



CORPORATIVE CARBON FOOTPRINT
CHLORUM SOLUTIONS

2020 EMISSIONS

Made by:



Why corporations should measure their carbon footprint?

Because Climate Change is the main environmental problem that humanity begins to face and will face in the next century;

Because the Brazilian Government has committed itself and assumed as an environmental priority the fight against climate change;

Because accounting for and controlling GHG emissions allows efficiency gains and reduction of direct and indirect costs;

Because Chlorum Solutions recognizes the importance of this exercise for the company and assumes a proactive environmental commitment stance.

For the first year Chlorum Solutions decided to prepare its report on greenhouse gas (GHG) emissions.

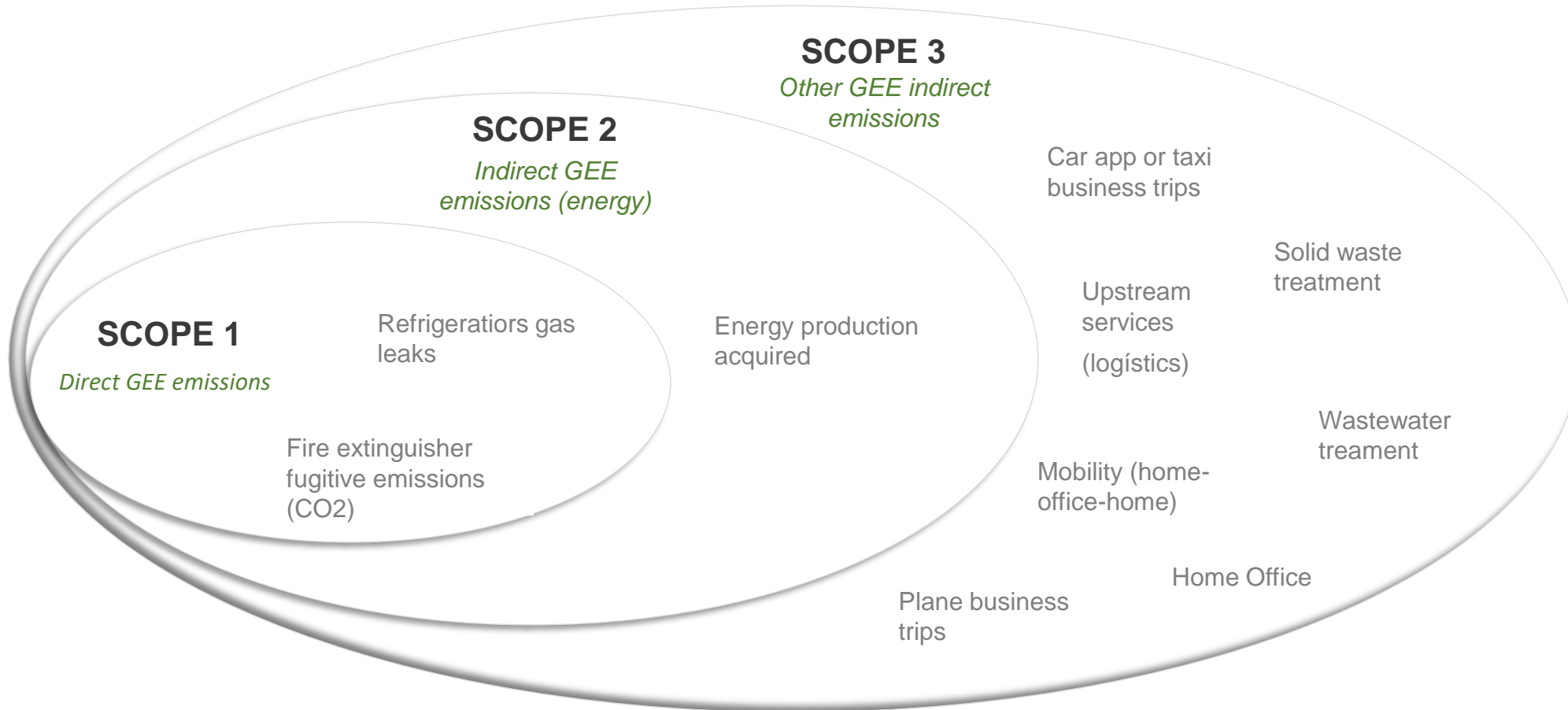
Here will be presented the results of the carbon inventory of Chlorum Solutions activities for the **year 2020**.

