

# ENVIRONMENTAL REPORT 2021

PROGRESS IN ENVIRONMENTAL RESPONSIBILITY OF THE PORT OF CARTAGENA,  
CONTECAR, SPRC, SPOI THROUGH THE CARBON FOOTPRINT 2021

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## CONTENT

Introduction	04
SPRC	06
CONTECAR	34
SPOI	62

This report was prepared based on information provided by the Port of Cartagena Group, CONTECAR, SPRC, SPOI and analyzed by consultants Manuel Felipe Olivera and Oscar Rios through AGAR Promotora de Proyectos SAS  
Cartagena, March 2022

# INTRODUCTION TO THE CARBON FOOTPRINT

## CARBON FOOTPRINT OF THE PORT OF CARTAGENA, CONTECAR, SPRC, SPOI 2021

For the seventh consecutive year, the Environmental Responsibility Report is presented to the the Sociedad Portuaria Regional de Cartagena -SPRC-, CONTECAR shareholders, with the inclusion for the first time, of Sociedad Portuaria Internacional -SPOI-.

This report, focused mainly on the Carbon Footprint of each of the terminals, including, in addition to the 2021 status, an inter-annual graphic comparison of energy consumption and emissions since 2015, in order to obtain traceability of the Greenhouse Gas GHG emissions indicator, expressed in kg of CO<sub>2</sub> equivalent/TEU<sup>11</sup> (CO<sub>2</sub>e/TEU).

As is already the methodological practice of international standards, the following scopes are presented in the report: Scope 1) direct emissions from the terminals (fossil fuel consumption), Scope 2) indirect emissions (electricity consumption), and Scope 3) emissions from port users and other sources (fuels from ships, trucks, tugboats and emissions associated with air transport of the organization's personnel), for SPRC and CONTECAR terminals. In the case of SPOI, due to its type of operation, the analysis of the scopes is less detailed and an indicator of emissions per TEU is not generated.

Emissions and energy consumption of the three scopes were monitored by the port's Processes division, whose team has been a constant support in the in the structuring of this report. For the final calculations of Scope 3 emissions, since 2018, the port of Los Angeles methodology is used. The results are updated and presented in this report.

The calculation of emissions related to electric power consumption depends on the emission factors calculated by the Mining and Energy Planning Unit -UPME-, which vary according to the composition of electricity generation sources for the previous year<sup>22</sup>. For the year 2021, this emission factor was 22.3% higher than that of 2020, so emissions from CONTECAR and SPRC grew considerably.

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<sup>1</sup> The analysis calculates the ratios of particulate matter and CO<sub>2</sub>e emissions to operational TEUs port output and to TEUs handled internally.

<sup>2</sup> The emission factors used for each year were those calculated by UPME for the previous year:

-Resol. UPME 857 of 2015 with emission factor for 2014: 0.374 kg CO<sub>2</sub>/kWh.

-Resol. UPME 843 of 2016 with emission factor for 2015: 0.401 kg-CO<sub>2</sub>/kWh (7.2% more than in 2015).

-Resol. UPME 804 2017 with emission factor for 2016: 0.367 kg-CO<sub>2</sub>/kWh (8.5% lower than in 2016 and 1.9% lower than in 2015)

-Resol. UPME 774 of 2018 with emission factor for 2018: 0.38 kg-CO<sub>2</sub>/kWh (3.54% higher than in 2016).

-UPME Resolution 642 of 2019 with emission factor for 2019: 0.381 kg-CO<sub>2</sub>/kWh (practically constant with the previous year, only 0.26% more than in 2016).

- Resolution UPME 385 of 2020 with emission factor for 2020: 0.166 kg-CO<sub>2</sub>/kWh, 56% less than for the previous year.

- Resolution UPME 382 of 2021 with emission factor for 2021: 0.203 kg-CO<sub>2</sub>/kWh, 22.3% more than for the previous year.

The analytical procedure follows the guidelines of international methodologies in line with those suggested by the Colombian Ministry of Environment and Sustainable Development (MADS), particularly indicated in the (1) Climate change plan for Colombian Ports and the (2) Roadmap to Facilitate Decision Makers to Incorporate the Climate Change initiatives in Port Planning and Development, published in 2016. The model used was initially developed by SPRC and adjusted by the consultancy responsible for the calculations, which is methodologically consistent with the one used by the World Port Climate Initiative<sup>3</sup>.

Comparison with international ports was feasible this year. However, it is important to note that the publicly available reports do not contain results with methodological details, this makes it impossible to understand with certainty the origin of the data and the methodologies employed. Thus, with the same source and basis of last year's analysis, historical comparison was made with three ports in other countries: Los Angeles, Amsterdam and the Hutchison Ports Bets aggregate. Three of the five ports analyzed, emissions per TEU (TEU) increase slightly (CONTECAR 4.2% more in 2021 compared to 2020). SPRC is the best performer in terms of reduction of CO2 equivalent emissions per TEU: 17% less in 2021.

For the preparation of this report, it was also performed a compliance status check of the terminals regarding environmental issues with based on the information received from the Port. Beyond the licensed obligations, with which there is a general compliance, it is important to note that environmental regulations are updated or changed, so in both terminals are monitoring this regulation to fulfill the requirements and, as a good practice, try to go beyond the legal requirements.

The report is structured for each terminal in three sections: Energy Consumption and Emissions, Interannual Comparison of Consumption and Emissions, and Interannual Comparison 2015-2021 of TEU Movements / Consumption and Emissions Compared to Cargo handling. The report closes with a carbon footprint comparison between SPRC and Contecar and of the ports of Los Angeles, Amsterdam and the Hutchison Ports.

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<sup>3</sup> [wpci.iaphworldports.org/carbon-footprinting/](http://wpci.iaphworldports.org/carbon-footprinting/)

# SPRC

## CARBON FOOTPRINT – SPRC

### *PROGRESS IN ENVIRONMENTAL RESPONSABILITY*

The graphs of this report on the carbon footprint of SPRC includes the structure of the consumption of fuel and electric power during the years 2020 and 2021; CO<sub>2</sub>e emissions from the terminal for the scopes 1, 2 and 3; comparisons between the years 2015 and 2021 of energy consumption and emissions; and the relationships between emissions and TEUs, showing indicators with respect to TEU and TEU including internal movements cargo, highlighting the effect of the pandemic of COVID-19 in port operation, in regards as the container crisis that led to increased demand for energy.

The report allows us to conclude that, in the year 2021, comparing the year 2020, the direct emissions from the terminal (sum of scopes 1 and 2) increased 22.3%, increasing the emission of 1,938 tons of CO<sub>2</sub>equivalent, in the same way that the cargo (expressed in movements of TEU) increased by 3.7%, in the same period of time. Several factors contributed to the increase of emissions: 23.2% increased the factor of electric energy emission calculated by the Unit Mining and Energy Planning - UPME; more cargo handling within the port, while TEUs grew 3.7% and internal movements of TEUS grew 16.2%.

Trucks and RTGs consume diesel fuel significantly, but not as much as the ships and tugboats. The refrigerated yard is where electricity plays a preponderant role, followed by gantry cranes. In the year 2021 the buildings used less energy, which would be associated with staff working from home. It's important to mention that by 2021 more RTG cranes have been used electrified, helping reduce diesel consumption significantly, which, in the end, favored the energy balance and emissions due to more efficient electrical energy.

Vessels and tugboats (Scope 3) are the largest contributors of CO<sub>2</sub>equivalent in the terminal. Only Scope 3 manages to be five times more than Scope 1 emissions and therefore the sources mentioned continue to be the largest contributors of particles to the atmosphere in port. However, in 2021 the reduction in almost a quarter of the cruise ship traffic in the port due to the pandemic, led to a decrease of emissions of 11,167 tons of CO<sub>2</sub>equivalent, 24% less than in 2020 when they had already been reduced emissions by 17.5% compared to the year 2019.

CO<sub>2</sub>equivalent emissions from consumption of electricity for the year 2021 were affected by a national emission factor 22.3% higher than that used for the calculations for the year 2020, which led, along with the increase in internal cargo handling, the increase of energy consumption and consequently of the GHG emissions.

In the year 2021, the growth of TEUs internal handling was 4.4 times higher than the TEU port output (3.7% vs. 16.2%), that is, for the operation is required cargo rearrangement inside the terminal, due to the world logistics crisis originated by the pandemic.

Although externalities impacted the port operations, in the seven years analysis, it is concluded that 2021 is the second year with the best results regarding the indicator of emissions per TEU and total emissions, if analyzed against the sum of scopes 1 and 2.

The sum of the emissions in 2021 of the terminal (Scope 1 and 2) was 10,644 tons of CO<sub>2</sub>e. Within Scope 1, trucks and RTGs were the most relevant with 78.6% of the total emissions; they contributed with 4,821 tons released into the atmosphere.

In Scope 2, emissions are mostly associated with the operation of the refrigerated container yard and the gantry cranes, followed by the buildings, they that add up to 72.4% of emissions of the Scope, about 3,263 tons.

Within Scope 3, only ships contribute 87% of CO<sub>2</sub>e emissions, about 40,461 tons, it means, 71% of the total emissions from the terminal, percentage that is less than the 78% registered in the year 2020 and that 90% registered in the year 2019.

Obviously Scope 3 is the greatest contributor greenhouse gas emissions, emissions that could only be reduced in if the ships find competitive to use <sup>4</sup> to port electrical power and tugboats make transit to electrical equipment.

Regarding emissions of particulate matter into the air, the reality again points out as the main responsible the ships, tugboats and external trucks. This group of emitters is responsible for 5.4 tons of particles emitted into the atmosphere in the port area, while cranes, trucks related to the internal port operation, along with other minor equipment (Scope 1) emitted 0.82 tons, for a total of 6.2 tons in the year 2021.

To build the particle matter emissions indicator with respect to TEUs, in the year 2021 there is better performance than the previous year, reducing the relationship in 17%.

