B3 S.A. – Brasil, Bolsa, Balcão

2019 Greenhouse Gas Emissions Inventory Results

Corporate GHG Inventory - 2019
Responsible Team

Gleice Donini de Souza
Luiza Nunes Ferreira Junqueira
Fernanda Nascimento Fernandes

Ricardo Algis Zibas
Paula da Silva Carvalho
Danielle Coimbra Moreira
David Andrade

Contents

Executive Summary

The greenhouse gas (GHG) emissions inventory aims to increase the company's transparency and control over its GHG impacts, by recording and disclosing the GHG emissions released by its business activities. The inventory should be used as a basis for the company's Carbon Management practice, which will support initiatives related to opportunities for reducing emissions and enhancing processes.

Since 2009, B3 has invented its GHG emission, and as of 2010 came to be verified by third part and include the document in the Brazilian GHG Protocol. In 2020, KPMG assisted B3 in the compilation of its inventory, based on data from 2019. The results of this engagement are set out in this report and will serve as a basis to support B3's carbon management and direct its initiatives..

B3's absolute emissions in 2019 totalized **1,135.06 tCO2e for scope 1**, **2,183.22 tCO2e for scope 2** and **1,635.69 tCO2e for scope 3**. The scope 1 emission presented an increase of 369.90% regarding 2018, consequence of the increase in the amount refrigerant gases recharged in the HVAC (heating, ventilation and air conditioning) system at B3, in 2019. For scope 2 emissions, there was an increase of 2.29%, compared to the previous year, consequence of the increase of 10% in the total of employees in 2019 and, in the increase of 1.35% in the annual emission average factor of the Brazilian GRID in 2019. The indirect emission of scope 3 presented na increase of 9.32% compared to the previous year. The increase of scope 3 is consequential of the growth of respondents in employee displacement surveys and increased mileage with business trips.

B3 has been offsetting the greenhouse gas emissions it cannot reduce, there by making it "**carbon neutral**". The objectives of these initiatives include identifying, managing and reducing its environmental impact, and contributing to the global effort against climate change and the effects thereof.

Definitions and Concepts

- This inventory includes the following greenhouse gases embraced by the Kyoto protocol: CO_2, CH_4, N_2O, SF6, NF3 and HFCs and PFCs.
- The Global Warming Potential – GWP indicates the amount of heat trapped by a certain mass of gas compared to the amount of heat trapped by a similar mass of carbon dioxide, whose potential is standardized to 1 over a given time period. And is used to calculate the carbon dioxide equivalent (CO2e) of greenhouse gases, transforming them into a standard unit. In accordance with the protocol decisions, the GWP amounts were adopted in the Fourth IPCC Assessment Report – AR4. The amounts can be seen in the table below and the full list on the IPCC site:

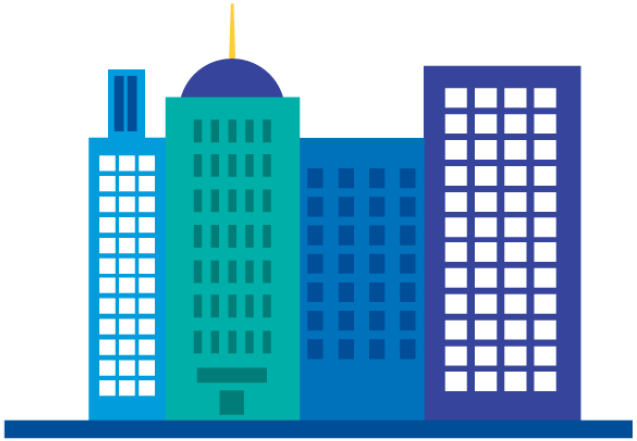
Gas	New GWP value (2013 to 2019 inventory)
CO_2	1
CH_4	25
N_2O	298
SF_6	22,800
HFCs	124 – 14,800
PFCs	7,390 – 12,200
NF_3	17,200

Methodologies used

- The methodologies, scope, calculations and assumptions used to create this inventory can be seen in the calculation spreadsheet and collection forms, accompanying this report.
- The main references used for this inventory are:
- The Greenhouse Gas Protocol - A Corporate Accounting and Reporting Standard - Revised Edition - March 2004 - WRI/WBCSD.
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Intergovernmental Panel on Climate Change).
- Programa Brasileiro do GHG Protocol - Guia para elaboração de inventários corporativos de emissões de gases de efeito estufa (GEE) – FGV, 2009.

Inventory Limits

- In order to determine the organizational limits of its inventory, the company should adopt one of the approaches presented by the GHG Protocol: equity interest and control (operational or financial).
- B3 opted for the **operational control approach**, whereby the company is responsible for the emissions from sources and activities it controls. Therefore, if B3 exercises control over a given source of emission, where it can implement operational measures, this source is considered to be an integral part of the company's organizational limit.
- This inventory embraced all companies over which the stock exchange exerts operational control. The following groups were therefore included:
  - B3 S.A
  - Banco B3.
  - Bolsa de Valores do Rio de Janeiro (BVRJ)
  - Supervisão de Mercados (BSM)
  - B3 Social
  - International Offices: London and Shanghai



Inventory Limits

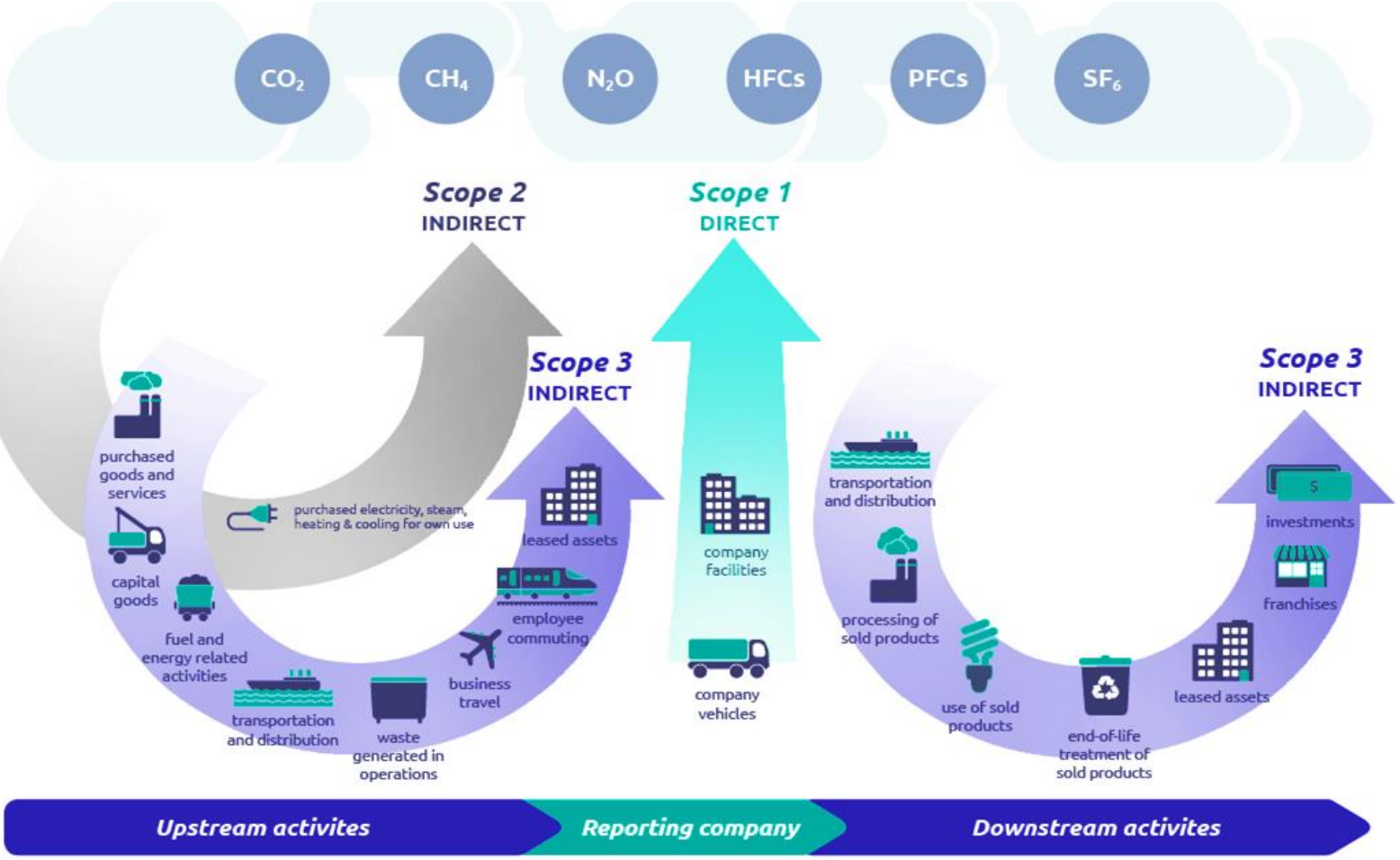
The scope concept introduced by the GHG Protocol will help companies set operational limits to be recorded. The three scopes are defined as follows:

