



Greenhouse Gas Emissions 2019

Inventory Report
Grupo Rotoplas

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Contents

1. Goal	4
2. Inventory scope	4
2.1 Control approach	4
2.2 Period analyzed	4
2.3 Limits	5
3. Calculation methodology	6
4. Inventory results	6
4.1 Overview	6
4.2 Emissions breakdown	8
4.3 Emissions intensity	15
Appendix 1. Consumption considered	16
1. Direct emissions (Scope 1)	16
2. Indirect emissions (Scope 2)	18
3. Indirect emissions (Scope 3)	19
Appendix 2. Emission factors	21
1. Direct emissions (Scope 1)	21
2. Indirect emissions (Scope 2)	22
3. Other indirect emissions – (Scope 3)	22
Appendix 3. Exclusions	23
Appendix 4. Additional emissions	24

Table index

Table 1. GHG emissions by scope	6
Table 2. Breakdown of direct emissions by emission source	8
Table 3. Breakdown of direct emissions by fuel	9
Table 4. Breakdown of Scope 2 emissions by supplier	10
Table 5. Breakdown of Scope 1 and 2 emissions by attributable process	11
Table 6. Breakdown of Scope 1 and 2 emissions by attributable process 2017	11
Table 7. Breakdown of Scope 1 and 2 emissions by attributable process 2018	11
Table 8. Breakdown of Scope 1 and 2 emissions by attributable process 2019	12
Table 9. Breakdown of Scope 1 and 2 emissions by country	12
Table 10. Breakdown of Scope 1 and 2 emissions by country – 2017	13
Table 11. Breakdown of Scope 1 and 2 emissions by country - 2018	13
Table 12. Breakdown of Scope 1 and 2 emissions by country - 2019	13
Table 13. Breakdown of emissions from outsourced transportation by fuel type	14
Table 14. Breakdown of emissions from outsourced transportation by country	14
Table 15. Breakdown of emissions from use of products sold	15

Table 16. Emissions intensity indicator	15
Table 17. Direct consumption of natural gas	16
Table 18. Direct consumption of LP gas	16
Table 19. Direct consumption of diesel	17
Table 20. Direct consumption of gasoline	17
Table 21. Estimated refrigerant leakage	18
Table 22. Electricity consumption from National power grid	18
Table 23. Electricity consumption from Cogeneration	19
Table 24. Indirect consumption of gasoline	19
Table 25. Indirect consumption of diesel	19
Table 26. Indirect consumption of LP gas	20
Table 27. Emission factors for stationary sources by GHG	21
Table 28. Emission factors for stationary sources by GHG	21
Table 29. Calorific power by fuel type	21
Table 30. GWP of the GHG	21
Table 31. GWP of refrigerants	22
Table 32. Electric emission factors by supplier	22

Figure index

Figure 1. GHG emissions by scope	7
Figure 2. Breakdown of Scope 1 and 2 GHG emissions	7
Figure 3. Breakdown of direct emissions by emission source	9
Figure 4. Breakdown of direct emissions by fuel	9
Figure 5. Breakdown of Scope 2 indirect emissions by supplier	10
Figure 6. Breakdown of Scope 1 and 2 emissions by attributable process	12
Figure 7. Breakdown of Scope 1 and 2 emissions by country	13
Figure 8. Breakdown of emissions from outsourced transportation by fuel type	14
Figure 9. Breakdown of emissions from outsourced transportation by country	15

1. Goal

Itemize the Greenhouse Gas (GHG) emissions linked to Grupo Rotoplas' activity in 2019, specifying sources and the calculation methodology. Moreover, this inventory acts as a base for the development of emissions reduction actions in the identified areas of opportunity.

2. Inventory scope

The methodology used is based on the "Greenhouse Gas Protocol (GHG Protocol). A Corporate Accounting and Reporting Standard", developed by the World Resources Institute and the World Business Council for Sustainable Development¹. Following this guide, the company's organizational scopes were established and the sources of GHG emission described below were defined.

2.1 Control approach

This report is carried out under an **operating control approach**; that is, considering all activities in which Grupo Rotoplas can introduce and implement operating policies.

Thus, among the operating control, it considers those activities pertaining to fuel and electricity consumption at the plants it operates (regardless of their geographic location) and the fleet of vehicles it manages².

Plants	Argentina: Pilar and Olivos Brazil: Extrema and Maracanau ³ Mexico: Anahuac, Guadalajara, Leon Rotomoldeo, Leon Rotopinsa, Lerma, Los Mochis (Pacific), Merida (Southeast), Monterrey Compuestos, Monterrey Rotomoldeo, Tuxtla, Veracruz (Gulf) Guatemala Peru
Commercial team fleet	Mexico

2.2 Period analyzed

This emissions inventory report pertains to the operations performed during 2019, regarding the period between January 1st and December 31st.

¹ Greenhouse Gas Protocol (GHG Protocol). A Corporate Accounting and Reporting Standard
<http://ghgprotocol.org/corporate-standard>

² In addition, they would include:

- 1) Energy consumption in stationary and mobile units linked to the Distribution Centers (DC/CEDIS) and administrative centers (not integrated into the plants: headquarters of Grupo and Systesa in Mexico City, and of the e-commerce business in Texas (U.S.))
- 2) Energy consumption from stationary and mobile units linked to the two IPS plants in Argentina.
- 3) Fuel consumption by the fleet of the commercial teams outside of Mexico.

There is no information available on the three preceding points; the company is working to incorporate them into the 2020 Emissions Inventory.

³ However, Maracanau has not developed activities since 2017.