In conclusion, the world logistics crisis, derived by the pandemic, generated a greater consumption of resources that the SPRC terminal was able to assimilate efficiently, not increasing significantly their indicators of emissions per TEU.

In the middle of the crises, new opportunities arouse to reduce their emissions in the short and medium term, some of which are already being implemented.

In the short and medium term, progress will continue in the electrification of RTG cranes. Likewise the electrification of high diesel consumption equipment (trucks, reach stacker forklifts), is the path to follow in order to have a significant reduction of emissions of CO<sub>2</sub>equivalent and particles within the terminal.

Moreover, if we add the onsite electricity generation or acquiring certified clean energy, the impact would be greater and the uncertainty in the energy supply will be reduce.

Cartagena, March 2022

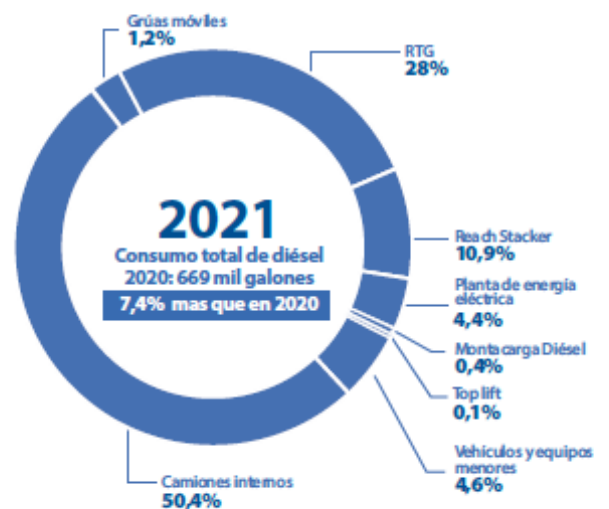
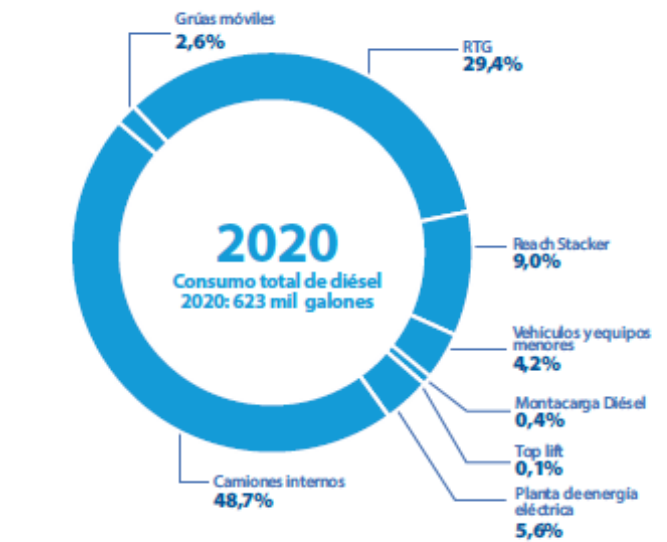
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<sup>4</sup> Unless an international agreement emerged to enforce this action for all ships during periods of berthing -a highly recommended agreement-, any restrictive national regulations in terms of emissions and promoting the connection to electricity in ports could cause a reduction in visits from ships with cargo or, increase in freights to cover additional costs.

# ENERGY CONSUMPTION AND EMISSIONS 2021

## DISTRIBUTION OF THE FUEL CONSUMPTION SCOPE 1

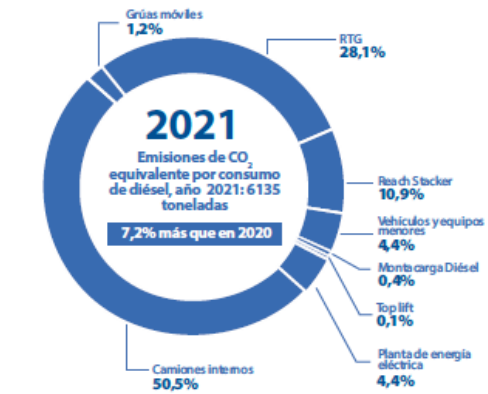
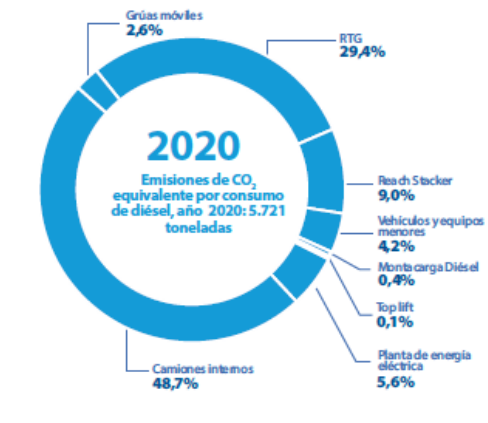
In the year 2021 the consumption of fossil fuels increased by 7.4% compared to 2020. The internal trucks consumed 34 thousand gallons (11.2% more than in 2020) this being the largest increase in 2021 consumption. The Reach stacker increased their consumption by almost 17 thousand gallons (23% more than in 2020). Minor vehicles and equipment increased 4.7 thousand gallons reflecting perhaps a reactivation in the operation after periods of quarantine caused by pandemic. Mobile cranes reduced their consumption by 51% compared to the year 2020 (close to 8 thousand gallons less than in 2020). Also power plants reduced diesel consumption in almost 6 thousand gallons, which shows that there was greater stability in the electrical power supply.



# EMISSIONS OF CO<sub>2</sub> EQUIVALENT BY FUEL CONSUMPTION SCOPE 1

In 2021 the trucks were responsible for more than half of Scope 1 emissions, emitting 312 additional tons of CO<sub>2</sub>e comparing 2020. Adding the emissions from mobile cranes and electricity power plants, in the year 2021, the terminal reduced its emissions in 129 tons of CO<sub>2</sub>e comparing 2020.

Based on 2020, CO<sub>2</sub>e total emissions increased 7.2% while the TEU growth of the operation was 3.7%. However, if we analyze the total moves of TEUs in 2021 (including internal cargo handling in port), such moves grew 16.2% compared to 2020. This reflects the impact of logistical complications worldwide caused by the pandemic.



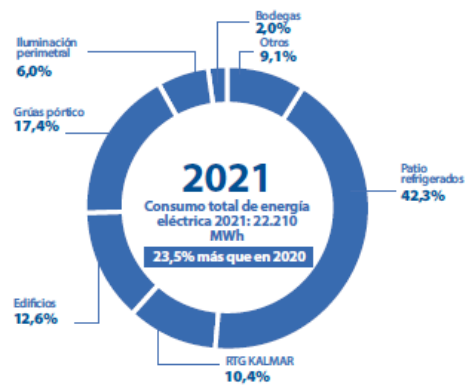
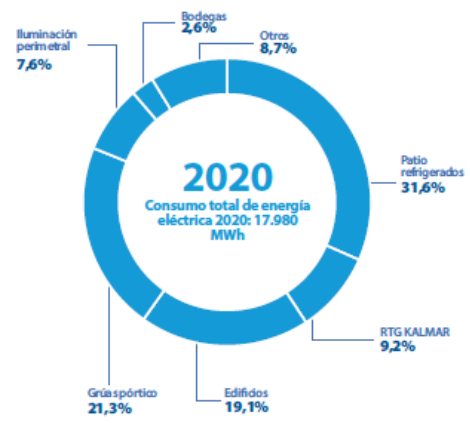


# ENERGY CONSUMPTION AND EMISSIONS 2021

## DISTRIBUTION OF ELECTRICAL POWER CONSUMPTION SCOPE 2

Electric power consumption in 2021 increased by 23.5% compared to 2020. The Refrigerated container yards had the greatest increase with 66%, resulting in 3,732 additional MWh. The above is reflected in the participation share, going from 31.6% to 42.3% in 2021. The higher energy consumption is related with the global logistics crisis, where it was required to have more refrigerated containers stacked in SPRC yards.

RTG cranes in the year 2021 increased the energy consumption by 40% (658 MWh more than in 2020). Opposite case happened in the buildings where energy savings were higher. In 2021, energy consumption was 620 KWh lower, which is reflected share participation going from 19.1% in 2020 to 12.6% in 2021.



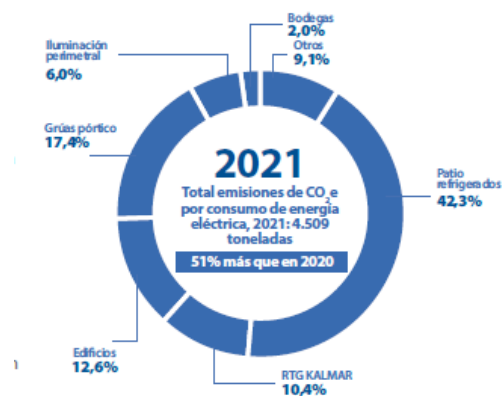
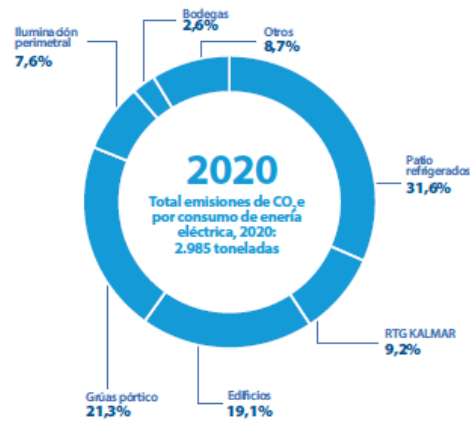
# EMISSIONS FROM CO<sub>2</sub> EQUIVALENT BY CONSUMPTION OF POWER ENERGY SCOPE 2

For the year 2021 the emission factor updated by the national government was 22.3% higher than 2020; this difference partially explains the increase in CO<sub>2</sub> emissions compared to 2020, with 51% growth, for a total of 1,524 additional tons.