Scope 1 - Direct GHG emissions – GHG emissions under the company's responsability and control.

Scope 2 - Indirect GHG emissions– Emissions stemming from purchased electricity or steam generated.

Scope 3 - Other indirect GHG emissions – Other indirect emissions comprise those in the company's value chain which are not controlled by B3.

Inventory Limits



Source: Corporate Value Chain (Scope 3) Accounting and Reporting Standard - Greenhouse Gas GHG Protocol

Inventory Limits

Based on the Brazilian GHG protocol program guidelines and B3 activities this inventory identified and included the following emission sources:

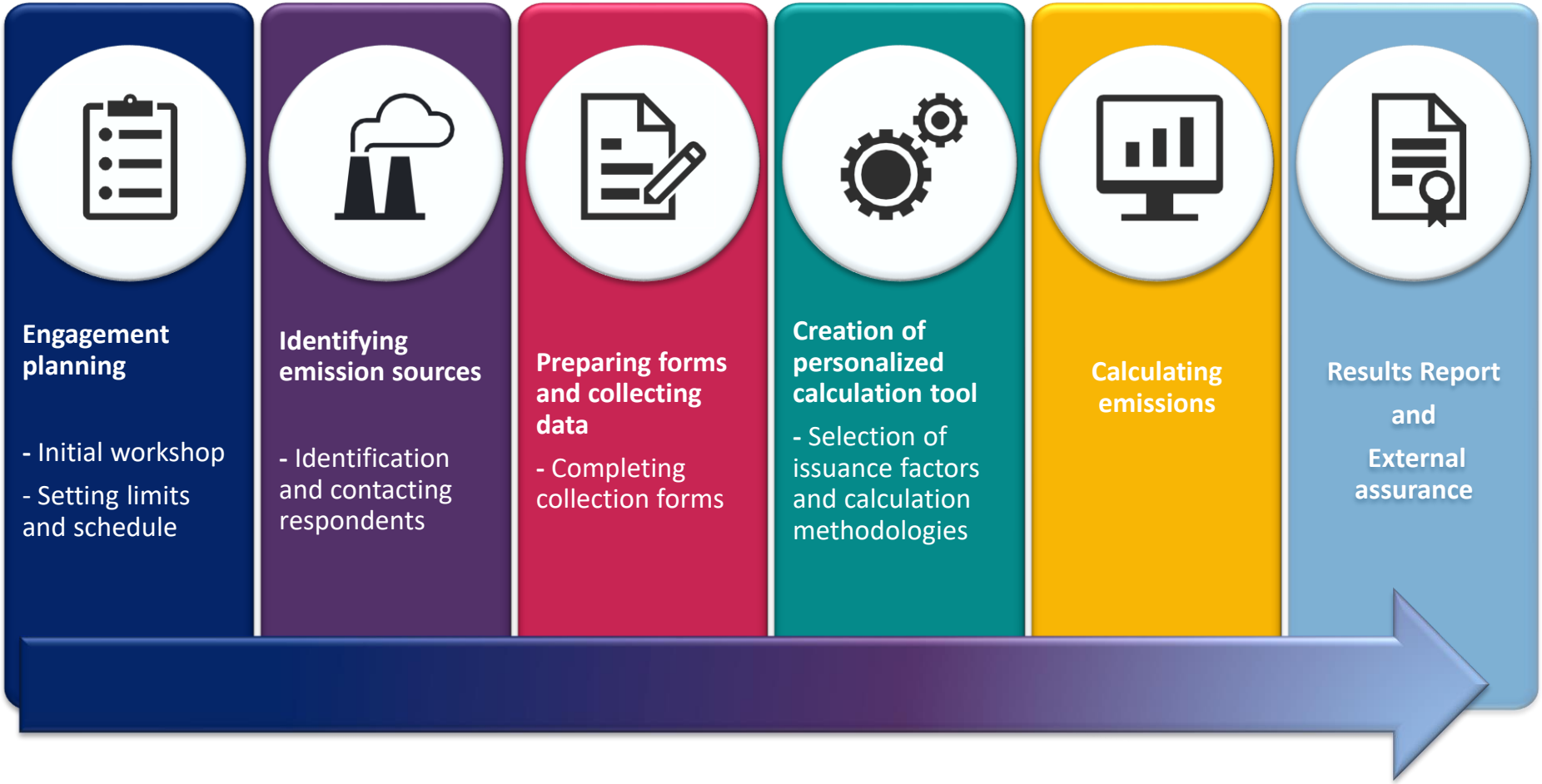
B3's Emissions Sources		
Scope 1	Stationary combustion sources	Use of fossil fuels to generate energy and cook food.
	Mobile combustion sources	Combustion of fossil fuels used in the operation of vehicles.
	Fugitive emissions	Unintentional release from sources including refrigerant systems and use of extinguishers.
Scope 2	Purchased energy	Emissions from the generation of purchased electricity, and use of fossil fuels to generate electricity.
Scope 3	Category 1 – Purchased goods and services	Combustion of fuel vehicles operated by third parties to transport documents (motorbike couriers)
	Category 5 - Waste generated in operations	Treatment of solid waste managed by third parties.
	Category 6 - Business travel	Air travel involving employees and use of taxi for business-related activities
	Category 7 - Employee commuting	Commuting
	Other emissions under Scope 3 (Fugitive)	Unintentional release from refrigerant systems controlled by third parties.

Core Changes in 2019

In 2019 the following changes occurred at B3 offices:

- Ipiranga Office: partially deactivated – Has been used in 2019 as a deposit during B3's retrofit. In 2019, this office had only water and electric energy consumption;
- Casa da Moeda: acquired as of second semester 2019. Has accounted emission regarding electric energy consumption from august 2019;
- AP Brás – B3 Social: The electric energy consumption in the first semester 2019;
- BVRJ Office: 4 new room/floors has been used as part of its structure;
- London Office: The calculation to estimate electric energy consumption was updated. The electric energy purchase of Data Center was disregarded, because its consumption refers mainly to the Data Center equipment maintenance, presenting a different profile of electricity consumption when compared with B3's Offices .