2.3 Limits

Following the decision to apply the operating control described above, the emission sources were identified. These sources were classified by Scope, pursuant to the guidelines of the GHG Protocol.

Below, we present a detailed description of each Scope, including the emission sources considered in each case.

A. Scope 1: Direct GHG emissions

Including emissions related to Grupo Rotoplas' direct operations; that is, emissions from sources owned or controlled by the company itself. These are divided into three types of sources:

Source (area)	Activity	Fuels
Stationary	Processes:	
	• Roto-molding (burners)	Natural gas
	• Heater manufacture	LP gas
Mobile	• Generators/emergency plants	Diesel
	• Use of forklifts (at plants)	LP gas
	• Commercial activity with utility vehicles	Gasoline

In addition, fugitive emissions resulting from the loss of refrigerant gases in climatization equipment are included, obtained from estimates of the annual leakage.

B. Scope 2: Indirect GHG emissions

Including emissions related to electric energy generation used in Grupo Rotoplas' processes. This consumption can be classed under 2 types:

- Consumption from the national power grids of each country.
- Consumption from suppliers credited with cleaner generation; such is the case of the cogeneration energy consumed in Mexico (INFRA)

C. Scope 3: Other indirect GHG emissions

These are indirect emissions generated somewhere along the company's value chain. Of the 15 existing categories⁴, Grupo Rotoplas calculates the following items:

- Transportation and distribution of downstream products (outsourced transportation)
- Use of sold products (drinking fountains, purifiers, dispensers, and treatment plants)

⁴ For further information on the Scope 3 categories, visit: <https://ghgprotocol.org/scope-3-technical-calculation-guidance>

3. Calculation methodology

The calculations made in the inventory comprise a sum of the emissions of the 3 main greenhouse gases: Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).

To obtain the emissions from the activities performed by the company, we multiply the collected activity data (for instance: fossil fuel or electricity consumption) by an applicable emission factor. That is, the following general formula is used:

$$GHG \text{ emissions} = \text{Activity data} \times \text{emission factor (EF)}$$

For emissions of refrigerants (HCFC and HFC), the calculation incorporates an estimate of annual refrigerant leakage and the capacity of systems containing the gas; the formula used is the following:

$$\begin{aligned} GHG \text{ emissions (tCO}_2\text{e)} \\ &= \text{Load capacity(kg)} \times \text{Annual refrigerant loss rate} \\ &\times \text{Global Warming Potential (GWP)} \end{aligned}$$

Emissions are always reported as tons of CO₂e.

The emission factors and global warming potentials used to calculate the GHG inventory of Grupo Rotoplas are specified in Appendix 2.

4. Inventory results

4.1 Overview

The Scope 1, Scope 2, and Scope 3 emissions were quantified. In 2019, the Group emitted **66,897 tons of CO₂ equivalent (tCO₂e)**, per the following breakdown:

Grupo Rotoplas GHG Emissions			
Scope	2017 (tCO ₂ e)	2018 (tCO ₂ e)	2019 (tCO ₂ e)
Scope 1 ⁵	26,633	25,084	25,707
Scope 1 (Annual integrated report)	27,426	26,524	25,707
Scope 2 ⁵	20,675	19,395	18,651
Scope 2 (Annual integrated report)	20,931	19,628	18,651
Scope 3. Downstream transportation and distribution ⁶	16,207	16,262	17,353
Scope 3. Downstream transportation and distribution (Annual integrated report)	17,671	17,726	21,380
Scope 3. Use of sold products	-	-	5,186
TOTAL	63,515	60,741	66,897

Table 1. GHG emissions by scope

⁵ Emissions from 2017 and 2018 U.S. plants are excluded to be comparable to 2019, they were no longer considered after the sale of the assets in this year.

⁶ Emissions from the consumption of fuels in third-party transport at plants in Extrema (Brazil), Pilar (Argentina), Mérida (Mexico) and the Distribution Centers (CEDIS) of Costa Rica and El Salvador are not considered. Although the information became available in 2019, it is excluded to be comparable to previous years.

The values in Table 1 reflect those considered in the emissions inventory and in the integrated annual report. The difference is in the scope considered: the values reported in the integrated annual report reflect the behavior of the company each year, while in the inventory the same scope is adapted to be able to compare the emissions of each year. With the exception of Table 1, the rest of the inventory presents comparable scopes.

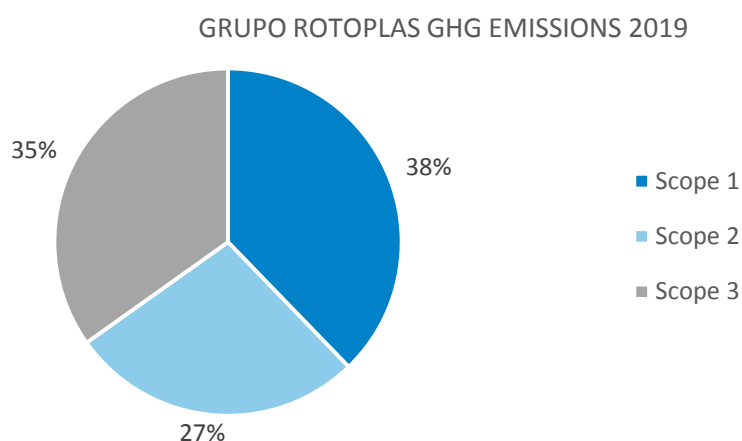


Figure 1. GHG emissions by scope in 2019

35% of the 2019 GHG emissions correspond to Scope 3, which are emissions not controlled by the company; namely: those related to the fuel for transporting and distributing products and electricity consumption during the stage of use.