The activities at Chlorum Solutions units in office in São Paulo - SP., as well as their office in Fortaleza – CE and their plants in Fortaleza –CE, Maranhão – MA and Uruguay. A total of **78 fixed employees**, were considered for the year under analysis.

The inventory was prepared according to the guidelines of the Intergovernmental Panel on Climate Change (IPCC), the Greenhouse Gas Protocol (PGEE) of the World Resources Institute/ World Business Council for Sustainable Development (WRI/WCSD), applied to the Brazilian reality by the Brazilian GHG Protocol Program and by ISO 14064.

As for the operational limits of the inventory, direct GHG emissions (**Scope 1**) are included; indirect emissions resulting from energy production by third parties (**Scope 2**); and other indirect optional reporting issues that, although a consequence of the organization's activity, occur in sources that belong to or are controlled by other organizations (**Scope 3**).

Activities considered – Chlorum Solutions



Total Emissions

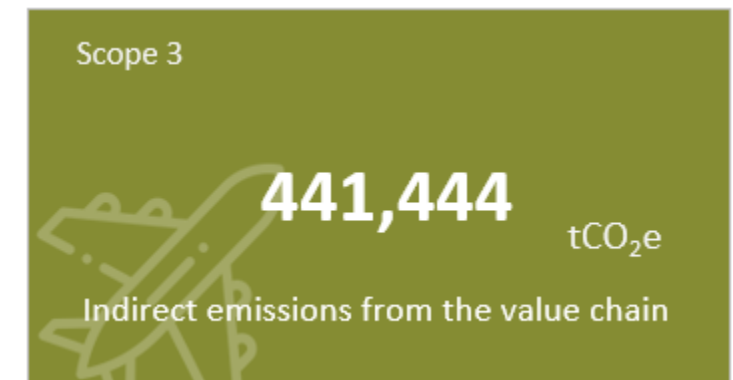
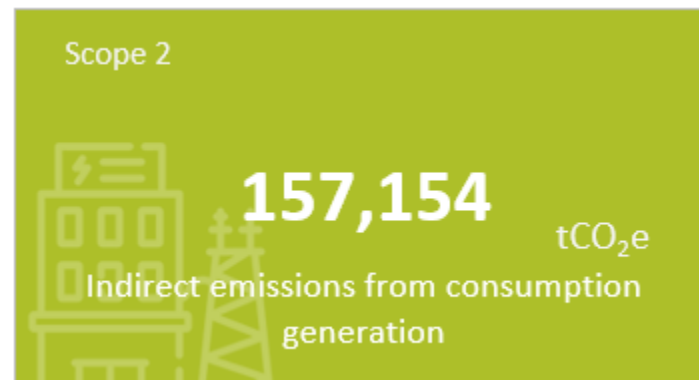
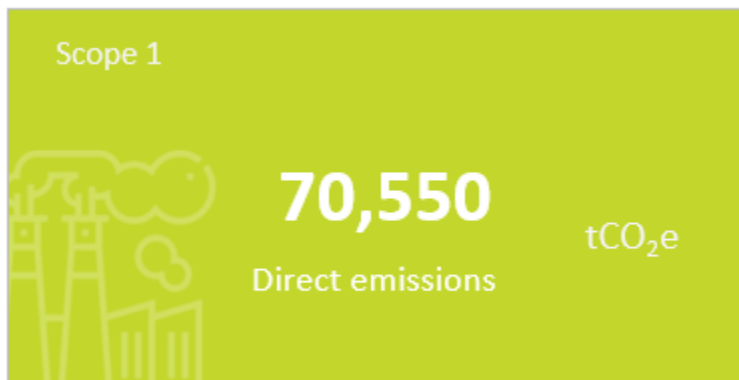
In 2020, Chlorum Solutions total GHG emissions were **669.15 tons de CO₂**