Stages of Compiling the GHG Emissions Inventory

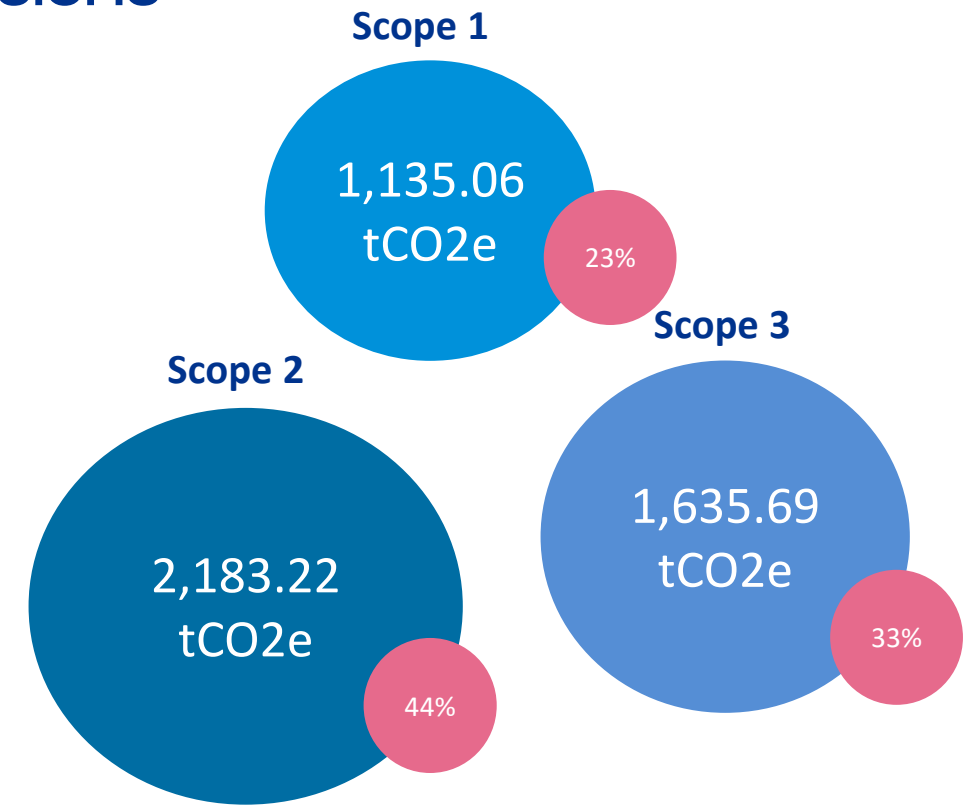


Results

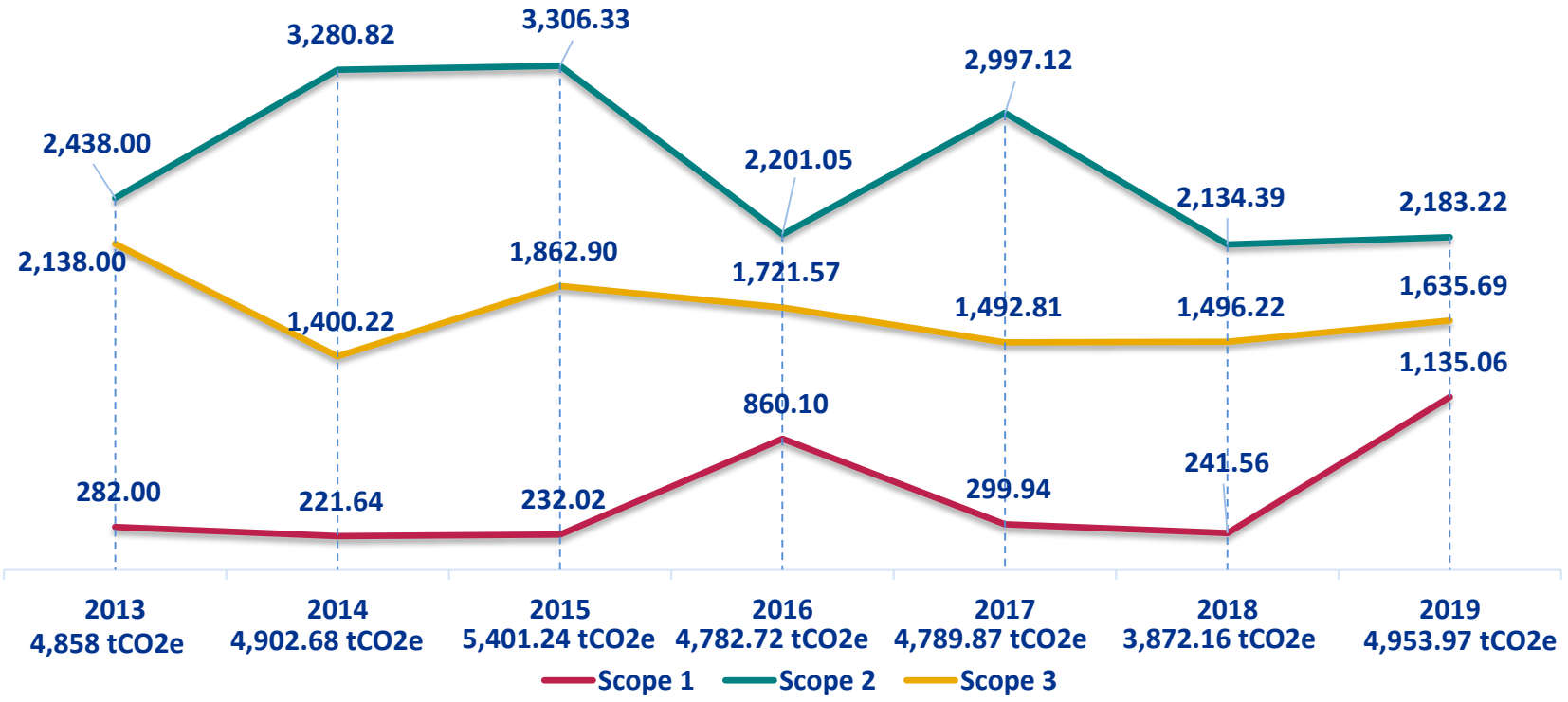
Results - Absolute Emissions

This chapter presents B3's GHG inventory results for 2019, compiled based on information collected internally and the methodologies and assumptions presented in this report.

B3's total GHG emissions for 2019 amounted to 4,953.97 tCO2e. As show in the image beside, 23% of the emissions refer to direct sources controlled by the company (scope 1). The other emissions are indirect, with 44% belonging to scope 2 and 33% to scope 3.



Results - Absolute Emissions

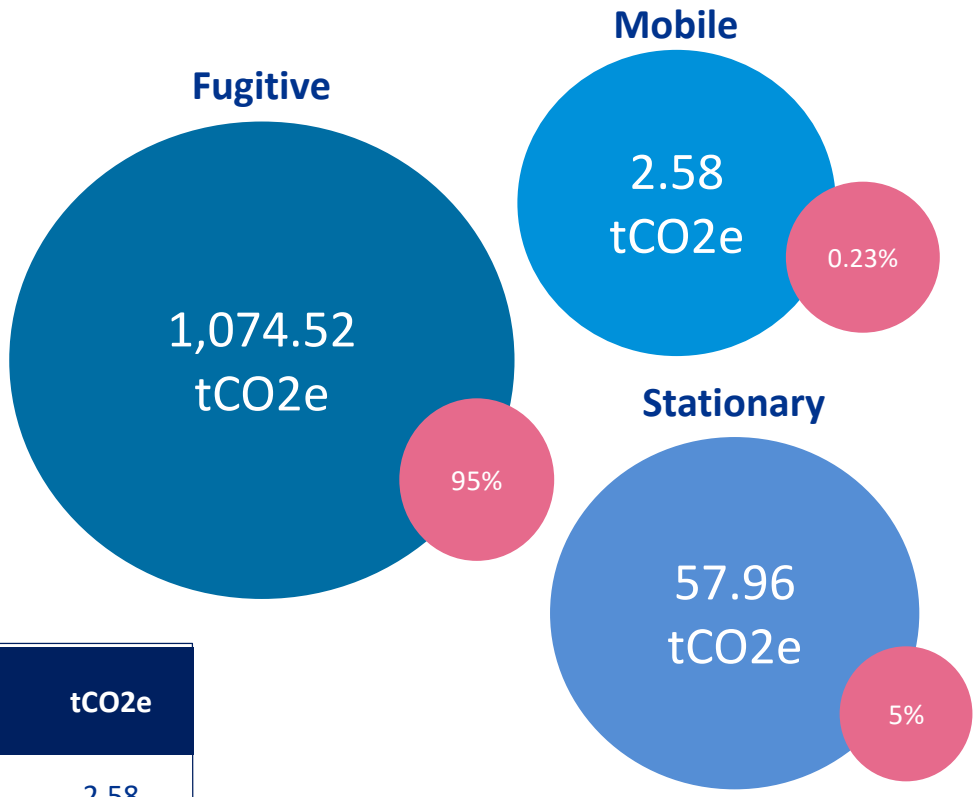


As is usual for financial and services companies, B3's direct emissions are much lower than its indirect emissions.