As the standard requirement is to report Scope 1 and 2 emissions—i.e. those under the company's control—the weight is presented below subtracting Scope 3 emissions. This further facilitates the comparison with peer companies in the sector.

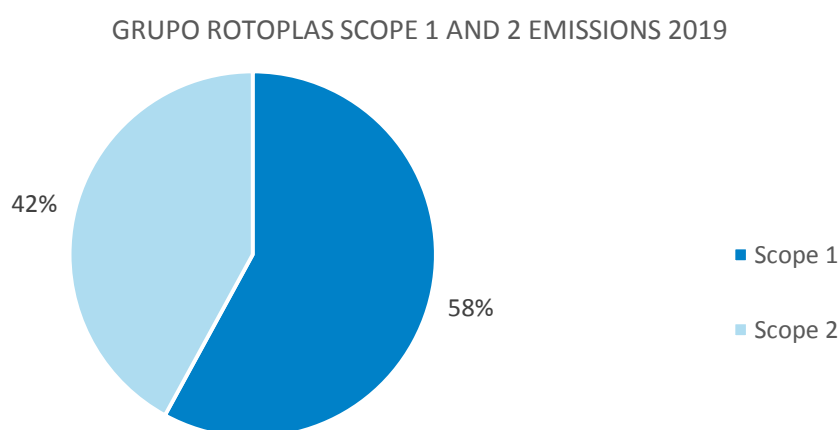


Figure 2. Breakdown of Scope 1 and 2 GHG emissions

4.2 Emissions breakdown

Below, we present a detail of the emissions in each scope.

Direct or Scope 1 emissions are broken down by emission source (table 2), as well as by fuel type (table 3). Scope 2 emissions are reported divided by electricity supplier (table 4).

In addition, Scope 1 and 2 emissions are presented by process (table 5) and by country (table 9).

With regard to Scope 3 emissions, the two typologies calculated are presented separately. On the one hand, emissions from product transportation and distribution, broken down by: 1) the country, plant, or DC (CEDIS in Spanish) whose products they transport and the type of fuel⁷ (tables 13, 14, and 15). On the other hand, emissions from the phase of product use are presented broken down by product category (drinking fountains, purifiers, dispensers, and treatment plants) (table 16).

a) Direct emissions – Scope 1

By emission source

Scope 1				
Segment	Emission source	GHG 2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Stationary sources	1. Heater manufacturing machinery	695	880	843
	2. Roto-molding machinery burners	25,235	23,293	24,093
	3. Generators/emergency plants	18	26	30
Mobile sources	4. forklifts ⁸	383	487	346
	5. Commercial activity vehicles	289	242	245 ⁹
Fugitive emissions	6. Refrigerant refills	13	156	151
Total		26,633	25,084	25,707

Table 2. Breakdown of direct emissions by emission source

As can be seen in figure 3, 94% of the 2019 Scope 1 emissions come from the use of burners for the Roto-molding processes, followed by machinery used to manufacture heaters; emissions generated by generators/emergency plants, forklifts, vehicles used for commercial activities, and refrigerant leakages are grouped under the “Others” category.

⁷ It is worth noting that all Grupo Rotoplas' plants double as distribution centers; to these are added 4 distribution centers in Costa Rica, El Salvador, Honduras, and Nicaragua.

⁸ The forklift category also considers a track mobile equipment, fueled by diesel.

⁹ The emissions reported were calculated based on estimated consumption data.

DIRECT EMISSIONS BY EMISSION SOURCE 2019

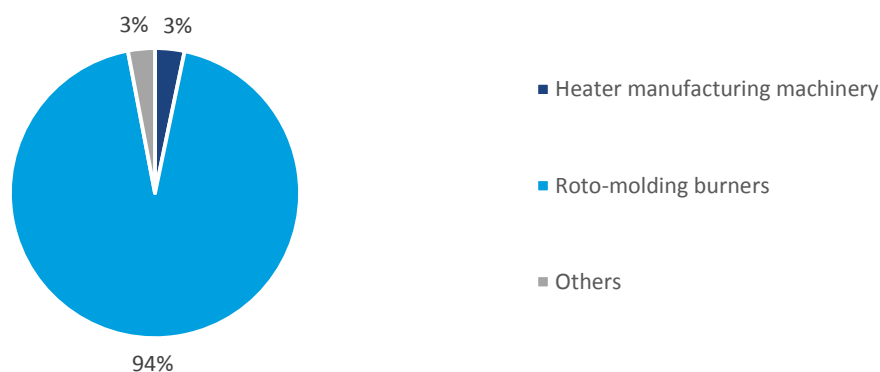


Figure 3. Breakdown of direct emissions by emission source

By fuel

Scope 1			
Fuel	GHG2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
1. Natural gas	20,469	19,221	19,636
2. LP gas	5,853	5,437	5,642
3. Diesel	52	29	33
4. Gasoline	246	242	245
(Emissions from refrigerant leakages)	13	156	151
TOTAL	26,633	25,084	25,707

Table 3. Breakdown of direct emissions by fuel

The breakdown by fuels shows that 76% of the 2019 direct emissions are due to natural gas, used in the Roto-molding burners and the machinery to manufacture heaters; it is followed by LP gas, mainly used also in the Roto-molding burners, although it also includes the gas used in forklifts. The “other consumption” category groups the diesel and gasoline emissions (stationary and mobile sources). See figure 4.