Overall, the **4 activities with the highest weight:**

1. Transport and Distribution Upstream – Scope 3
2. Energy Consumption – Scope 2
3. Employee Mobility (home to work) – Scope 3
4. Solid Waste management – Scope 3

GEE Emissions by Scope/Activities

- Among chlorum solutions' 669.15 tCO₂e emissions in 2020, **66% came from scope 3**, **24% from scope 2** and **10% from scope 1**, as can be seen in diagram below, which represents the distribution of GHG emissions by scopes.



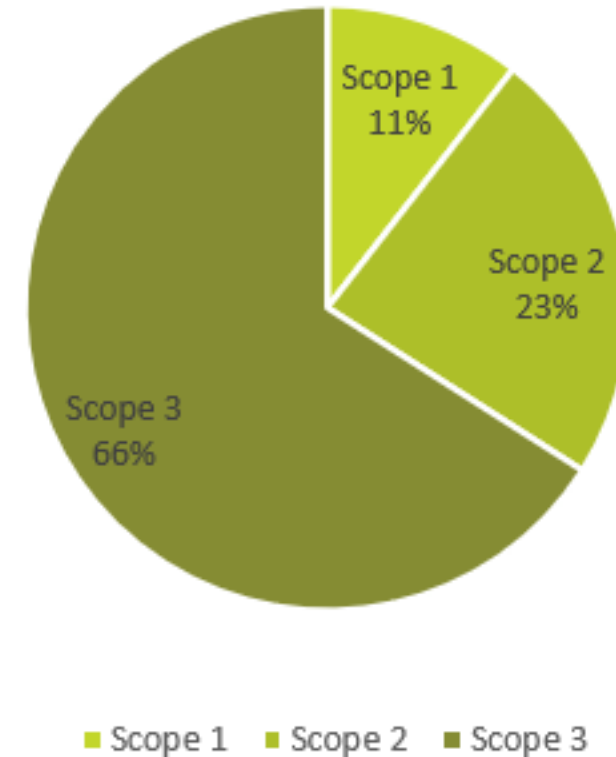
GEE Emissions by Scope/Activities

TOTAL Escopo 1 + Escopo 2 + Escopo 3	669.15 tCO₂e	
Escopo 1 <i>Emissões diretas</i>	70.55 tCO₂e	10.54%
Frota Interna de Automóveis	49.40	7.38%
Fugitivas	9.80	1.47%
Gerador	11.35	1.70%
Escopo 2 <i>Emissões indiretas da geração de consumo</i>	157.15 tCO₂e	23.49%
Aquisição de energia elétrica	157.15	23.49%
Escopo 3 <i>Emissões indiretas da cadeia de valor</i>	441.44 tCO₂e	65.97%
Tratamento de efluentes líquidos	2.18	0.33%
Tratamento de resíduos sólidos	88.58	13.24%
Deslocamento de Funcionários	116.22	17.37%
Viagens a negócio em aeronave	21.72	3.25%
Viagens a negócio com veículo alugado, taxi ou APP de mobilidade	0.32	0.05%
Serviços UPSTREAM	212.33	31.73%
Home Office	0.09	0.01%

GEE Emissions by Scope/Activities

With **441,44 tCO₂** of total emissions, **Chlorum Solutions scope 3**, it is easily understood that these activities developed in this scope represent **66% of the GHG (greenhouse gas) emissions** generated by the company in 2020.