In 2019, B3's total emissions presented an increase of approximately 27.94% compared to B3's 2018 emissions, highlighting the scope 1 variation as the most significant factor for the increase.

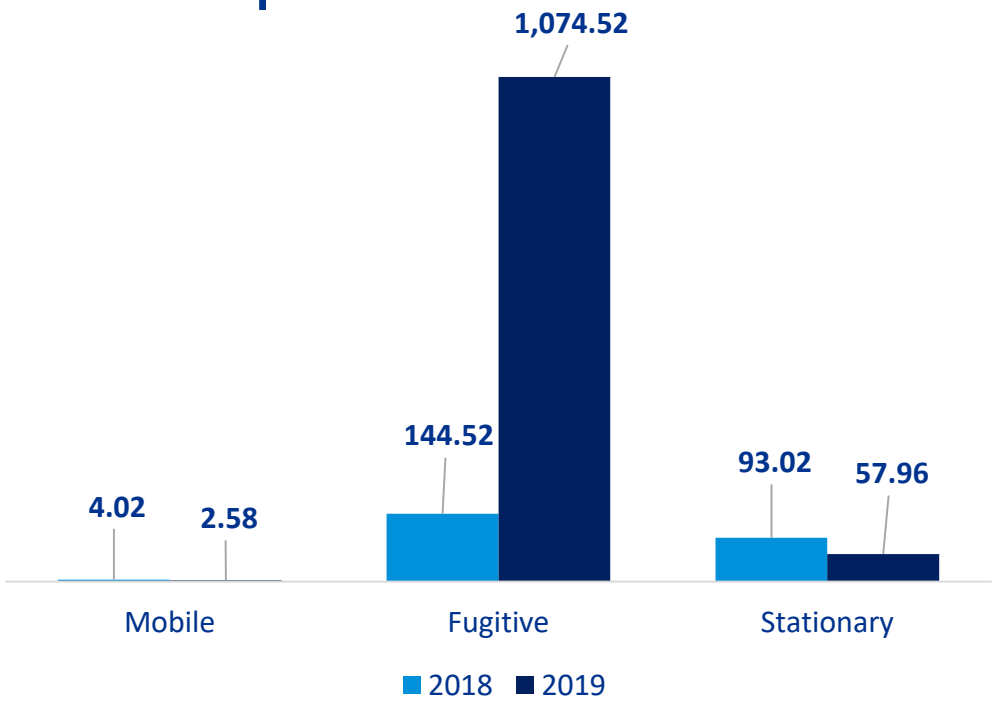
Results - Absolute Emissions Scope 1

The largest scope 1 emission source were found in fugitive sources, due to the replacement of air-conditioning gases (refrigerants). Although the mass of gas was low (approximately 0.6315 tonnes), its heating potential is very high, making it an important source of emission to the company when converted to CO2e.



Source of Emission	tCO2	tCH4	tN2O	tHFCs	tCO2e
Mobile	2.492	0.001	0.0002	0.000	2.58
Fugitive	1.390	0.000	0.000	0.6315	1,074.52
Stationary	57.623	0.008	0.0005	0.00	57.96

Results - Absolute Emissions Scope 1



When comparing 2018 and 2019 total scope 1 emissions it is possible to notice a significant increase of 369.90%.

The most significant increase is related to fugitive emissions, representing about 94.7% of the total emission for scope 1. The increase in the replacement of refrigerant gases was responsible for the 643.5% growth in fugitive emission.

Replacement of gas in air conditioning appliances varies and depends on how much the equipment is used. It is normal for years of heavy use to be followed by years of lower use, as the replacement does not always take place every year.

In 2019, emissions from B3's mobile and stationary sources accounted for 0.2% and 5.1% of the total scope 1 emissions. The stationary source presented a reduction of, approximately, 38% in absolute emissions, due to the lower consumption of Diesel Oil at the Data Center. Mobile source emissions reduced, approximately, 36% compared 2018 as a result of the offices deactivation (Ipiranga, Rondonópolis and Sorriso), that had vehicle fuels consumption.

Results - Absolute Emissions Scope 1

Mobile sources

Scope 1 mobile emissions stem from the use of vehicles owned or controlled by the company. B3 has a very small fleet, which explains the low emissions compared with other sources comprising this scope. In 2019, B3's fleet ran on gasoline and diesel. Gasoline accounted for 57% of the emissions from this source.

In 2019 the percentage of ethanol in gasoline held steady at 27%, although diesel had its composition changed from 9.7% to 10.3% of biodiesel in the annual average. This change helped reduce non-biogenic emissions, thereby mitigating the impact on diesel consumption.

As it can be seen in the table below, the decrease in mobile source emissions is mainly connected to the lower gasoline consumption:

Source of Emission	Activity	Fuel	2018		2019	
			Consumption in liters	tCO2e	Consumption in liters	tCO2e
Mobile	Company's fleet	Ethanol	2,160.41	0.03	0	0
Mobile	Company's fleet	Diesel	683.71	1.64	466.92	1.11
Mobile	Company's fleet	Gasoline	1,395.09	2.36	868.49	1.47

Results - Absolute Emissions Scope 1

Stationary sources

Stationary source emissions result from the combustion of fuel (diesel oil) by generators and the use of natural gas and LPG in restaurants and heaters. The most significant emissions from this source in 2019 came from generators, representing approximately 85% of the emissions. We emphasize that this scope only took into account generators owned by B3. All energy from third-party sources was allocated to scope 2, in accordance with the guidelines of the Brazilian GHG Protocol.

The consumption of diesel by the Data Center's generators accounted for, approximately, 37% of stationary source emissions, and in 2019, presented a reduction of 66% regarding 2018. This Data Center emission reduction is consequence of its diesel consumption decrease.

Source of Emission	Activity	Fuel	tCO2e
Stationary	Canteen	Natural Gas	7.96
Stationary	Canteen	LPG	0.533
Stationary	Generator	Diesel Oil	49.47

Results - Absolute Emissions Scope 1

Fugitive sources

In 2019, fugitive emissions primarily stemmed from the replacement of CO2 in the units' fire extinguishers (1.39 tonnes) and the replacement of R134A (0.2043 tonnes), R407C (0.4164 tonnes) and R404A (0.0108 tonnes). R-22 was also replaced, however as this gas is not encompassed in the Kyoto protocol, its emissions were not included in the inventory.

Compared with previous years, the replacement of extinguishers continues to be of negligible importance and refrigerant gases accounted for 99.8% of the fugitive emissions and 94.7% of the absolute emissions in scope 1.