The refrigerated container yards and the cranes sum up for almost 60% of the CO<sub>2</sub> equivalent emissions from Scope 2.

The impact of the logistics crisis caused by the pandemic was reflected in an surge in refrigerated containers that together with a higher emission factor, increased CO<sub>2</sub> emissions in the terminal.

It is remarkable that the buildings have reduced power consumption, where in 2020 the share was 19.1%, while in 2021, the percentage was 12.6%

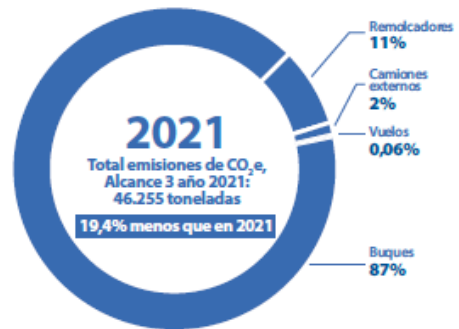
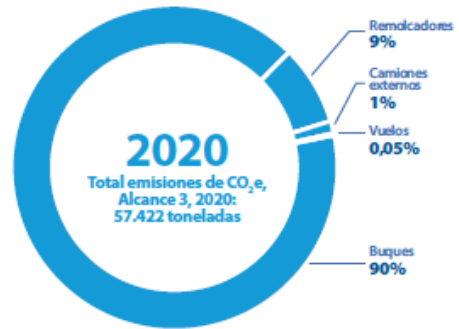


# DISTRIBUTION EMISSIONS CO<sub>2</sub> EQUIVALENT SCOPE 3

CO<sub>2</sub>equivalent emissions of Scope 3 correspond to emissions from ships, external trucks, tugboats and flights. These emissions are not controlled directly by the terminal.

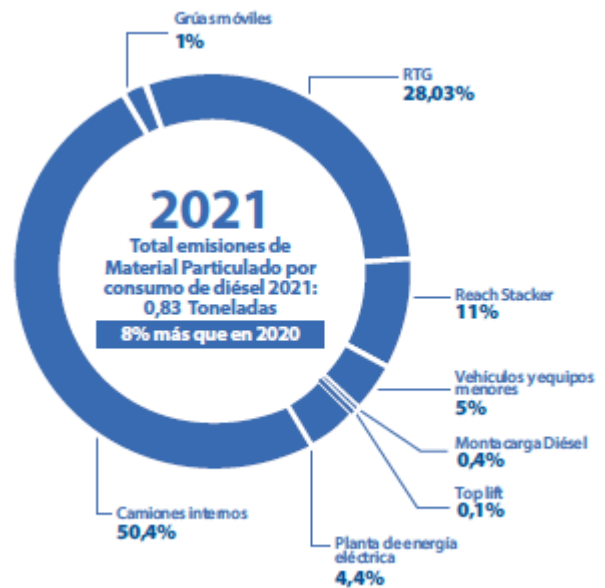
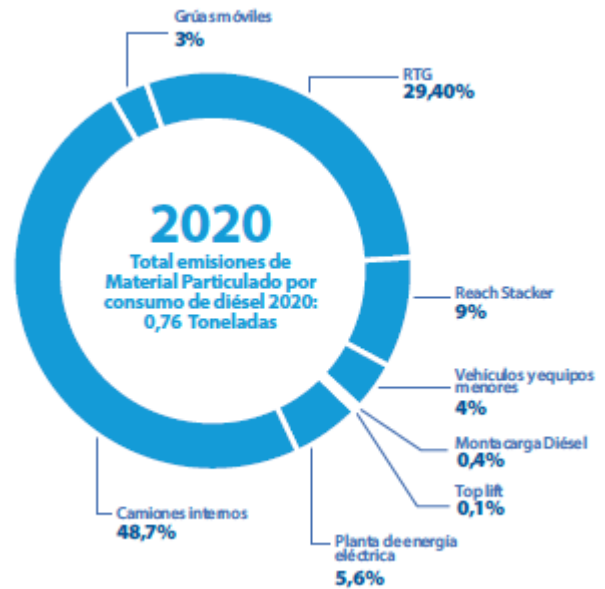
By the year 2021 the CO<sub>2</sub>equivalent emissions of this Scope were reduced by 11,167 tons (19.4% compared to 2020), where emissions from ships fell 10,980 tons.

The above is due to the fact that in 2021 there were 199 less ships calling to the port. Due to the effects of COVID-19 pandemic, the major reduction occurred with cruise ships. In 2021; just 1/4 of the cruises of 2020 docked in the terminal: 21 cruise ships and 74 cruise ships respectively.



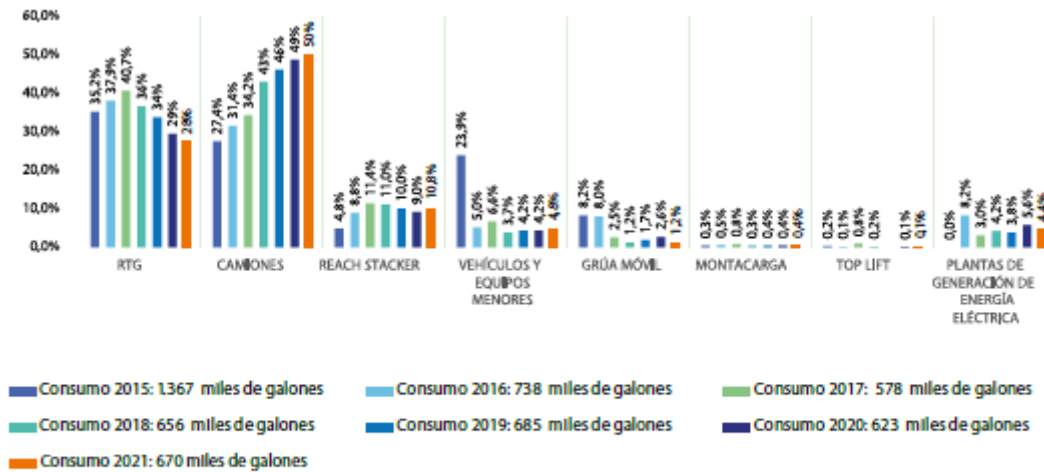
# EMISSIONS OF PARTICULATE MATERIAL FOR USE OF DIESEL, SCOPE 1

Particulate emissions in the year 2021 had an increase of 8% compared to 2020, caused by more consumption of fossil fuels in the terminal. The internal trucks continue to participate with the greatest share. When complete electrification of all RTG cranes, the particulate emissions will be reduce by more than 25% and the energy efficiency of each crane could triple.



# YEAR-ON-YEAR COMPARISON OF CONSUMPTION AND EMISSIONS

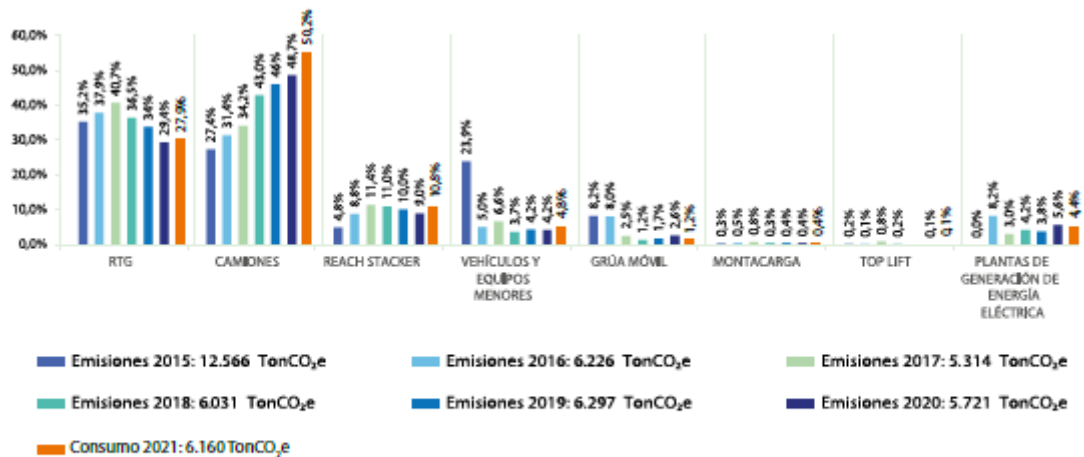
## HISTORICAL DISTRIBUTION OF FUEL CONSUMPTION SCOPE 1



In 2021, the terminal presented an increase of 7.4% in fossils fuel consumption compared to 2020. This increase is mainly associated with the operation of the internal trucks of the port, where a constant growth has been observed since 2015.

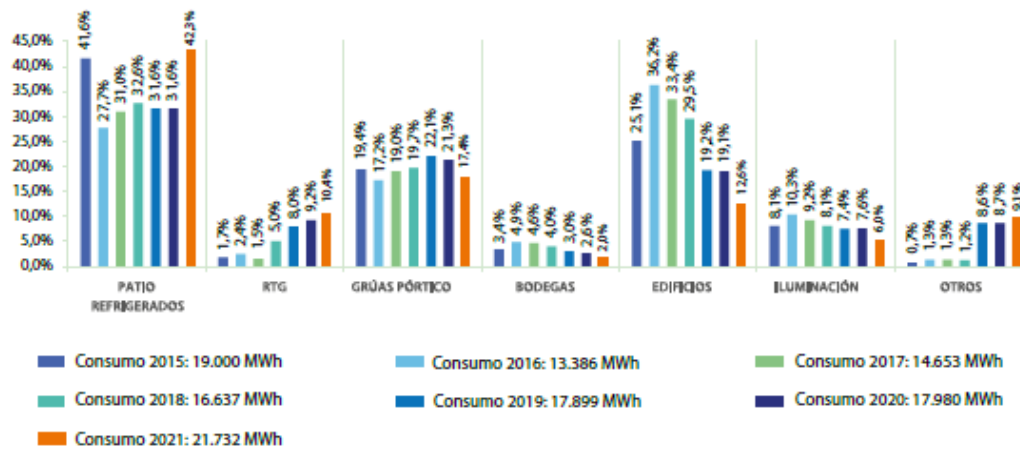
Moreover, RTG cranes have progressively reduced their percentage share, because they have been progressively electrified over the years.