Scope	(t CO ₂ e)	%
Scope 1	70,55	10%
Scope 2	157,15	24%
Scope 3	441,44	66%
Total GEE	669,15	



Emissions per unit

Emissions São Paulo – Office

Description of the source / activity	GHG Emissions (t CO ₂ e)	
Scope 1	0.00%	-
1.1 Internal Car Fleet		-
1.2 Fugitives		-
1.3 Generator		-
Scope 2	0.00%	-
2.1 Acquisition of electricity		-
Scope 3	100.00%	12.71
3.1 Treatment of liquid effluents	3.4%	0.43
3.2 Solid waste treatment	16.3%	2.07
3.3 Employee Displacement	54.0%	6.87
3.4 Business travel with airplane	26.3%	3.34
3.5 Business trips with rental vehicle, taxi or mobility APP		-
3.6 UPSTREAM Services		-
3.7 Home Office		-
Total São Paulo – Office		12.71

Emissions Fortaleza – Office

Description of the source / activity	GHG Emissions (t CO ₂ e)	
Scope 1	0.00%	-
1.1 Internal Car Fleet		-
1.2 Fugitives		-
1.3 Generator		-
Scope 2	0.00%	-
2.1 Acquisition of electricity		-
Scope 3	100.00%	0.94
3.1 Treatment of liquid effluents	11.4%	0.11
3.2 Solid waste treatment		-
3.3 Employee Displacement		-
3.4 Business travel with airplane	88.6%	0.84
3.5 Business trips with rental vehicle, taxi or mobility APP		-
3.6 UPSTREAM Services		-
3.7 Home Office		-
Total Fortaleza – Office		0.94

Emissions per unit

Emissions Fortaleza – Plant

Description of the source / activity	GHG Emissions (t CO ₂ e)	
Scope 1	13.8%	35.70
1.1 Internal Car Fleet	11.8%	30.53
1.2 Fugitives	1.5%	3.96
1.3 Generator	0.5%	1.22
Scope 2	0.0%	-
2.1 Acquisition of electricity		-
Scope 3	86.2%	222.15
3.1 Treatment of liquid effluents	0.3%	0.75
3.2 Solid waste treatment	20.9%	54.00
3.3 Employee Displacement	22.5%	58.08
3.4 Business travel with airplane	2.3%	5.85
3.5 Business trips with rental vehicle, <u>taxi</u> or mobility APP		-
3.6 UPSTREAM Services	40.1%	103.47
3.7 Home Office		-
Total Fortaleza – Plant		257.86

Emissions Maranhão – Plant

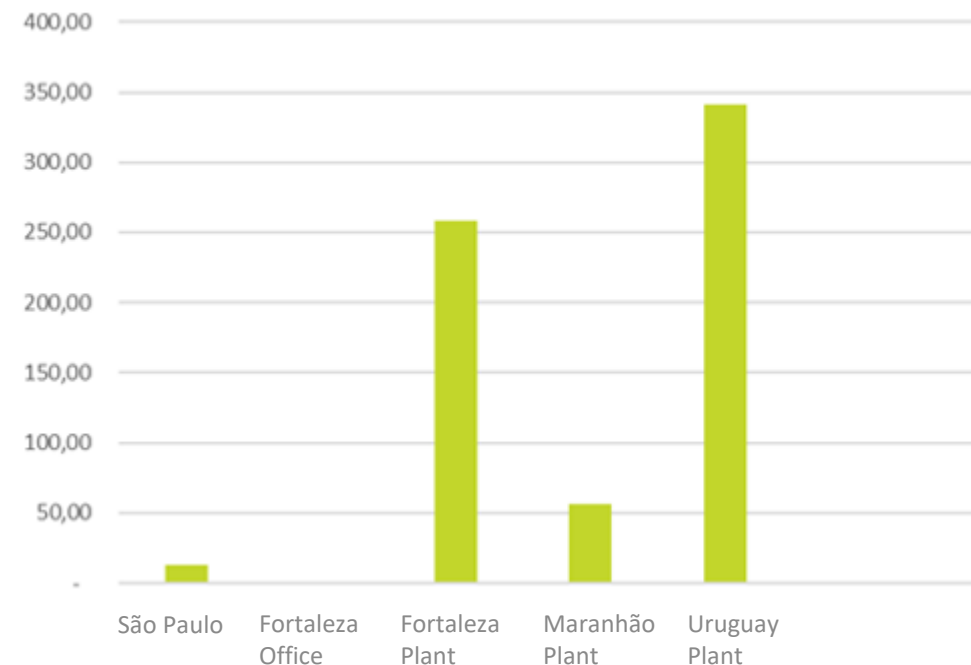
Description of the source / activity	GHG Emissions (t CO ₂ e)	
Scope 1	37.0%	20.91
1.1 Internal Car Fleet	33.4%	18.87
1.2 Fugitives		-
1.3 Generator	3.6%	2.04
Scope 2	0.0%	-
2.1 Acquisition of electricity		-
Scope 3	63.0%	35.58
3.1 Treatment of liquid effluents	0.2%	0.13
3.2 Solid waste treatment	14.3%	8.10
3.3 Employee Displacement	32.6%	18.40
3.4 Business travel with airplane	10.4%	5.85
3.5 Business trips with rental vehicle, <u>taxi</u> or mobility APP	0.3%	0.15
3.6 UPSTREAM Services	5.2%	2.95
3.7 Home Office		-
Total Maranhão – Plant		56,49