Source of Emission	Activity	2018		2019	
		Gases (t)	tCO2e	Gases (t)	tCO2e
Fugitive	Extinguishers – CO2	1.72	1.72	1.39	1.39
Fugitive	Air conditioning – R134A	0.00	0.00	0.2043	292.1
Fugitive	Air conditioning – R407C	0.08	142.80	0.4164	738.6
Fugitive	Air conditioning – R410A	0.00	0.00	0.00	0.00
Fugitive	Air conditioning – R404A	0.00	0.00	0.0108	42.4

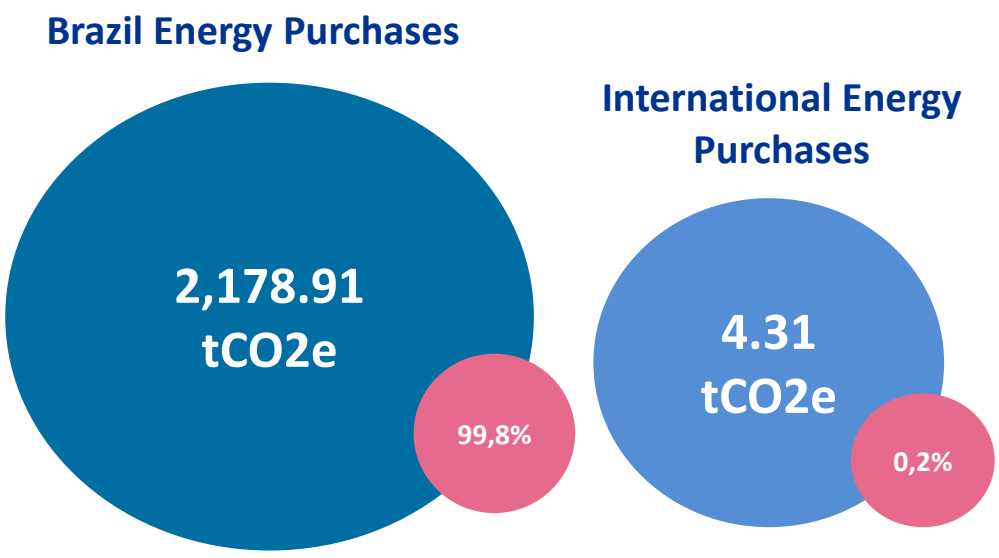
Results - Absolute Emissions Scope 2

Scope 2 emissions consist of emissions from energy (electricity and steam) purchased externally. In 2019, B3 consumed 29.21 GWh from the Brazilian electricity grid in its operations, an increase of 2.35% compared with the consumption in 2018.

In 2019 the emissions associated with this scope accounted for 44% of the company's total emissions, which can be divided in three categories: use of third-party generators, energy consumed in international offices and energy consumed in Brazilian offices.

International emissions in London and Shanghai were calculated by estimating the annual energy consumption per employee of the units in Brazil. This figure was used to quantify these units' emissions, which accounted for 0.2% of scope 2.

There was no emission regarding third-party generators, therefore represent a reduction of 100%.



Results - Absolute Emissions Scope 2

The distribution of emissions are coherent with the company's structure. As most of the offices are located in Brazil, 99% of the scope 2 emissions consist of energy purchased in this country.

Source of Emission	tCO2	tCH4	tN2O	tCO2e
International Energy Purchases	4.31	-	-	4.31
Brazil Energy Purchases	2,178.91	-	-	2,178.91
Generators Energy Purchases	-	-	-	-

The emissions from purchased energy are based on specific emission factors determined according to each country's energy matrix, although Brazil is the most significant country, because of the number of units, its emission factor (tCO2e/Mwh) is lower compared with overseas units since it has a predominantly renewable energy matrix.

Source of Emission	tCO2e/MWh
International Energy Purchases- London	0.256
International Energy Purchases- Shanghai	0.704
Brazil Energy Purchases	0.075

Results - Absolute Emissions Scope 2

The 2.35% increase in energy consumption, allied with the 1.35% increase in the GRID factor emission in 2019, was responsible for the growth 2.96% in the scope 2 emission linked to energy acquired from the Brazilian GRID.

The building acquisition "Casa da Moeda" was accountable for a short increase (1.01 tCO2e) in the scope 2 emission.

The GRID emissions factor is related to the use of thermal power plants during the year (when hydroelectric power plants cannot meet the population's energy requirement, more thermal power plants are activated to meet this demand) which consequently leads to a variance in greenhouse gas emissions.

The table below presents the stock exchange's values and variation between 2018 and 2019 for its electricity consumption and GRID emission factor.

	Energy Consumption in Brazil (Mwh)	Emissions Factor (Annual average tCO2eq/Mwh)	Scope 2 Emissions in Brazil (tCO2eq)
2018	28,538	0.074	2,116.23
2019	29,208	0.075	2,178.91
Variation	2.35%	1.35%	2.96%

Results - Absolute Emissions Scope 3

Scope 3 emissions consist of indirect emissions related to B3's activities. Five scope 3 categories, which are applicable to and reportable by the stock exchange, were considered in B3's inventory.

GHG Emission – Scope 3

Category 1	Purchases goods and services	2.09 tCO2e (0.1%)
Category 5	Waste generated in operations	54.33 tCO2e (3.3%)
Category 6	Business travel	854.88 tCO2e (52.3%)
Category 7	Employee commuting	724.39 tCO2e (44.3%)
Other emission	Scope 3 - Fugitives	0.0 tCO2e (0.0%)

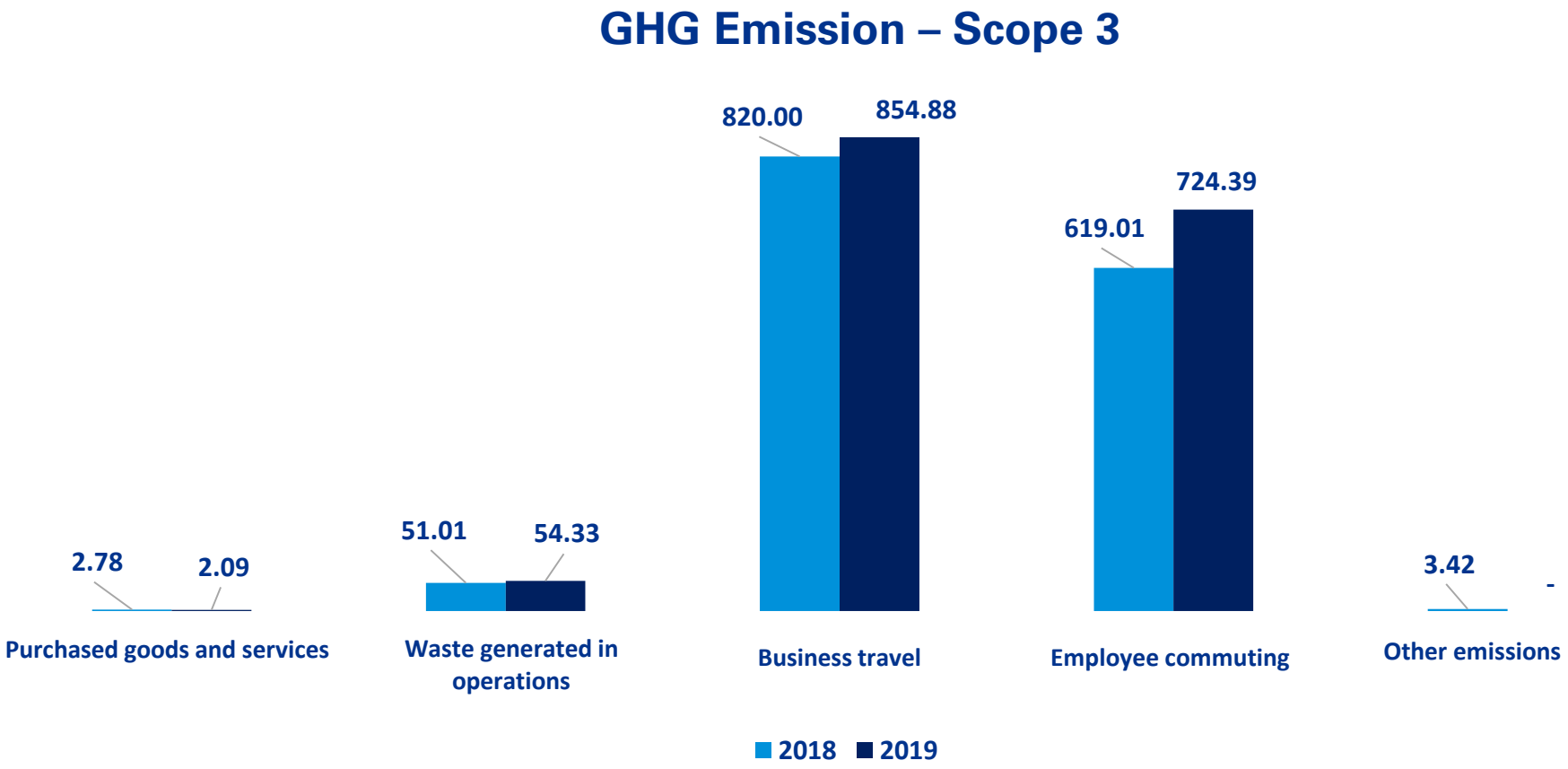
*Included the scope 3 categories defined by the Brazilian GHG Protocol program.

