Gas Emissions, a team was assembled with employees from different sectors of the Sabará Group as well as specialists from GSS *Carbono* e *Bioinovação*. The latter played a fundamental role in the success of this inventory, from understanding the topic and helping us acquire information to analyzing the quality of the data, with the goal of ensuring full transparency so that the inventory was a reliable portrait of the company's reality.

GSS project team

Eng. Paulo A. Zanardi Jr.
Eng. Gabriel Chaves Barboza
Engª. Amanda Falcoski Vieira
Engª. Maria Fernanda Celli
Engª. Bruna Duffeck
Engª. Gabriella Troyan

For more information, contact us via email:

sustentabilidade@gruposabara.com

grupo-sabara

grsabara

gss CARBONO E BIOINOVAÇÃO

·G·R·U·P·O· SABARÁ

Verification Statement

Greenhouse Gas Emissions Inventory Verification

Sabará Químicos e Ingredientes S.A.
Rua Vilela, 652
Tatuapé
São Paulo
São Paulo
03314-000
Brazil

Reference No: GHGEV 766011

Within the scope of the considered limited assurance, regarding the "Inventory of Greenhouse Gas (GHG) Emissions by **Sabará Químicos e Ingredientes S.A. – Year 2021"** document, which covers the period from January 1, 2021 to December 31, 2021 and is the subject of this statement, nothing was detected by the verification team. This suggests that the Declaration of Greenhouse Gas Emissions by **Sabará Químicos e Ingredientes S.A.**, which was provided in the aforementioned document, is not materially correct within the 5% materiality threshold for the declared quantity. Additionally, within the scope's assurance, the development of the inventory and its disclosure were found to generically comply with the principles established by the 2nd edition of the Brazilian GHG Protocol Program.
The verification was carried out independently and in accordance with the ISO 14065:2013 principles and the Brazilian GHG Protocol Program (2011).

Declaration of GHG Emissions

Scope 1 emissions in metric tons of CO2 equivalent: 302.76	**302.76**
Scope 2 emissions in metric tons of CO2 equivalent: 438.36	**438.36**
Scope 3 emissions in metric tons of CO2 equivalent: 22.81	**22.81**
Total CO2 equivalent emissions in metric tons: 763.93	**763.93**

Biomass:

Total CO2 emissions in metric tons: 53.01	**53.01**

Origin of emissions: **Chemical Industry** activities.

Attesting from BSI:

Carlos Pitanga, Chief Operating Officer Assurance - Americas

...making excellence a habit.™

Originally issued on May 5, 2022.

BSI Brasil: Rua Gomes de Carvalho, 1069 - 18º andar – Cj. 183, Vila Olímpia - São Paulo - SP - 04547-004 Telefone: +55 11 2148 9600

THE INTERNATIONAL REC STANDARD

This Retirement Statement was created for

SABARA QUIMICOS E INGREDIENTES S/A

through

STATKRAFT ENERGIA DO BRASIL LTDA

attesting the retirement of

2,760

I-REC certificates, which represent 2,760 MWh of electricity that were generated from renewable sources.

This Declaration assesses the energy consumption at

Rua Juscelino Kubitschek de Oliveira, 878 – Bairro Distrito Industrial- Município Santa Barbara D'oeste CEP 13.457-190
Brazil

covering the period from

July 1, 2021 to July 8, 2021

With the purpose of:

Redemption for SABARA QUIMICOS E INGREDIENTES S/A - CNPJ : 12.884.672/0005-10

Evident

QR code verification

Scan the code on the left and enter the verification key below to verify this document

Verification code

6 6 3 8 0 1 7 6

https://evident.app/public/certificates/pt/wO2emDejJ C6XmPzYg30aTM6KUBXW6DnLVvJ uoVJ +U1M=

Certificate of Verified Carbon Unit (VCU) Retirement

Verra, in its capacity as administrator of the Verra Registry, does hereby certify that on 31 Aug 2022, 369 Verified Carbon Units (VCUs) were retired on behalf of:

Sabará Químicos e Ingredientes S/A

Project Name

VTRM Renewable Energy 2

VCU Serial Number

11090-279898196-279898564-VCS-VCU-1491-VER-BR-1-1903-01032019-30092020-0

Additional Certifications