DIRECT EMISSIONS BY FUEL TYPE 2019

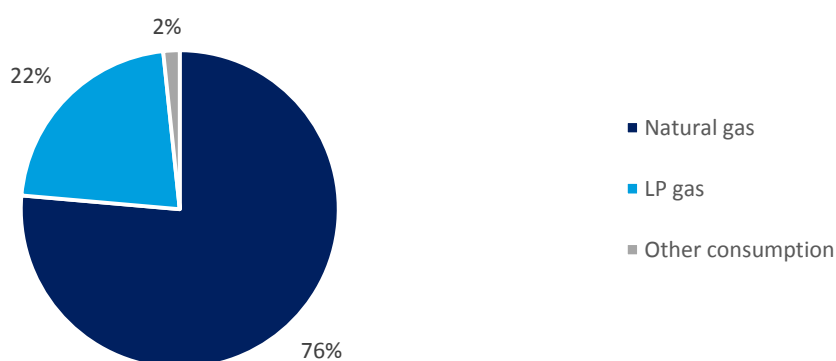


Figure 4. Breakdown of direct emissions by fuel

b) Indirect emissions – Scope 2

Grupo Rotoplas obtains electricity from three sources:

- 1) overall country grid,
- 2) private contracts for certain types of origin (fewer GHG emissions than the national grid)
- 3) self-generation.

The latter two cases are only seen in the Mexican operations, where the company has supply contracts for cogeneration energy, as well as solar panels for self-generation (at 5 plants¹⁰). These measures are part of the company's emissions reduction strategy, together with the operating efficiency projects¹¹.

The related emissions are presented in table 4 and figure 5.

Electricity source	GHG 2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
1. Cogeneration (INFRA)	16,033	15,813	15,325
2. National grids	4,643	3,582	3,326
3. Renewables	-	-	-
Total	20,675	19,395	18,651

Table 4. Breakdown of Scope 2 emissions by supplier

SCOPE 2 EMISSIONS BY ELECTRICITY SUPPLIER - 2019

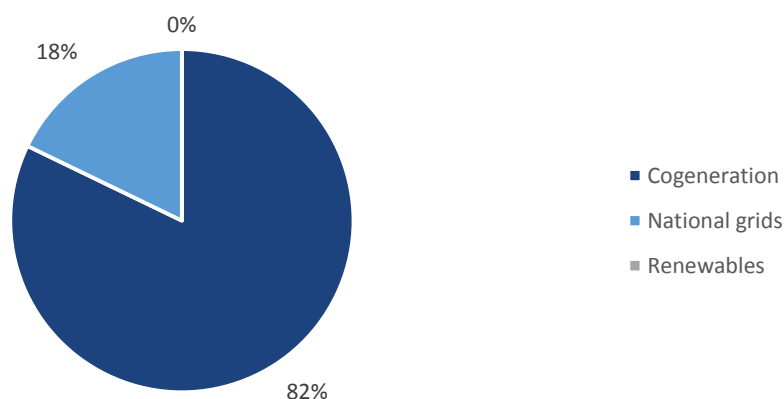


Figure 5. Breakdown of Scope 2 indirect emissions by supplier

c) Scope 1 and 2 emissions

Grupo Rotoplas has operational control of the Scope 1 and 2 emission sources, with regard to managing the processes and machinery (including vehicles) that consume fuels and electricity, as well as cooling equipment (refrigerants).

¹⁰ Plants in Anahuac, Guadalajara, Los Mochis, Merida, and Veracruz.

¹¹ Further information available in the Annual Integrated Report 2019.

This is, therefore, the priority group of emissions for the proposal to reduce consumption (energy efficiency) and emissions themselves (together with the energy efficiency measures, and the procurement of cleaner and/or renewable sources).

Moreover, to prioritize those activities with the greatest impact, tables 5 to 8 show the emissions by attributable process¹².

Furthermore, tables 9 to 12 show the breakdown by country, which makes it possible to establish the contribution of each of the geographic areas where the Group has operations.

By attributable process

Scope 1 + 2 emissions by attributable process			
Process	GHG 2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Roto-molding	27,965	25,686	26,198
Heater manufacture	1,054	1,164	1,146
Injection and extrusion	7,633	7,502	7,494
Milling	10,397	9,730	9,125
Commercial activity vehicles	246	242	245
General (refrigerants)	13	156	151
Total	47,308	44,479	44,358

Table 5. Breakdown of Scope 1 and 2 emissions by attributable process

Scope 1 + 2 emissions by attributable process -2017			
Process	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	GHG 2017 (tCO ₂ e)
Roto-molding	25,450	2,515	27,965
Heater manufacture	712	342	1,054
Injection and extrusion	55	7,579	7,633
Milling	157	10,240	10,397
Commercial activity vehicles	246	-	246
General (refrigerants)	13	-	13
Total	26,633	20,675	47,308

Table 6. Breakdown of Scope 1 and 2 emissions by attributable process 2017

Scope 1 + 2 emissions by attributable process -2018			
Process	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	GHG 2018 (tCO ₂ e)
Roto-molding	23,599	2,087	25,686
Heater manufacture	880	284	1,164
Injection and extrusion	51	7,450	7,502
Milling	156	9,574	9,730
Commercial activity vehicles	242	-	242
General (refrigerants)	156	-	156
Total	25,084	19,395	44,479

Table 7. Breakdown of Scope 1 and 2 emissions by attributable process 2018

¹² The concept of attributable process refers to activities performed in connection with the processes mentioned in table 5, even if the emissions were generated by a different activity. e.g.: the roto-molding process includes, in addition to the burners, the consumption from forklifts, generators/emergency plants necessary to perform this process.