# HISTORICAL DISTRIBUTION OF EMISSIONS CO<sub>2</sub> EQUIVALENT FOR THE CONSUMPTION OF FUELS – SCOPE 1



In 2021, trucks had the highest participation in CO<sub>2</sub> equivalent carbon emissions, gradually increasing its share from 27.4% in 2015 to 50.2% in 2021. RTG cranes have reduced since 2017 its participation to reach 27.9% in 2021.

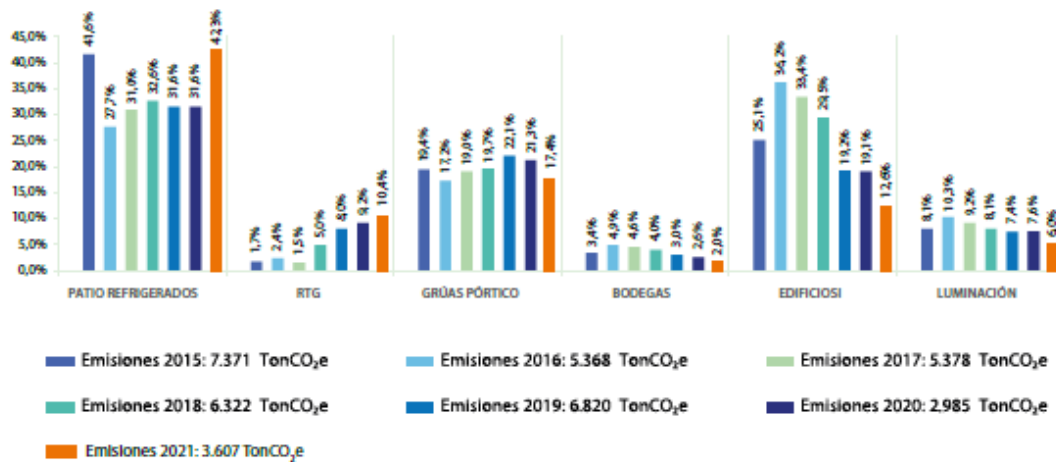
# HISTORICAL DISTRIBUTION OF ELECTRICAL ENERGY CONSUMPTION SCOPE 2



Comparing 2020, in 2021 electricity consumption increased in 23.5%. Since 2016, buildings have reduced their share from 36.2% to 12.6%, which reflects the investments made in lights replacement and improvements in air conditioning equipment. The refrigerated container yards registered the higher increase in energy consumption, passing from 31.6% share in 2020 to 42.3% in 2021, which means an additional consumption of 3.7 GWh.

The above is the effect of the global logistics crisis that increased in the terminal the number of containers that require cold chain and must be connected permanently to the electrical power source.

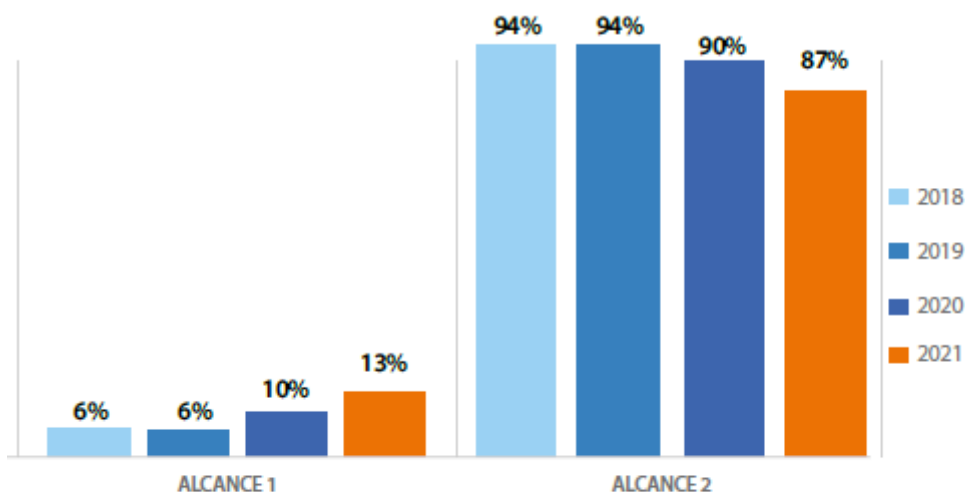
# HISTORICAL DISTRIBUTION OF THE EMISSIONS OF CO<sub>2</sub> EQUIVALENT BY ELECTRICAL ENERGY CONSUMPTION SCOPE 2



CO<sub>2</sub>equivalent emissions for 2021 increased by 51% compared to 2020. This was mainly due to three factors: the 22.3% increase in the national emission factor (expressed in kgCO<sub>2</sub>e/kWh), the increase in emissions by the demand for energy to serve a greater number of refrigerated containers and a 16% increase in the mobilization of TEUs during 2021 compared to 2020. This last aspect is understood as the greater mobilization of TEUs inside the port, the more usage of cranes and other equipment. Although Scope 2 emissions grew, this increase is lower than if fossil fuels were used (up to 70% more).



# HISTORICAL DISTRIBUTION OF FOSSIL FUELS CONSUMPTION SCOPE 1 AND 3



In 2021 most of the fossils fuel consumption occurred within Scope 3 (87% of total consumption of fuels that corresponds to 4,434 thousand gallons). The ships have the highest demand.

During the years 2020 and 2021, the share of Scope 3 was reduced as fewer ships docked in the port, effect of the COVID-19 pandemic.

Scope 1 increased its share to 13% in the year 2021 due to increased consumption of fossil fuels, mainly, on internal trucks.

### (Scope 1+3):

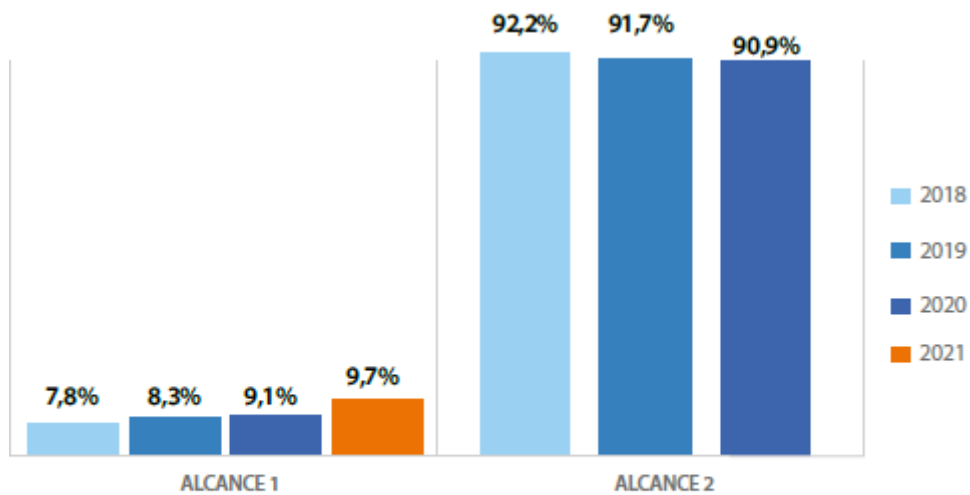
2018: 10,266 thousand gallons

2019: 10,903 thousand gallons

2020: 6,134 thousand gallons

2021: 5,103 thousand gallons

# HISTORICAL DISTRIBUTION OF THE EMISSIONS OF CO<sub>2</sub> EQUIVALENT BY CONSUMPTION OF FOSSIL FUELS, SCOPE 1 AND 3

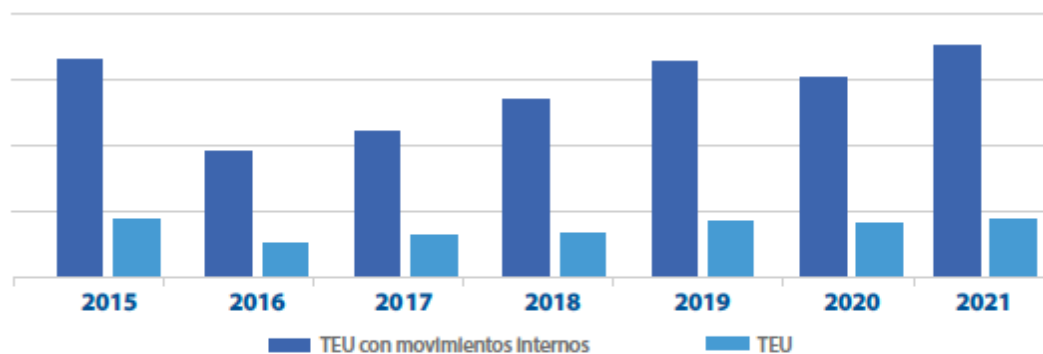


In 2021 the CO<sub>2</sub> equivalent emissions associated with the consumption of fossil fuels were lower by 17% compared to those of 2020.

Scope 1 increases its percentage by 2.6% due to the increased emissions from port trucks.