Results - Absolute Emissions Scope 3

Source of Emission	2019				
	Other Gases (t)	tCO2	tCH4	tN2O	tCO2e
Category 1: Purchased goods and services	-	1.9943	0.0008	0.0002	2.0852
Category 5: Waste generated in operations	-	-	2.1733	-	54.3320
Category 6: Business travel	-	843.7663	0.0391	0.0340	854.8838
Category 7: Employee commuting	-	696.1567	0.3038	0.0693	724.3884
Other emissions under Scope 3 (Fugitive)	-	-	-	-	-

According to the table above, scope 3 emissions primarily stemmed from the category Business Travel and Employee Commuting, jointly accounting for 96.5% of the total emissions under this scope.

Results - Absolute Emissions Scope 3



Results - Absolute Emissions Scope 3

Other Scope 3 emissions (Fugitive)

This category comprise the fugitive emission by sources didn't controlled by B3. Since in 2019 no fugitive gas was reported by third parties sources , this emission source presented a reduction of 100% with regard to 2018.

Category 1: Purchased goods and services

This category comprise the emissions from the transportation of documents by motorbike couriers. In 2019, there was a reduction of 25% in the mileage travelled, representing a decrease of 0.7 tCO2e.

Category 5: Waste generated in operations

Category 5 presents emissions related to the disposal of waste generated on B3's operation. In the last years organic waste was disposed in landfills. In 2019, there was an increase in the quantity of waste sent to the landfill, resulting a growth of 6.5% emission in category 5.

Destination	2018 tCO2e	2019 tCO2e
Landfill	51.01	54.33

Results - Absolute Emissions Scope 3

Category 6 - Business travel

Category 6 (business travel) is the largest source of scope 3 emissions for B3. This category includes business travel and employee commuting by taxi and other forms of transportation, as shown below.

Category 6 (Business travel)	2018 tCO2e	2019 tCO2e
Employees/Directors Transport (Taxi)	61.18	86.88
Air Travel	758.82	768.01

In 2019, emissions due to taxi journeys presented a growth of 42% with regard to 2018. This change occurred due to 2019 mileage rise, as shown in the table below.

	2018	2019
Taxi - distance traveled (km)	438,221.00	622,889.60

Results - Absolute Emissions Scope 3

Emissions from flights increased in 2019 (1.21%), due to a growth in the distance travelled. The DEFRA emission factor, that was updated in 2019, presented a reduction of 14.5% to short travel, 2.5% to average travel and 8% long travel.

As it can be seen in the table below the mileage increase is higher for longer trips, usually associated with overseas flights. In 2019, longer trips accounted for 67% of air travel mileage.

	2018	2019	Variation
Number of flights	3.943	4.056	2.86%
Short KM	630.715	597.307	-5.3%
Medium KM	1.760.076	1.918.079	8.97%
Long KM	4.522.790	5.095.042	12.65%
Total KM	6.913.580	7.610.428	10.07%
tCO2e	758.82	768.01	1.21%

Results - Absolute Emissions Scope 3

Category 7 - Employee Commuting

In 2019, emissions from employee commuting accounted for 44.3% of the total scope 3 emissions. The data was obtained from an online survey applied to B3 employees and trainees. Whom 56.6% answered the survey for this inventory, and those who did not answer had their emissions calculated by extrapolating the patterns observed in the answers obtained.

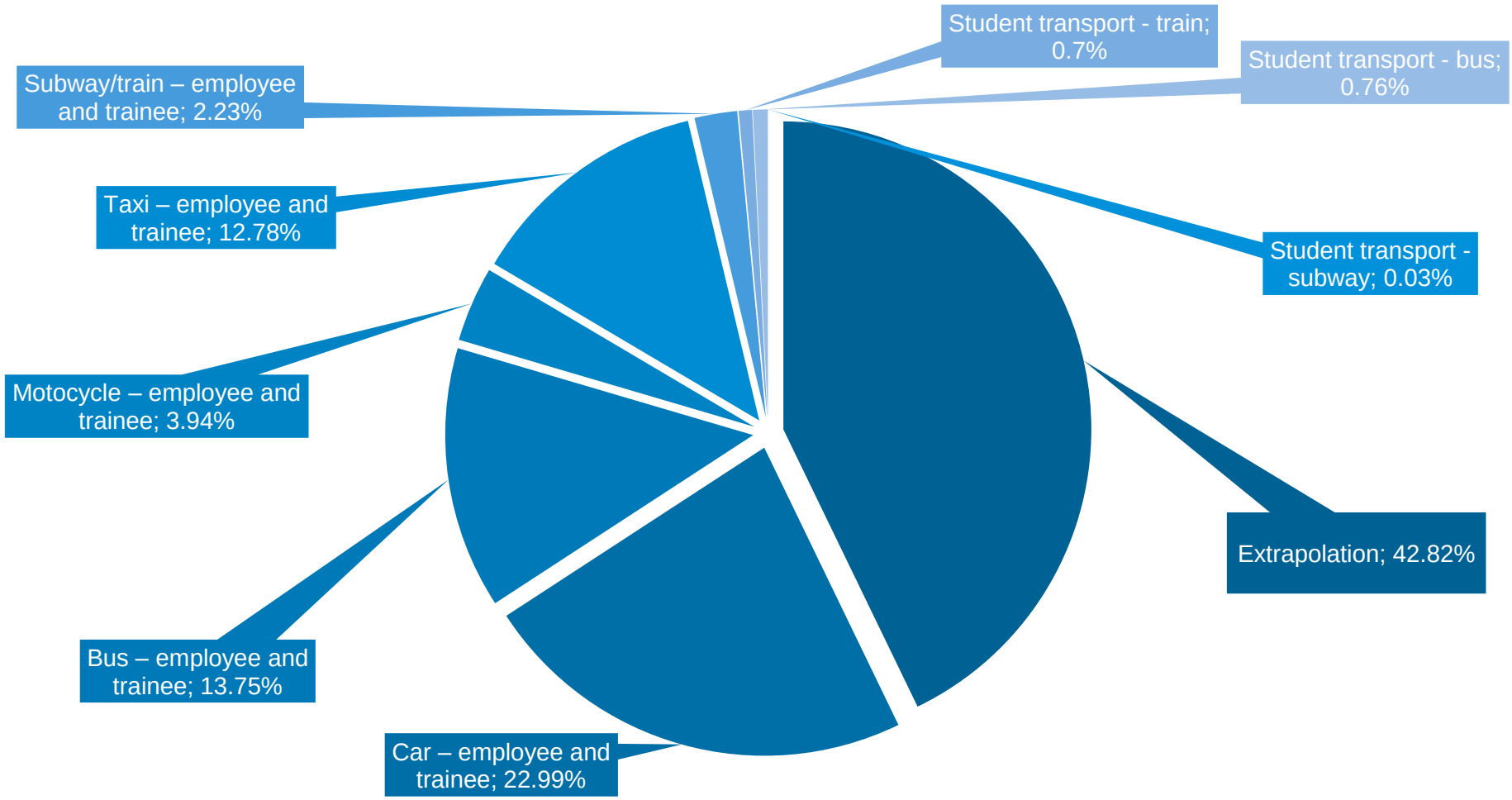
In 2019, an increase of 17.2% in absolute emissions was observed for this category, compared to B3's 2018 emissions. This increase in commuting emissions can be explained by research respondents growth of 49%.