Scope 1 + 2 emissions by attributable process - 2019			
Process	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Roto-molding	24,339	1,859	26,198
Heater manufacture	843	302	1,146
Injection and extrusion	50	7,444	7,494
Milling	80	9,045	9,125
Commercial activity vehicles	245	-	245
General (refrigerants)	151	-	151
Total	25,707	18,651	44,358

Table 8. Breakdown of Scope 1 and 2 emissions by attributable process 2019

The Roto-molding process is the one with the highest carbon impact within the company, with 59% of all Scope 1 and 2 emissions in 2019 (figure 6).

On the other hand, the milling process generates nearly half of the Scope 2 emissions and represents 21% of the total value of both scopes. Thus, these processes must be considered when developing emissions reduction strategies.

2019 SCOPE 1 AND 2 EMISSIONS BY ATTRIBUTABLE PROCESS
2019

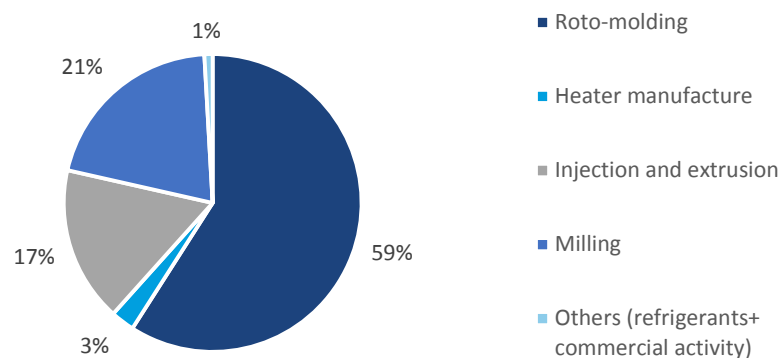


Figure 6. Breakdown of Scope 1 and 2 emissions by attributable process

By country

Scope 1 and 2 emissions by country			
Country	GHG 2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Mexico	39,185	35,657	34,782
Argentina	2,715	2,684	2,371
Brazil	2,550	2,482	3,063
Guatemala	97	944	1,215
Peru	2,761	2,712	2,926
Total	47,308	44,479	44,358

Table 9. Breakdown of Scope 1 and 2 emissions by country

Scope 1 and 2 emissions by country - 2017			
Country	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	GHG 2017 (tCO ₂ e)
Mexico	19,261	19,924	39,185
Argentina	2,209	507	2,715
Brazil	2,521	28	2,550
Guatemala	11	86	97
Peru	2,630	131	2,761
Total	26,633	20,675	47,308

Table 10. Breakdown of Scope 1 and 2 emissions by country – 2017

Scope 1 and 2 emissions by country -2018			
Country	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	GHG 2018 (tCO ₂ e)
Mexico	16,925	18,732	35,657
Argentina	2,231	453	2,684
Brazil	2,450	32	2,482
Guatemala	885	59	944
Peru	2,594	118	2,712
Total	25,084	19,395	44,479

Table 11. Breakdown of Scope 1 and 2 emissions by country - 2018

Scope 1 and 2 emissions by country - 2019			
Country	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Mexico	16,771	18,011	34,782
Argentina	1,949	423	2,371
Brazil	3,027	36	3,063
Guatemala	1,158	57	1,215
Peru	2,802	124	2,926
Total	25,707	18,651	44,358

Table 12. Breakdown of Scope 1 and 2 emissions by country - 2019

The breakdown by country shows that the main percentage comes from Mexico (78%); this is due to the number of plants in the country. It is followed by the operations in Brazil and Peru, which together contribute 14% of all the emissions (figure 7). The percentages are related to 2019 emissions.

SCOPE 1 AND 2 EMISSIONS BY COUNTRY -2019

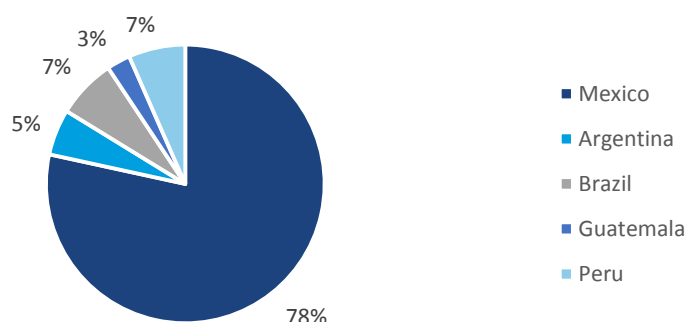


Figure 7. Breakdown of Scope 1 and 2 emissions by country.

d) Other indirect emissions – Scope 3

Downstream transportation and distribution

The transportation that Grupo Rotoplas outsources uses gasoline, diesel, and LP gas, based on the type of vehicle. Tables 13 and 14, as well as figures 8 and 9, show the consolidated breakdown by type of fuel and by country.

Scope 3 – downstream transportation and distribution			
Fuel	GHG 2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Gasoline	1,503	1,558	1,852
Diesel	14,433	14,433	15,229
LP gas	272	272	272
Total	16,207	16,262	17,353

Table 13. Breakdown of emissions from outsourced transportation by fuel type

EMISSIONS FROM OUTSOURCED TRANSPORTATION BY FUEL TYPE -2019

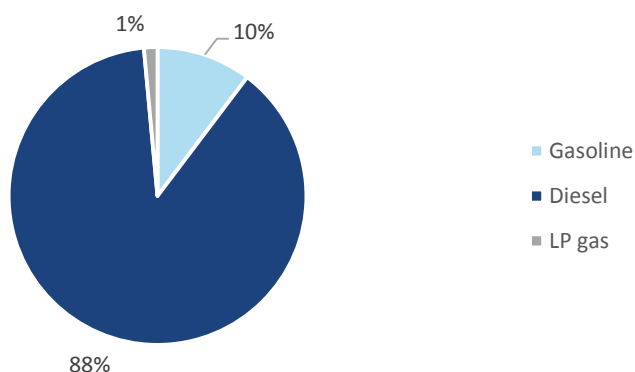


Figure 8. Breakdown of emissions from outsourced transportation by fuel type

Diesel is the main fuel consumed during the distribution of Grupo Rotoplas' products; it stands for 88% of all the 2019 outsourced transportation emissions.