# YEAR-YEAR COMPARISON 2015-2021 OF MOVEMENTS OF TEU AND CONSUMPTION AND EMISSIONS VS. LOAD MOVEMENTS

## TEU MOVES IN SPRC



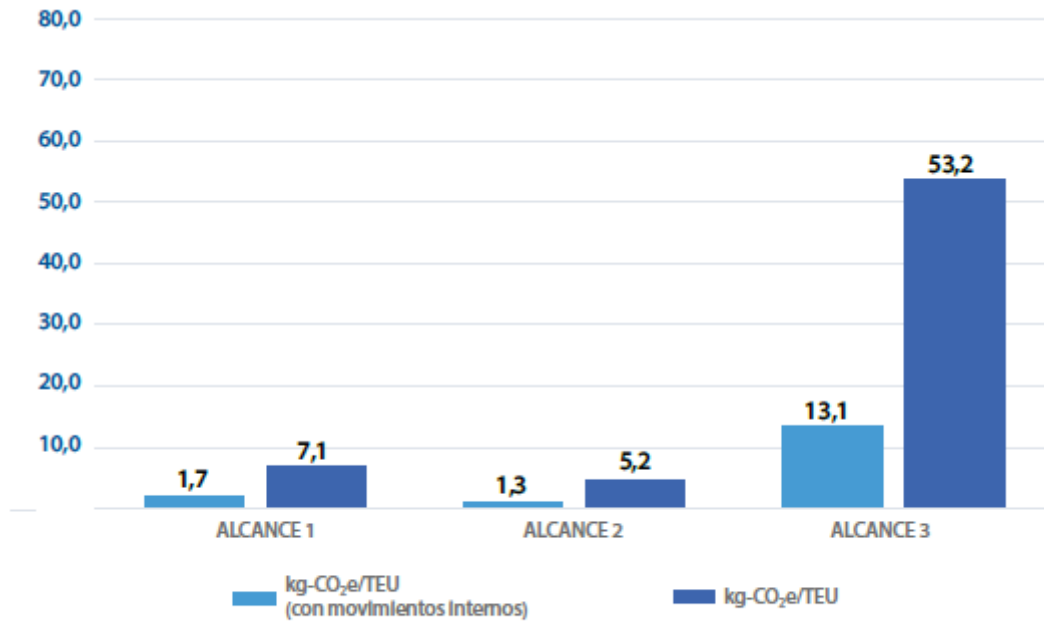
TEUs moves are defined as follows: TEUs as port output (hereinafter TEU) and TEU that include internal movements within the premises (TEU with internal movements).

The TEUs as a port output represent around a quarter of the total internal movements of TEU, which reflects a high level of cargo moves before the departure and the impact of the global logistics crisis.

In 2021 there was a growth in the TEU output of 3.7% compared to 2020.

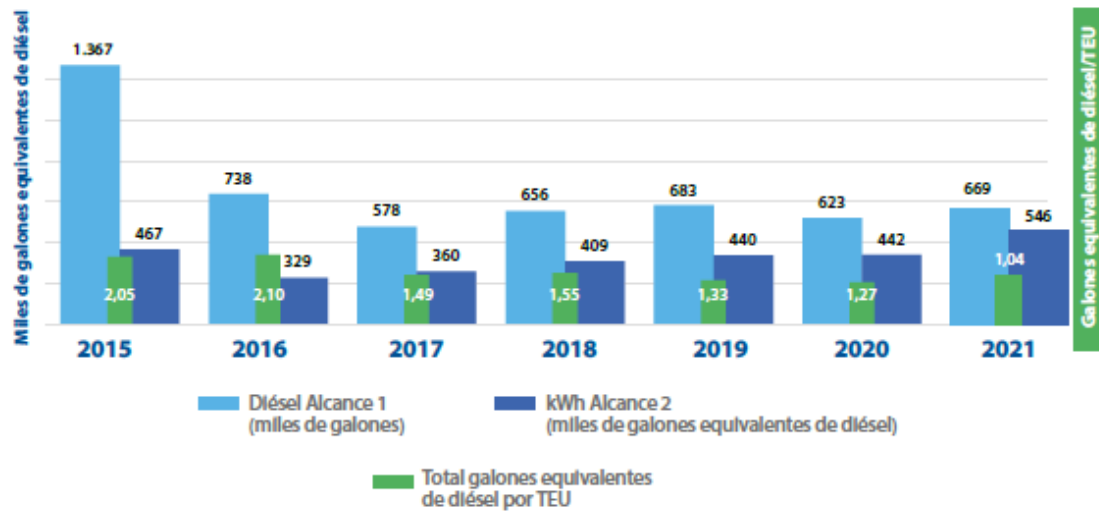
On the other hand, the TEUs with internal moves grew by 16.2% in the same year 2021.

# CO<sub>2</sub>EQUIVALENT EMISSIONS PER TEU PER SCOPE 2021



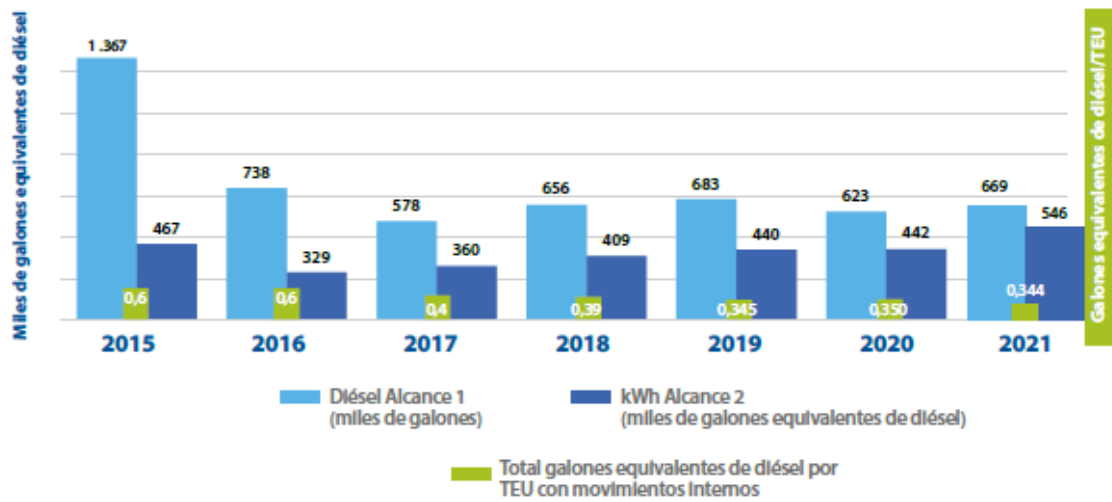
The indicator of CO<sub>2</sub> equivalent emissions per TEU shows that emissions of Scope 3, which are external emissions to the terminal (external trucks, tugboats, ships and flights), are almost four times the direct emissions (Scopes 1 and 2).

# DIESEL CONSUMPTION, ELECTRICITY AND GALLON EQUIVALENTS PER TEU



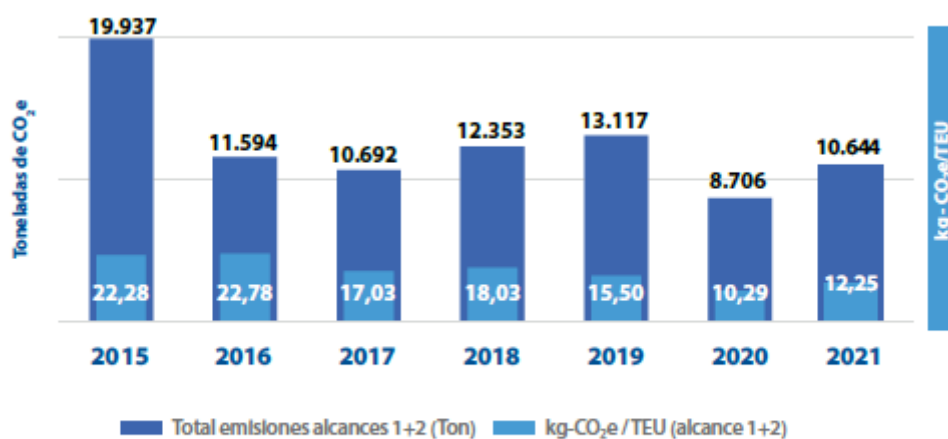
Analyzing the behavior of the energy efficiency indicator, expressed in diesel equivalent gallons per TEU, since 2015 until 2021, 2021 had the third best result in the last 7 years, with 1.4 equivalent gallons of diesel/TEU. The TEU growth in the terminal for the year 2021 was 3.7%, while the consumption of equivalent gallons/TEUs in diesel increased by 10% compared to 2020.

# DIESEL CONSUMPTION, ELECTRICITY AND GALLON EQUIVALENTS PER TEU (TEU WITH INTERNAL MOVES)



The equivalent gallons with the TEUs that include the internal movements, in 2021 the energy efficiency expressed in equivalent gallons of diesel/TEU, presented a slight improvement of 0.350 in 2020 to 0.344 in 2021. The above, even taking into account that the TEU with internal movements in the year 2021 increased by 16.2% compared to 2020, which reflects a great effort in optimizing the port efficiency.

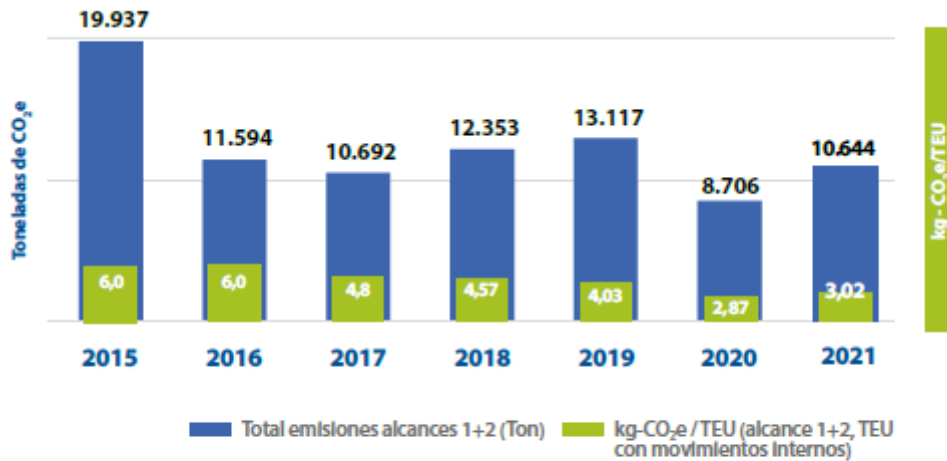
## EMISSIONS OF CO<sub>2</sub> EQUIVALENT AND KILOGRAMS OF CO<sub>2</sub>/TEU (SCOPES 1 + 2)



Considering that the direct emissions of CO<sub>2</sub> equivalent from the terminal are related to Scopes 1 and 2, it is observed that, during a period of seven years (2015-2021), in 2021 the second best indicator of emissions was obtained IN CO<sub>2</sub> equivalent per TEU: 12.25 kg- CO<sub>2</sub>/TEU. This value is higher by 18%, compared to 2020 where it was 10.39 kg- CO<sub>2</sub>/TEU.