Emissions per unit

Emissions Uruguay – Plant

Description of the source / activity	GHG Emissions (t CO ₂ e)
Scope 1	4.1% 13.94
1.1 Internal Car Fleet	-
1.2 Fugitives	1.7% 5.85
1.3 Generator	2.4% 8.09
Scope 2	46.1% 157.15
2.1 Acquisition of electricity	46.1% 157.15
Scope 3	49.8% 170.06
3.1 Treatment of liquid effluents	0.2% 0.75
3.2 Solid waste treatment	7.2% 24.41
3.3 Employee Displacement	9.6% 32.88
3.4 Business travel with airplane	1.7% 5.85
3.5 Business trips with rental vehicle, taxi or mobility APP	0.1% 0.17
3.6 UPSTREAM Services	31.0% 105.90
3.7 Home Office	0.0% 0.09
Total filial Uruguai	341.15

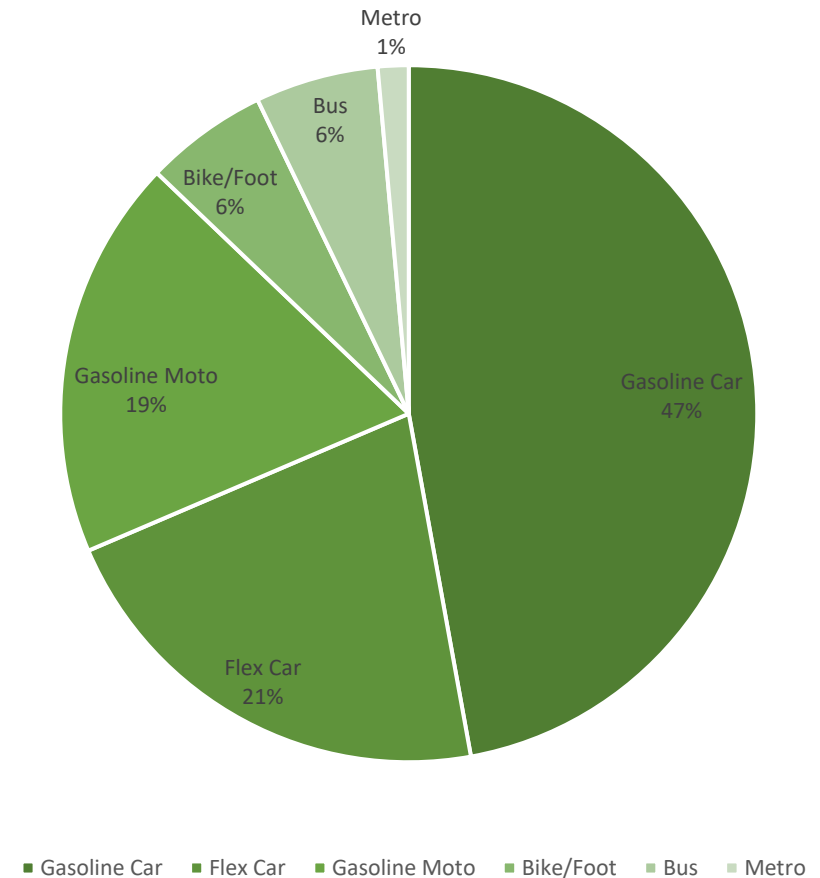
Analyzing the contribution of each of the subsidiaries in the total emissions of Chlorum Solutions, we have that in Uruguay is the branch with the highest emissions, totaling 341.15 tCO₂e, followed by the Fortaleza plant and the Maranhão branch, respectively with 257.86 tCO₂e and 56.49 tCO₂e.