Scope 3 – Downstream transportation and distribution			
Country/region	GHG 2017 (tCO ₂ e)	GHG 2018 (tCO ₂ e)	GHG 2019 (tCO ₂ e)
Mexico	15,925	15,980	15,734
Guatemala	282	282	1,619
Total	16,207	16,262	17,353

Table 14. Breakdown of emissions from outsourced transportation by country

Moreover, in 2019 Mexico's operations represent 91% of the emissions accounted by this activity (figure 9). In this year, two countries have been considered; however, it intends to grow the scope of the information in subsequent measurements to cover all the Group operations.

EMISSIONS FROM OUTSOURCED TRANSPORTATION BY COUNTRY-2019

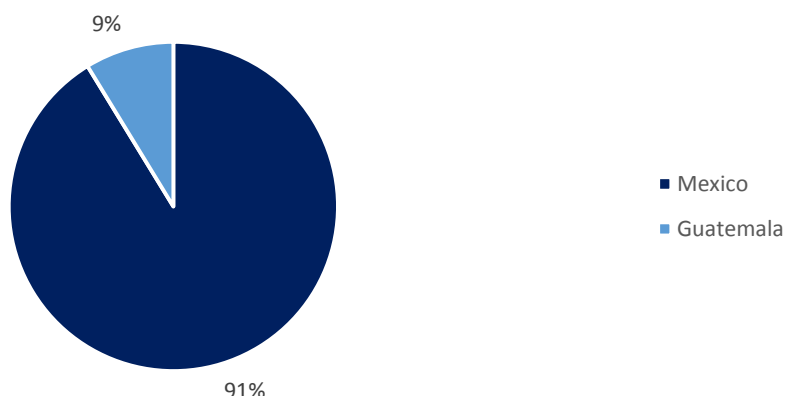


Figure 9. Breakdown of emissions from outsourced transportation by country

Use of sold products

Emissions attributable to electricity consumption by drinking fountains, purifiers, dispensers, and treatment plants in Mexico are presented in the category of use of products sold.

2019 is the first year this category has been calculated. The electricity consumption by unit of each type of product was obtained from a rate calculated in 2018; moreover, CFE is considered as the electricity supplier.

Scope 3—Use of products sold ¹³	
Product/service	GHG 2019 (tCO ₂ e)
Drinking fountains	320
Water purifiers	64
Dispensers	217
Treatment plants	4,585
Total	5,186

Table 15. Breakdown of emissions from use of products sold

4.3 Emissions intensity

Table 16 presents the Scope 1 and 2 emissions divided by tons of processed resin, the internal parameter that makes it possible to determine the company's degree of efficiency.

Emissions by intensity - 2019				
Year	Denominator	Units	Emissions	Units
2017	96,525	Ton of resin processed	0.49	tCO ₂ e/t of resin processed
2018	93,438	Ton of resin processed	0.48	tCO ₂ e/t of resin processed
2019	92,583	Ton of resin processed	0.48	tCO ₂ e/t of resin processed

Table 16. Emissions intensity indicator

Only Scope 1 and 2 emissions are considered, as they enable a comparison with other companies within the sector.

¹³ 2019 is the first year that the category "Use of sold products" were calculated, so no information is presented from previous years.

Appendix 1. Consumption considered

Below, we present the activity data that is the basis for the referenced emissions.

1. Direct emissions (Scope 1)

1.1 Natural gas

Country	Plant	Process	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ)
Mexico	Anahuac	Roto-molding	73,970	70,108	69,463
Mexico	Veracruz - Gulf		35,041	34,013	38,861
Mexico	León Roto-molding		60,990	52,935	49,532
Mexico	Monterrey Roto-molding		34,756	31,716	31,788
Mexico	Merida – Southeast		28,995	24,134	22,376
Peru	Peru		46,747	45,888	49,693
Brazil	Brazil		38,793	37,696	46,550
Argentina	Pilar		26,370	23,860	19,369
Argentina	Olivos	Heater manufacture	12,358	15,642	15,018
Overall total			358,020	335,991	342,649

Table 17. Direct consumption of natural gas

1.2 LP gas

Country	Plant	Attributable process	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ)
Mexico	Lerma	Injection	834	729	705
	Monterrey compounds	Milling	2,353	2,354	1,177
	Anahuac	Roto-molding	1,052	1,170	338
	Guadalajara		31,263	30,898	31,891
	León Rotomolding		654	927	982
	Monterrey Roto-molding		346	727	349
	Los Mochis - Pacific		29,106	25,500	25,765
	Merida – Southeast		326	287	337
	Tuxtla		11,751	9,027	9,102
Guatemala	Guatemala		14,459	13,935	18,278
Brazil	Brazil		207	185	267
Overall total			92,351	85,740	89,191