A higher emission factor for the national electricity system, as well as higher internal movements influenced the indicator in 2021 to deteriorate compared to the 2020.

# EMISSIONS OF CO<sub>2</sub> EQUIVALENT AND KILOGRAMS OF CO<sub>2</sub>/TEU (SCOPE 1 + 2, TEU WITH INTERNAL MOVEMENTS)

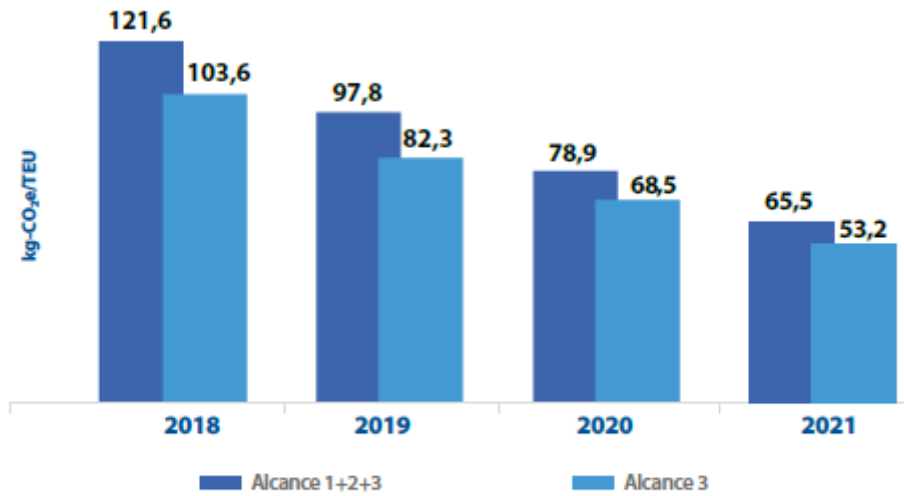


When the analysis is performed with the TEUs that include internal movements, the kilograms of CO<sub>2</sub> equivalent/TEU of Scopes 1 + 2, could indicate that the efficiency in the year 2021 slightly deteriorated by 5% when compared to 2020.

However, this result turns out to be marginal, taking into account that the calculations of the Scope 2 were carried out with an emission factor that is 22.3% higher in 2021.



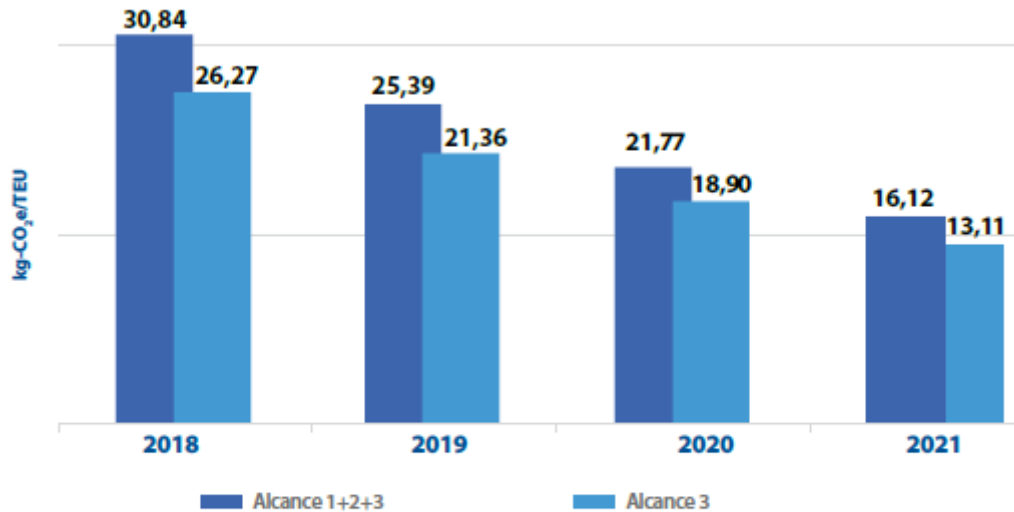
# KILOGRAMS OF CO<sub>2</sub> EQUIVALENT/TEU



Adding the emissions of the three Scopes and relating them to the number of TEU, there was a 17% reduction in emissions from 78.9 in 2020 to 65.5 kilograms of CO<sub>2</sub>equivalent/TEU in the year 2021. The reduction in emissions is mainly associated with the lower amount of ships that were serviced in the port in 2021.

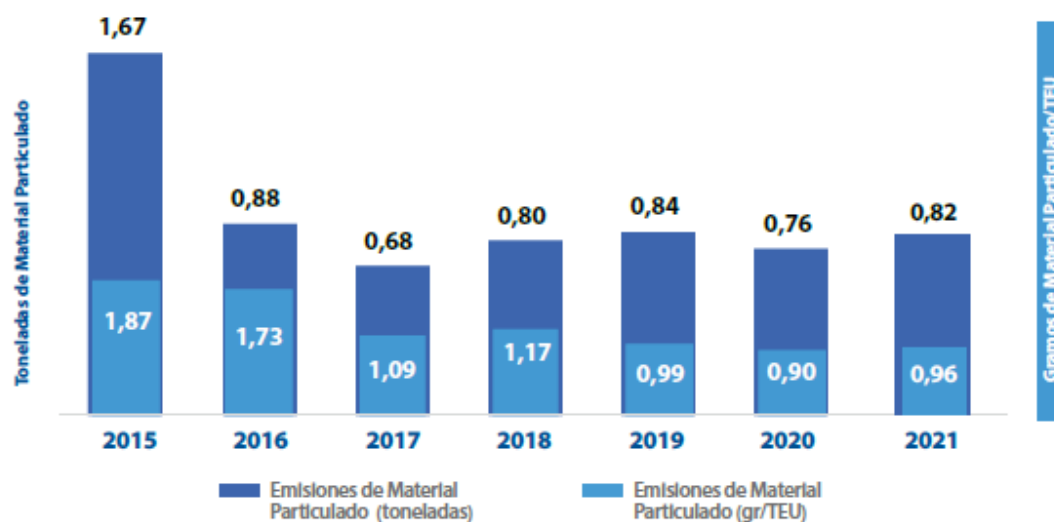
For Scope 3, which presents the highest emissions generated in the terminal, the reduction of the indicator for the period between 2020 and 2021 was 22.3%, going from 68.5 to 53.2 kilograms of CO<sub>2</sub>equivalent/TEU.

# KILOGRAMS OF CO<sub>2</sub> EQUIVALENT/TEU (TEU WITH INTERNAL MOVEMENTS)



For TEUs that include internal movements, the total emissions of the three Scopes in the year 2021 were 26% lower compared to 2020, going from 21.77 to 16.12 kg-CO<sub>2</sub>equivalent/TEU. Given the above, it is concluded that for the set of three Scopes, the operation was more efficient and part of the reductions were explained by the lower number of vessels served (-18.6%), although the movement of TEUs grew by 3.7%.

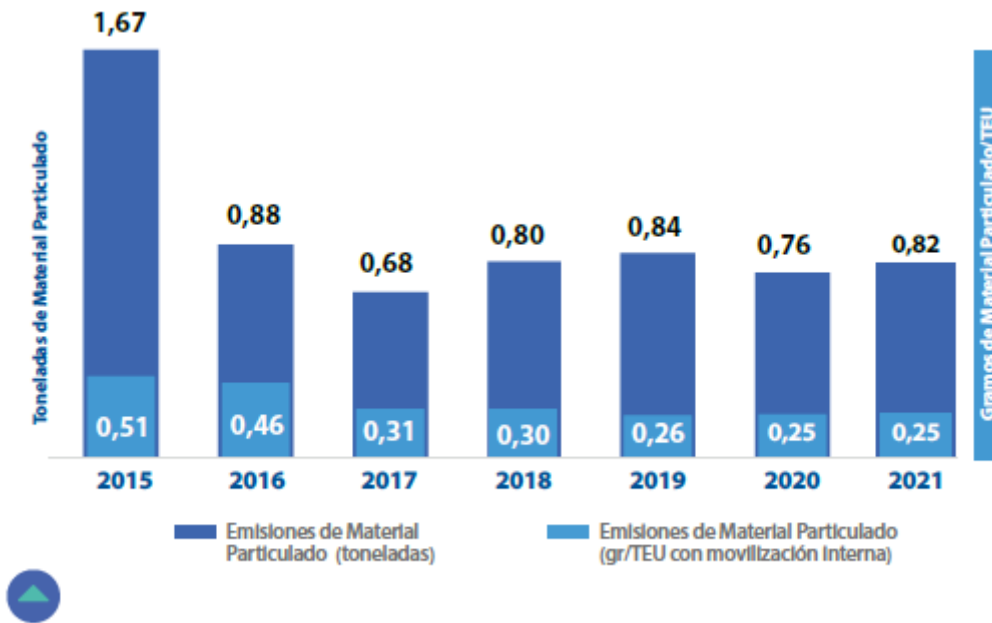
# PARTICULATE MATERIAL EMISSIONS AND EMISSIONS PER TEU, SCOPE 1



The terminal is advancing year on year to achieve greater efficiency reflected in part by the reduction of particle emissions into the air. This is achieved by reducing the consumption of diesel, advancing in the greater use of equipment that works with electrical energy.

For the year 2021, there was an increase in the emission of particulate matter by 7.9% compared to 2020 and a reduction of 2.1% compared to 2019.