Resultados da Pesquisa "Como você vai para a B3?"

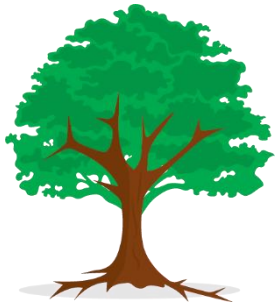
Result by form of transportation	2018		2019	
	Nº. of people	%	Nº. of people	%
Subway/train + Bus	131	14.69%	227	17.08%
Subway/train	153	17.15%	225	16.93%
Car	101	11.32%	139	10.46%
Bus	70	7.85%	79	5.94%
Subway/train + car	62	6.95%	103	7.75%
Motorcycle	35	3.92%	42	3.16%
On foot	25	2.80%	34	2.56%
Subway/train on foot	46	5.16%	53	3.99%
Bus + on foot	9	1.01%	12	0.90%
Bicycle	6	0.67%	6	0.45%
Others*	254	28.48%	409	30.78%
Total	892	100%	1,329	100%

*** The item "Other" primarily denotes taxes, lifts and the combination of 3 different forms of transportation.**

Results - Absolute Emissions Scope 3



Results - Absolute Emissions Biogenic and fugitive emissions



Emissions resulting from the combustion of biofuels are different and were therefore treated differently to those deriving from the combustion of fossil fuels. The combustion of biomass has a neutral CO2 emission, this assumption is made because it considers that the CO2 released during the combustion of biomass is equal to the CO2 absorbed from the atmosphere during photosynthesis, meaning it can be considered neutral. Emissions of CH4 and N2O cannot be considered neutral because these gases are not removed from the atmosphere during the biomass life-cycle. In this case the emissions of CH4 and N2O were included in scope 1.

In Brazil, all diesel sold contains a fraction of biodiesel (Law 11097 issued 1/13/2005) and all Brazilian gasoline must contain a variable fraction of biogenic fuel, i.e ethanol. For the diesel and gasoline consumption it was therefore necessary to segregate the fossil fuel portion from the renewable portion. In 2019 the gasoline and diesel oil produced in Brazil contained an average 27% anhydrous ethanol and 10.3% biodiesel respectively. Therefore, GHG emission percent regarding this biomass fuel were discounted from B3's total emission.

The following table presents the neutral emissions for scopes 1, 2 and 3 resulting from the burning of biomass fuels in B3's activities in 2019. The emissions of R-22 refrigerant gas, which is not included in the Kyoto Protocol as it is already regulated by the Montreal[1] Protocol, is also reported since it has a representative global warming potential.

[1] The Montreal protocol is an agreement that restricts the emissions of ozone layer harmful gases.

Results - Absolute Emissions
Biogenic and fugitive emissions

Scope	Source of Emission	Consumed fuel	Neutral emissions
Scope 1	Stationary Sources	B5 Diesel	5.06
	Mobile Sources	B5 Diesel	0.117
		Gasoline	0.3578
		Hydrated Ethanol	0.00
Scope 2	Purchased electricity (generator)	B5 Diesel	0.00
Scope 3	Category 1 :Purchased goods and services	Gasoline	0.509
	Category 6: Business travel	Gasoline	21.16
	Category 7: Employee commuting	Ethanol	201.18
		B5 Diesel	11.85
		Gasoline	67.25
		Extrapolation	297.75

Scope	Source of Emission	Gas Consumed	Emissions of Montreal protocol gases (tCO2e)
Scope 1	Fugitive Sources	R-22	803.45

Results - Emissions Intensity

B3 uses the following 4 indicators to assess its GHG emissions performance:

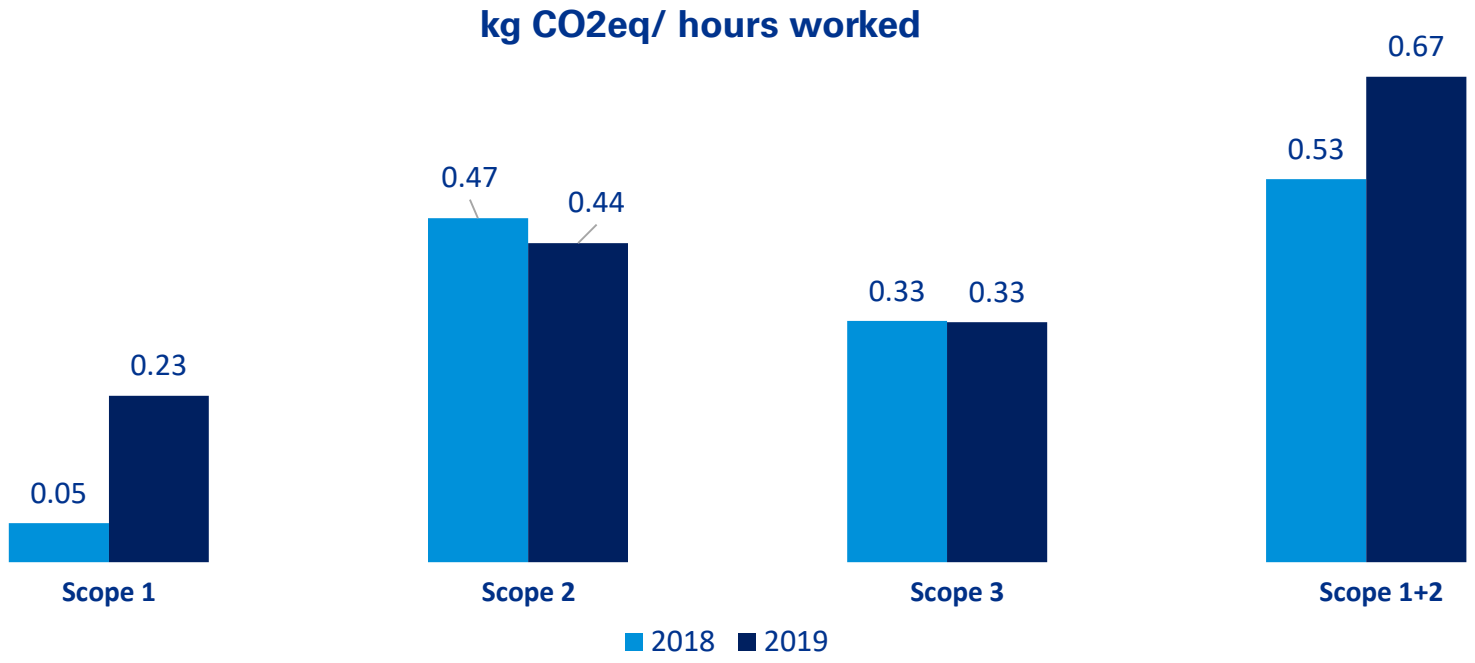
- Intensity of emissions by hours worked
- Intensity of emissions by gross revenue
- Intensity of emissions by trading volume - Bovespa Segment
- Intensity of emissions by trading volume - BM&F Segment

Results - Emissions Intensity

Intensity kg CO2eq/ hours worked

The quantification of the emissions by hours worked shows the participation of the company staff and interns in the company's emissions.