Employee Mobility

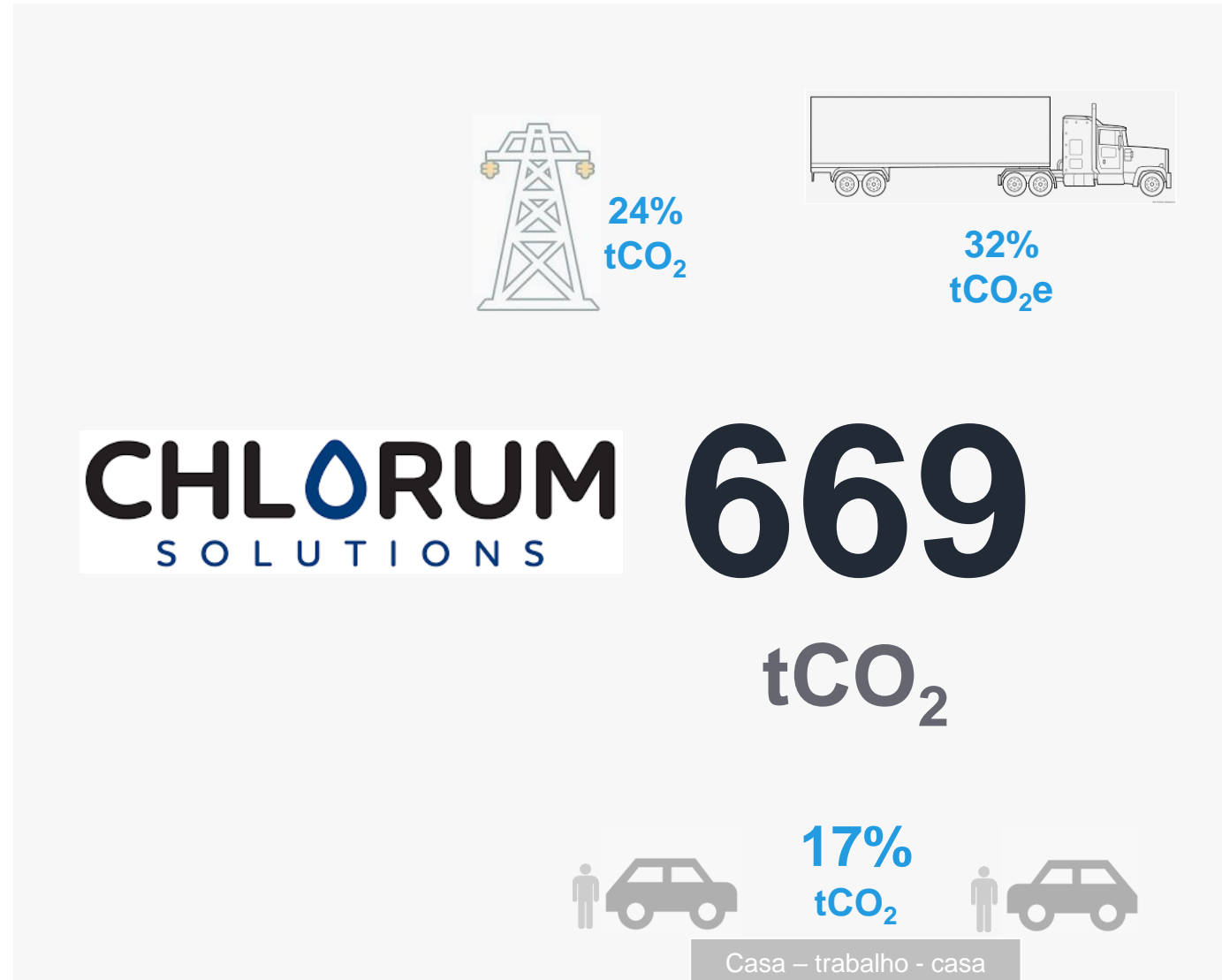
The analysis of the habits of commuting trips of employees in 2020 based on a questionnaire about the most significant means of transport they use in CTC commuting and distance traveled (round trip) totaled 70 responses (response rate of 90%).