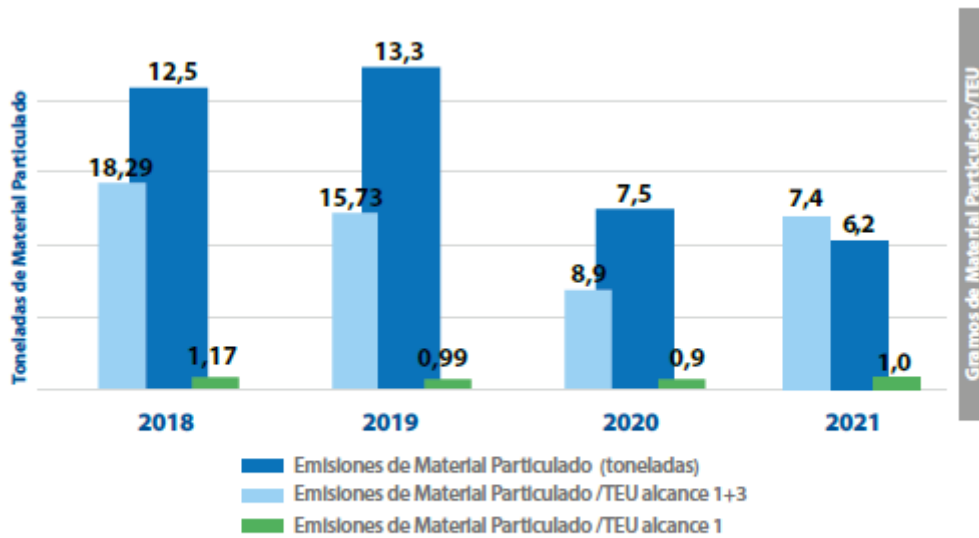
# PARTICULATE MATERIAL EMISSIONS AND EMISSIONS PER TEU (TEU WITH INTERNAL MOVEMENTS)



TEUs with internal movements in 2021 increased by 16.2% in comparison to 2020. At the same time, diesel consumption also increased by 7.4% in the same period. Analyzing particulate emissions per TEU, finds that the indicator for the year 2021 remains the same as that of the year 2020 (0.25g/TEU with internal movements).

The electrification of some equipment such as RTG cranes has led to internal trucks of the terminal are the ones that mainly consume diesel and therefore they are the main source of particle emissions.

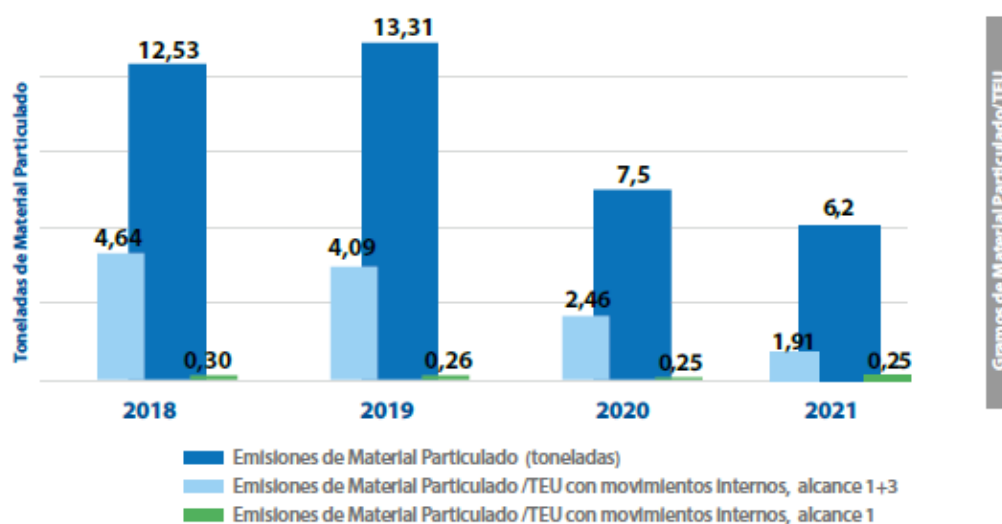
# PARTICULATE MATERIAL EMISSIONS AND EMISSIONS PER TEU, SCOPE 1 AND 3



With respect to the year 2020, in 2021 the emissions of particulate matter, added Scopes 1 and 3 were reduced by 17%, while in Scope 3 (mainly related to ships) were given the highest reductions.

When analyzing the emissions of particulate matter per TEU for the years 2020 and 2021 there was a slight increase from 0.9 to 1 gram of material particulate per TEU.

# PARTICULATE MATERIAL EMISSIONS AND EMISSIONS PER TEU (TEU WITH INTERNAL MOVEMENTS) SCOPE 1 AND 3



When the Scope 1 analysis is performed by comparing emissions of particulate matter per TEU with internal movements, the emissions remain stable between the two years.

The total emission reduction between 2020 and 2021 was 17.3% (from 7.5 to 6.2 ton CO2equivalent)

# CONTECAR

## CARBON FOOTPRINT

### *PROGRESS IN ENVIRONMENTAL RESPONSIBILITY*

The graphs in this report include the structure of fuel and energy consumption during the year 2021; CO<sub>2</sub>equivalent emissions of the port for scopes 1, 2 and 3 used to measure the carbon footprint; comparisons between the years 2015 to 2021 of consumption and emissions; and the relationships between emissions and TEUs, highlighting indicators with respect to TEUs, and TEUs that include internal moves.

The report allows to conclude that with respect to 2020, in 2021 the consumption of fossil fuels and electricity consumption increased by 23.3% and 29.2% respectively, which led to an increase of Scope 1 and 2 GHG emissions in a 31.4% and was also evident of a proportional increase in emissions of polluting particles (23.2%).

Regarding the indicators of emissions per TEU, these presented a decreasing behavior. Although emissions grew at the terminal, the most of the indicators present a positive performance, which shows that it efficiency of the port was steady despite the high number of TEU movements that had to be carried out due to the global logistics crisis.

For the entry into operation of the photovoltaic system installed on the deck of a 22 thousand sqm warehouse, the increase in electricity consumption was lower by 1,880 MWh, that is, 15% of the 2021 additional consumption. This allowed not emitting 382 tons of CO<sub>2</sub>equivalent.

Within the terminal, in 2021, the largest consumption of fossil fuels come form of RTG cranes and internal trucks that support the operation and they used a total of 2.19 million gallons (87.7% of scope 1). Related to electricity, the main consumption and increase came from the refrigerated container yard. This increase was linked to the global container crisis that implied storing more containers which are plugged to the power grid to maintain the cold supply chain. In Scope 3 vessels, tugboats and external trucks account for more than 68% of consumption of fossil fuels. Regarding the emissions of the Scope 3, the terminal has no control over these, since they are emissions, for the most part, generated by external vehicles.

In relation to the emissions of CO<sub>2</sub>equivalent, form the 124,379 tons emitted by the operation, 90,532 tons (72.8%) were related to Scope 3 by vessels, tugboats, transfers air and external trucks, while the Scope 1 activities contributed 18.4% of the emissions of CO<sub>2</sub>equivalent and those of Scope 2, the 8.8% In the case of particulate pollutant emissions, Scope 3 was also responsible of the greatest generation of these.

For the analysis of the year 2021, the national emission factor used for the interconnected system was of 0.203 kg-CO<sub>2</sub>/kWh, a value 22.3% higher than the calculated by the national government for 2020. This factor, added to the increase in energy consumption, mainly by refrigerated containers, led to the CO<sub>2</sub>equivalent emissions of the Scope 2 increased by 52.7% compared to the year 2020.

In relation to 2020, in 2021 the growth of TEUs was 8.1% and in TEUs with internal movements was 18.4%, 2.3 times more internal moves that were associated with the containers crisis, where the port required to increased its operation, which was reflected in more consumption of energy and therefore GHG emissions.

The direct CO<sub>2</sub> equivalent emissions from the port are related to Scopes 1 and 2. For the 2021, the sum of these emissions was 13.68 kilograms of CO<sub>2</sub>/TEU, this value being the lower compared to the years 2015, 2016, 2018 and 2019 and 21.5% higher than that registered in 2020.<sup>5</sup>

One of the conclusions regarding the participation of the different scopes in the emissions of total CO<sub>2</sub> equivalent of the terminal, is that the components of Scope 3 are the largest contributors to greenhouse gas emissions, emissions that could only be reduced with the shipping industry transition to the use of cleaner fuels and, in addition, the enforcement to use an electricity source while moored.<sup>6</sup>

Regarding emissions of particulate matter into the air, the numbers again point out as responsible the ships and tugboats, together with the external trucks. This group of emitters is responsible for 6.6 tons (Scope 3) of particles emitted into the atmosphere during 2021. The RTG cranes, the trucks related to the internal port operation, along with other minor equipment (Scope 1) emitted 3 tons, for a total of 9.6 tons per year of this pollutant. Although Scope 3 emissions represent the largest contribution of particles, it should be noted that their emission corresponds to the second lowest since the year 2017 and 11.3% higher than that registered in 2020.

In general, several externalities influenced the increase vs. previous year of fuel consumption and electrical power and consequently in emissions of both CO<sub>2</sub> equivalent as particles: the worldwide logistics crisis and a higher factor of the interconnected system. However, several indicators analyzed, especially those involving the TEU movements reflect that the port advances in achieving greater efficiency despite external adverse factors.

Apart from the excellent contribution of the photovoltaic project, CONTECAR will continue to face challenges to ensure that the growth of its services will allow to accelerate changes in energy efficiency and thus achieve significant reductions in their emissions of both CO<sub>2</sub>e and particles into the atmosphere, thus keeping the terminal with the highest global standards in environmental efficiency with respect to its carbon footprint.

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<sup>5</sup> The best results of the year 2020 are mainly due to a lower number of internal movements and a low emission factor of the national interconnected system.

<sup>6</sup> Unless an international agreement emerged to enforce this action for all ships during periods of berthing -a highly recommended agreement-, any restrictive national regulations in terms of emissions and promoting the connection to electricity in ports could cause a reduction in visits from ships with cargo or, increase in freights to cover additional costs.