Table 18. Direct consumption of LP gas

1.3 Diesel

Country	Plant	Process	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ)
Mexico	Lerma	Injection	7	4	14
Mexico	León Rotopinsa		-	49	40
Mexico	Monterrey compounds	Milling	55	43	45
Mexico	Anahuac	Roto-molding	3	4	
Mexico	Veracruz - Gulf		62	-	
Mexico	Guadalajara		9	16	19
Mexico	León Rotomolding		65	23	15
Mexico	Monterrey Roto-molding		122	165	102
Mexico	Los Mochis - Pacific		7	14	14
Mexico	Merida – Southeast		5	4	2
Mexico	Tuxtla		1	-	
Argentina	Pilar		125	67	194
Peru	Peru		-	2	0.3
Argentina	Olivos	Heater manufacture	226	-	
Overall total			688	390	445

Table 19. Direct consumption of diesel

1.4 Gasoline

Country	Activity	Process	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ) ¹⁴
Mexico	Chain-quality assurance	Sales	1,635	1,635	1,584
	Quality		1,128	1,128	1,099
	Shipping		418	418	418
	Production		65	292	291
Overall total			3,538	3,473	3,392

Table 20. Direct consumption of gasoline

¹⁴ Gasoline consumption was estimated based on 2018 data.

1.5 Refrigerants

Country	Plant	HCFC-22 (kg)			HFC-32 (kg)			HFC-125 (kg)		
		2017	2018	2019	2017	2018	2019	2017	2018	2019
Mexico	Anahuac	1.87	1.87	1.87	0.12	0.12	0.12	0.12	0.12	0.12
	Merida - Southeast	2.35	2.18	1.27	-	0.06	0.06	-	0.06	0.06
	Tuxtla	0.83	.30	0.35	-	0.03		-	0.03	-
	Veracruz - Gulf	-	10.05	10.05	-	0.30	0.30	-	0.30	0.30
	Guadalajara	-	0.60	0.60	-	0.60	0.60	-	0.60	0.60
	León Rotomolding	-	0.80	0.80	-	0.05	0.05	-	0.05	0.05
	Monterrey Rotomolding	-	2.70	0.90	-	-		-	-	-
	Los Mochis - Pacific	-	1.92	1.92	-	-		-	-	-
	Monterrey compounds	-	1.28	1.28	-	22.95	22.95	-	22.95	22.95
	León Rotopinsa	-	2.93	2.93	-	-		-	-	
	Lerma	-	0.15	0.15	-	0.08	0.08	-	0.08	0.08
Brazil	Brazil	-	0.64	0.64	0.60	-		0.60	-	-
Argentina	Pilar	1.27	1.05	1.05	0.31	-	0.38	0.31	-	0.38
Guatemala	Guatemala	-	1.30	1.30	-	0.24	0.24	-	0.24	0.24
Peru	Peru	-	4.25	4.25	-	1.13	1.13	-	1.13	1.13
Overall total		6.32	32.0	25.94	1.04	25.94	25.91	1.04	25.94	25.91

Table 21. Estimated refrigerant leakage

2. Indirect emissions (Scope 2)

Country	Plant	National power grid consumption (kWh)		
		2017	2018	2019
Mexico	Anahuac	437,954	437,489	371,628
	Veracruz - Gulf	689,566	681,671	557,305
	Guadalajara	353,424	369,866	304,760
	Lerma	654,858	635,776	721,576
	Monterrey Rotomolding	431,323	403,595	340,042
	Los Mochis - Pacific	316,712	289,769	236,920
	Monterrey compounds	1,496,962	896,635	260,211
	León Rotomolding	181,022	225,538	232,545
	León Rotopinsa	1,629,200	2,029,844	2,092,904
	Merida – Southeast	357,525	325,273	91,634
	Tuxtla	137,440	107,040	110,248
Argentina	Pilar	307,686	316,790	259,570
	Olivos	639,262	530,486	652,296
Brazil	Brazil	346,627	397,197	477,399
Peru	Peru	456,374	412,795	431,830
Guatemala	Guatemala	176,260	160,080	156,560
Overall total		8,612,195	8,219,844	7,297,428

Table 22. Electricity consumption from National power grid

Country	Plant	Cogeneration consumption (kWh)		
		2017	2018	2019
Mexico	Lerma	6,176,125	6,184,357	6,214,421
	Monterrey compounds	23,012,616	22,512,667	21,896,003
	León Rotomolding	1,019,392	1,014,543	953,311
	León Rotopinsa	9,174,524	9,130,891	8,579,796
Overall total		39,382,656	38,842,458	37,643,531

Table 23. Electricity consumption from Cogeneration

3. Indirect emissions (Scope 3)

3.1 Gasoline

Country	Plant	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ)
Mexico	Anahuac	15,755	15,755	10,132
	Veracruz - Gulf	254	254	677
	Guadalajara	328	328	168
	León Rotomolding	2,086	2,086	3,833
	Lerma	384	384	-
	Monterrey Rotomolding	-	-	2,855
	Los Mochis - Pacific	-	-	782
	Tuxtla	2,788	2,788	5,037
Overall total		21,597	21,597	23,485

Table 24. Indirect consumption of gasoline

3.2 Diesel

Country	Plant	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ)
Mexico	Anahuac	16,783	16,783	14,759
	Veracruz - Gulf	27,406	27,406	23,054
	Guadalajara	11,616	11,616	13,166
	León Rotomolding	37,122	37,122	39,023
	Lerma	13,480	13,480	7,464
	Monterrey Rotomolding	33,219	33,219	27,680
	Los Mochis - Pacific	26,331	26,331	28,438
	Monterrey compounds	21,373	21,373	23,896
	Tuxtla	736	736	3,402
	Guatemala	3,749	3,749	21,520
Total		191,816	191,816	202,401

Table 25. Indirect consumption of diesel

3.3 LP gas

Country	Plant	Consumption 2017 (GJ)	Consumption 2018 (GJ)	Consumption 2019 (GJ)
Mexico	Leon Rotomolding	1,342	1,342	1,342
	Monterrey Rotomolding	2,846	2,846	2,846
Total		4,188	4,188	4,188

Table 26. Indirect consumption of LP gas

Appendix 2. Emission factors

1. Direct emissions (Scope 1)

1.1 Stationary sources¹⁵

For the roto-molding processes, heater manufacturing, generators/emergency plants, consumption data is obtained, broken down by type of fuel (gasoline, diesel, etc.). They are translated into energy units (GJ) in the cases that so require it, to apply the emission factor.