B3 had a significant increase in their scope 1 emission intensity. The emission intensity scope 2 had a reduction of 6.4% and scope 3 emission held steady. Those results are connected directly to the scopes emissions fluctuation and, in the growth in hours worked that represented an increase of 10%.

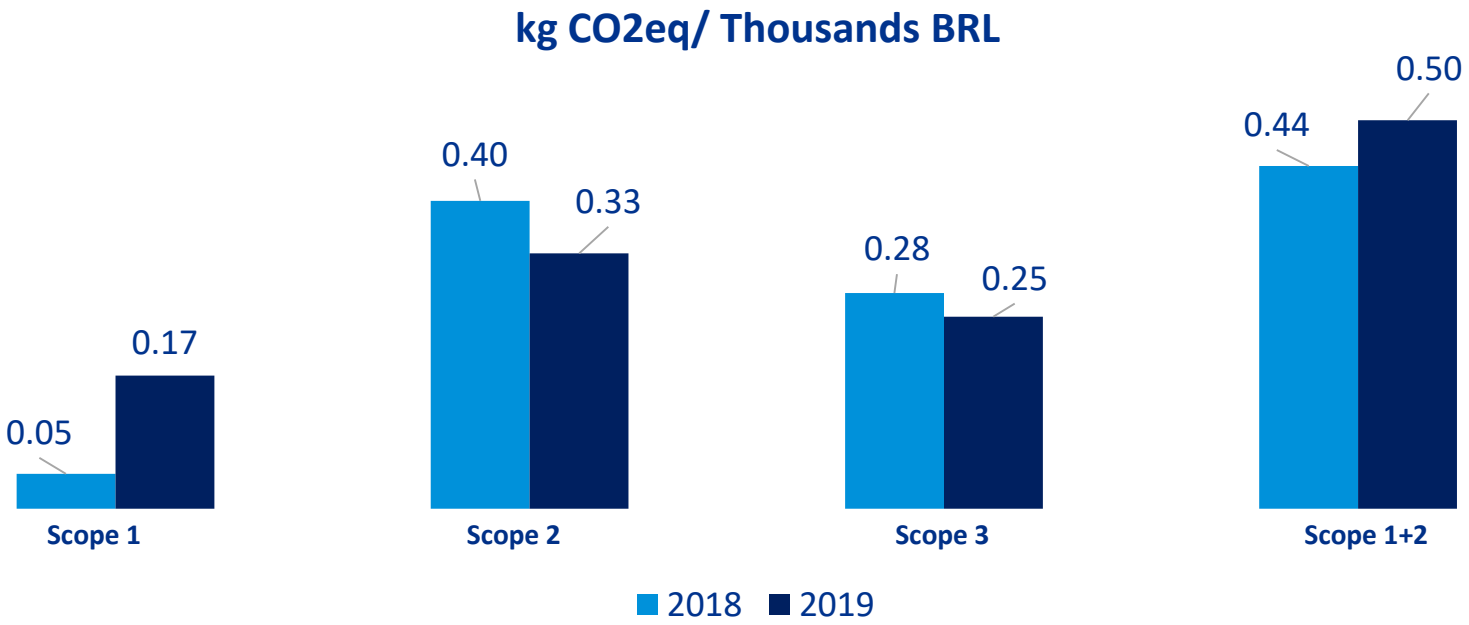


Results - Emissions Intensity

Intensity kg CO2eq/ gross revenue

In 2019 the revenue increase 23% with regard to 2018. However, due to a significant increase in scope 1 emissions, the evolution of revenue was not enough to prevent the increase in scope 1 intensity.The scope 2 emission intensity presented a reduction of 17.5%.

The scope 3 emission increased 9.3%. This increase is assigned to the growth of 10% in the employee number in 2019. The reduction of 10.7% in scope 3 intensity is a consequence of the 2019 revenue increase.

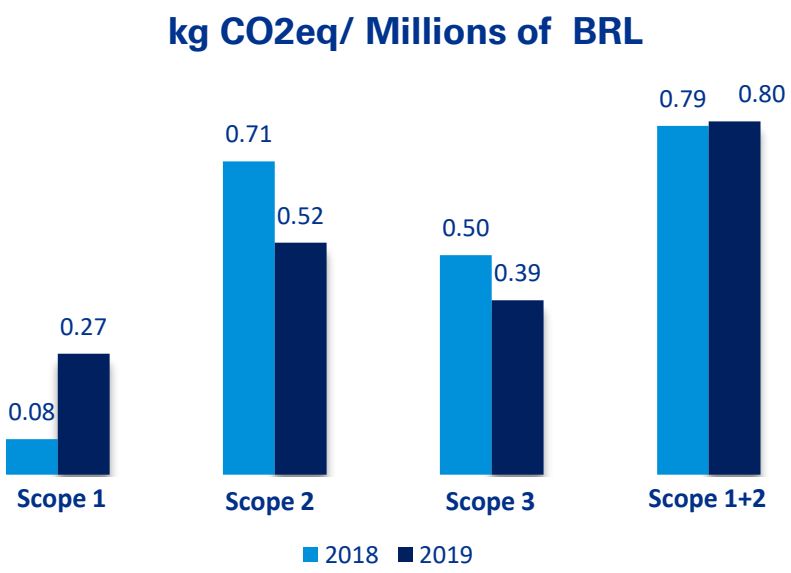


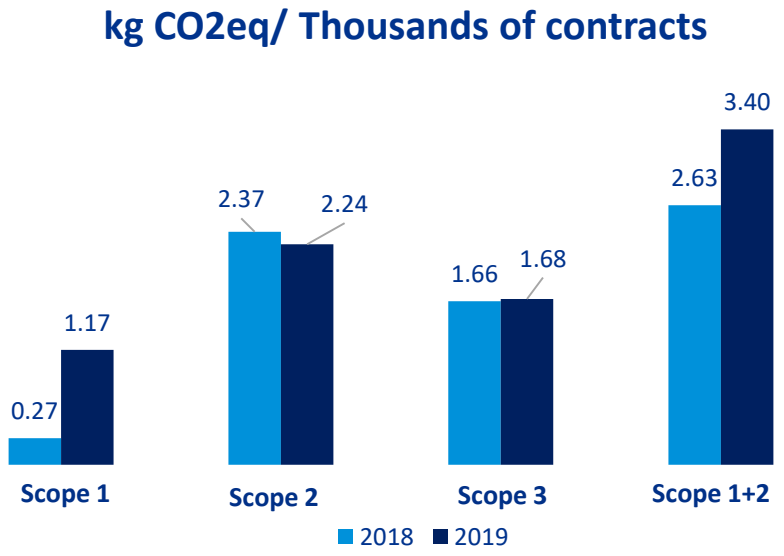
Results - Emissions Intensity

Intensity kg CO2eq/ trading volume

The increase of 36% in the daily average of millions of BRL traded, boosted the reduction of the scopes 2 and 3 in 26% and 22%. However, the scope 1 presented a growth of 237%, due to the fugitive emission increase in 2019.

The daily average of contracts negotiated increased 6.5% in 2019. The scope 1 intensity increased 333% and, scope 2 intensity had a reduction of 5.5%. Scope 3 intensity held steady.





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Ricardo Algis ZIbas
Sustainability Services
Director
T: +55 (11) 3940-1795
E: rzibas@kpmg.com.br

Paula Carvalho
Sustainability Services
Senior Manager
T: +55 (11) 3940-1621
E: PScarvalho@kpmg.com.br

Danielle Moreira
Sustainability Services
Supervising
T: +55 (11) 3940-4014
E: daniellemoreira@kpmg.com.br

David Andrade
Sustainability Services
Trainee
T: +55 (11) 3940-6399
E: davidandrade@kpmg.com.br

kpmg.com/BR

/kpmgbrasil

B3 Contact
Sustainability
sustentabilidade@b3.com.br