In 2020, the most used means of transport by employees for CTC displacement was the gasoline fueled car (36%), followed by flex cars (15%) and gasoline fueled motorcycle (13%).



Summary Results

- In 2020, the total GHG emissions of Chlorum Solutions' activity was **669 tons of CO₂** in rounded values.
- The largest component of Chlorum Solutions emissions in 2020 resulted from sources not controlled by the company, which **translate into indirect emissions**: Transportation and distribution upstream, employee mobility are among the main contributors.
- For 2020, we were able to obtain, as a GHG indicator that 32% of CO₂ emissions were originated from upstream transport and distribution.

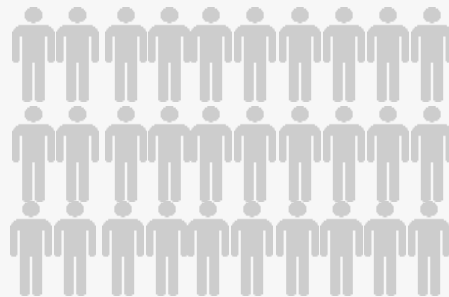


Summary Results

- Considering that Chlorum Solutions maintained its staff of 78 fixed employees, for 2020 a GHG emission intensity indicator of **8.57 tCO₂e** per employee is obtained

CHLORUM
SOLUTIONS

669.15
tCO₂e



8.57
tCO₂e

Summary Results

- Another indicator which can be produced is the amount of CO₂ equivalent in relation with the chlorum production of the company.

CHLORUM
SOLUTIONS

669.15
tCO₂e



0.144
tCO₂e/mtECU



Summary Results

- This is Chlorum Solutions first GHG Emissions Inventory considering emissions for the year 2020.
- A possible comparison of increase or decrease in Chlorum Solutions GHG emissions may be observed at the conclusion of the next inventory related to the actual emissions of the year 2021. The carbon inventory is the first step in a carbon management strategy that has enabled knowledge to be gained about GHG emissions and climate impacts from Chlorum Solutions activities.
- One final point that should be highlighted are the very low results, considering the sector of activity of Chlorum Solutions. Especially with regard to scope 2, the company's choices to acquire encouraged energy (50%) ensure that it is 100% renewable and therefore emission-free. In addition to this, in the Uruguayan plant, due to the country's extremely clean energy matrix (approximately 95% of renewable sources), this makes the company's emissions substantially lower than in a situation where traditional interconnected national energy system was used. That represents an emission reduction of around 900 tCO₂e.

The logo for Green Solutions features the word "GREEN" in a large, bold, yellow, stylized font. The letter "G" is particularly large and rounded. Below "GREEN", the word "SOLUTIONS" is written in a smaller, white, sans-serif font. The background is a dark, grayscale image of a modern building's glass and steel facade, viewed from a low angle looking up.

GREEN

SOLUTIONS

Contatos:

David Garcia

+55 11 98959 4171

david@greensolutionsconsultoria.com

Eduardo Melitto

+55 11 99990 5185

melitto@greensolutionsconsultoria.com