Fuel	kgCO ₂ /GJ	kgCH ₄ /GJ	kgN ₂ O/GJ
Diesel	74.1	0.0030	0.0006
LP gas	63.1	0.001	0.0001
Natural gas	56.10	0.001	0.0001

Table 27. Emission factors for stationary sources by GHG

1.2 Non-stationary sources¹⁴

For the use of forklifts and commercial activity with utility cars, the data on consumption per liter is obtained, broken down by type of fuel (gasoline, LP gas, and diesel). They are converted into energy units (GJ) using the calorific value, and the emission factor is then applied.

Fuel	kgCO ₂ /GJ	kgCH ₄ /GJ	kgN ₂ O/GJ
Gasoline	69.3	0.0250	0.0080
Diesel	74.1	0.0039	0.0039
LP gas	63.1	0.062	0.0002

Table 28. Emission factors for stationary sources by GHG

1.3 Calorific power and Global warming potentials (GWP)

Fuel	Calorific power ¹⁶	Units
Gasoline	0.0323	GJ/L
Diesel	0.0361	GJ/L
LP gas	0.0255	GJ/L
Natural gas	0.0336	GJ/m ³

Table 29. Calorific power by fuel type

GHG	GWP ¹⁷	Units
CO₂	1	tCO ₂ e/tCO ₂
CH₄	28	tCO ₂ e/tCH ₄
N₂O	265	tCO ₂ e/tN ₂ O

Table 30. GWP of the GHG

¹⁵ Adapted from the AGREEMENT, which establishes the technical particulars and formulas to apply methodologies for calculating greenhouse gas or compound emissions. SEMARNAT (2015)

¹⁶ Adapted from the 2020 fuel list, which will be considered to identify the users with a high consumption pattern, as well as the factors to determine equivalences in terms of barrels of oil equivalent.

¹⁷ Global Warming Potential Values. Green House Gas Protocol. Fifth Assessment Report (AR5) (2016).

1.4 Fugitive emissions

These are related to the leakage of refrigerants from air conditioning systems in the company's various facilities.

Refrigerant mix	Individual refrigerant	Composition	GWP ¹⁸
Not applicable	R-22	1	1760
R-401A	R-32	0.5	677
	R-125	0.5	3170

Table 31. GWP of refrigerants

2. Indirect emissions (Scope 2)

2.1 Electricity consumption

Electric energy consumed by Grupo Rotoplas is supplied by different national suppliers, depending on the country of operation; in Mexico, it also includes the supply of electricity generated through cogeneration processes by INFRA.

Country	Supplier	FE (tCO ₂ e/kWh)
Mexico	CFE	0.000505 ¹⁹
Mexico	INFRA - Cogeneration	0.000407 ²⁰
Guatemala	Empresa eléctrica de Guatemala	0.000367 ²¹
Argentina	EDENOR	0.000464 ²²
Brazil	Energisa	0.000075 ²³
Peru	Luz del Sur	0.000286 ²⁴

Table 32. Electric emission factors by supplier

3. Other indirect emissions – (Scope 3)

3.1 Outsourced transportation and use of products sold

This category groups the emissions from outsourced transportation used by the company to distribute its products; this transportation uses gasoline, diesel, and LP gas as fuel; the calculation considers the emission factors from table 27 (*Emission factors for stationary sources by GHG*).

For the category of use of products sold, which considers drinking fountains, purifiers, dispensers, and treatment plants, the calculation was done with the consumption of electricity, so the emission factor for Mexico, provided by CFE and reported in table 32, was considered.

¹⁸ Global Warming Potential Values. Green House Gas Protocol. Fifth Assessment Report (AR5) (2016).

¹⁹ CRE. Emission factor of the National Power System 2019.

²⁰ Figure provided by INFRA.

²¹ Republic of Guatemala. Ministry of Mines and Energy. Energy balance 2017.

²² Government of Argentina. Ministry of energy. Calculation of the grid's emission factor from 2013-2018.

²³ Ministério da Ciência, Tecnologia, Inovações e Comunicações. Median factor for Corporate Inventories.

²⁴ Value provided by the plant.

Appendix 3. Exclusions

This appendix presents the operations and aspects not included in this year's inventory.

- The emissions from the distribution centers (DC/CEDIS in Spanish) (Nicaragua, Honduras, El Salvador, and Costa Rica) are not included for Scopes 1 and 2. The mechanism to consider this consumption in the next reports is under development.
- The Scope 2 emissions of the administrative offices in Mexico (Grupo Rotoplas headquarters and Sytesa administrative office) and Texas are not included. In the case of Argentina, they are included because they are located within the Pilar plant. Scope 1 emissions are considered not relevant or are not generated.
- The emissions and consumption of resin from the US (California, Dallas, and Georgia) roto-molding operations are not included, as these plants were sold during 2019.

Appendix 4. Additional emissions

As part of the emissions generated by the company's activities, the combustion of LP gas and natural gas in rotomolding processes generated 28 tons of nitrogen oxides (NOx), 0.11 tons of sulfur oxides (SOx) and 1.5 tons of particles (PM).



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