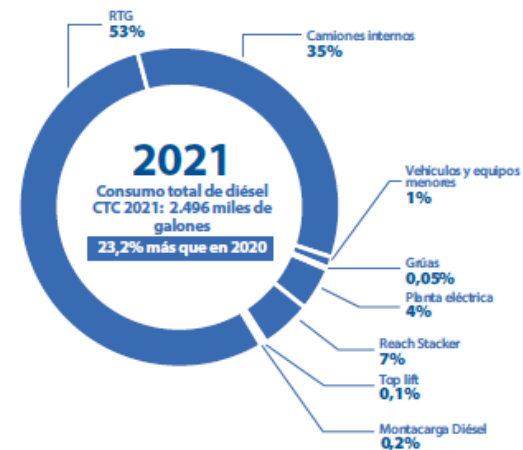
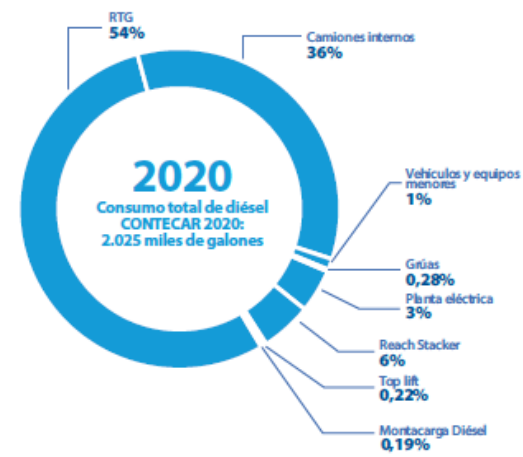


# ENERGY CONSUMPTION AND EMISSIONS 2021

## DISTRIBUTION OF THE FUEL CONSUMPTION SCOPE 1

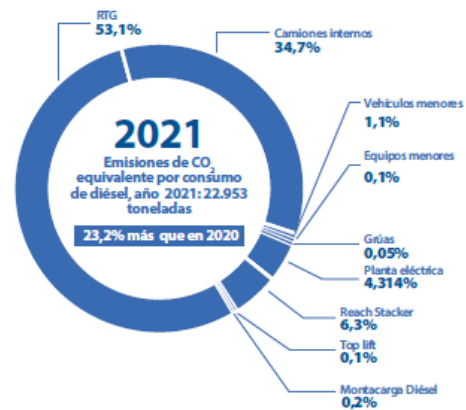
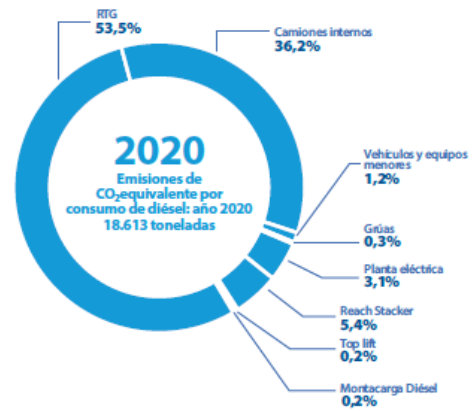
Regarding 2020, in 2021 the consumption of fossil fuels increased by 23.2% (471 thousand gallons plus). The volume of emissions keep coming from RGT cranes whose consumption increased in 2021 by 241 thousand gallons (22%), followed by internal trucks who consumed 133 thousand of additional gallons (18%) in 2020.

Cranes and Top Lifts, in 2021 reduced the consumption in about 6 thousand fossil fuel gallons with respect to 2020.



# EMISSIONS FROM CO2 EQUIVALENT BY FUEL CONSUMPTION SCOPE 1

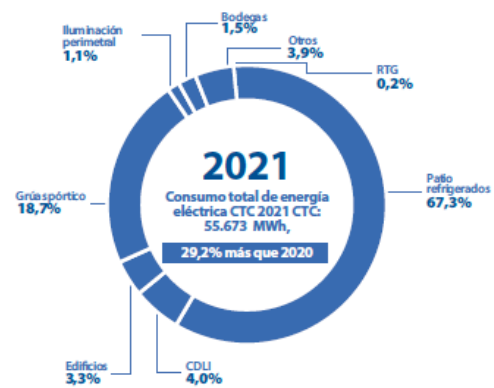
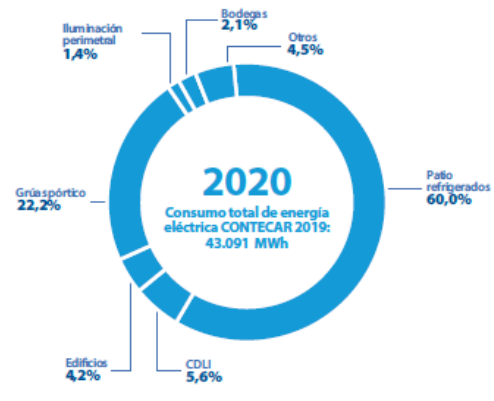
For Scope 1, the CO2equivalent emissions in the 2021 increased by 23.2% compared to 2020 (4,314 tons more). Only RTG cranes and internal trucks respond for the 87.5% of total CO2equivalent emissions due to the fossil fuel consumption. These two equipments represent the greatest opportunity to reduce emissions due to high impact. The power generators generated 414 tons of CO2equivalent more than 2020, which indicates that the power supply presented interruptions and excess of demand vs. network capacity.



# DISTRIBUTION OF CONSUMPTION OF ELECTRICAL ENERGY SCOPE 2

In 2021 the consumption of electric power increased by 29.2% (12,582 MWh) compared to the 2020. The main increase in electric power consumption was in the refrigerated yards where 11,622 were consumed MWh (45%) more than in 2020, the refrigerated yards contributed 92% of total in 2021. It is very important to highlight that 12,582 MWh in which consumption increased 1,880 MWh of energy were supplied by photovoltaic system installed in the 22 thousand square meters warehouse cover (almost 15% of the additional consumption).

The increase in emissions from refrigerated containers was linked to the global crisis of containers that involved more units connected to the power grid to maintain the cold chain.

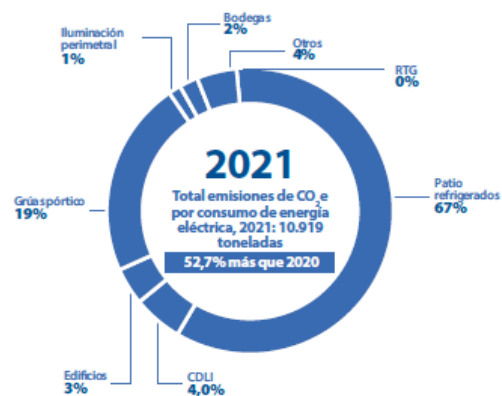
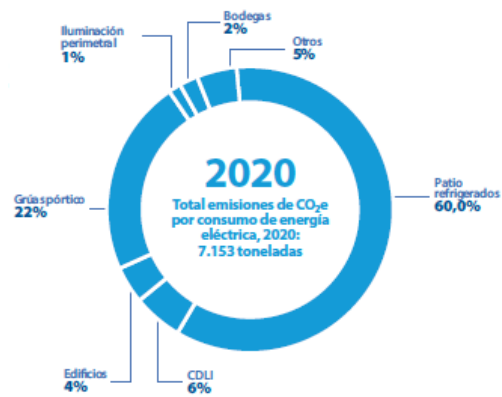


# EMISSIONS OF CO<sub>2</sub> EQUIVALENT BY CONSUMPTION OF ELECTRICAL ENERGY SCOPE 2

For the analysis of 2021, the national emission factor was 22.3% higher than the calculated by the national government in 2020. This factor added to the increase of energy consumption mainly in the refrigerated yards, the CO<sub>2</sub>equivalent emissions will increase by 52.7% compared to 2020, that is, 3,767 additional tons.

Emissions in 2021 would have been 10% higher but because of power generation with solar panels, the port achieves a reduction of 382 tons of CO<sub>2</sub>equivalent.

The increase in emissions in refrigerated yards is explained by the impact in logistics worldwide caused by the pandemic that led to the increase in refrigerated containers.

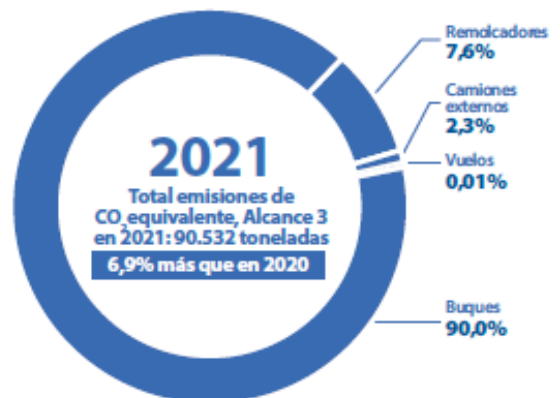
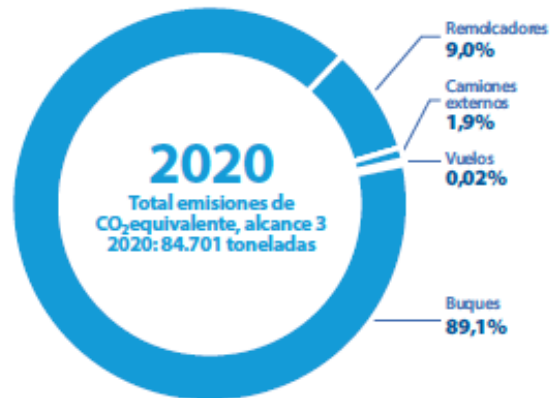


# DISTRIBUTION OF EMISSIONS CO<sub>2</sub>EQUIVALENT, SCOPE 3

CO<sub>2</sub>equivalent emissions of Scope 3, linked to external factors, in 2021 increased 6.9% compared to 2020.

Ships, with an emission of 6,082 additional tons comparing 2020 (8% more), are the main responsible for the emissions of CO<sub>2</sub>equivalent of this Scope.

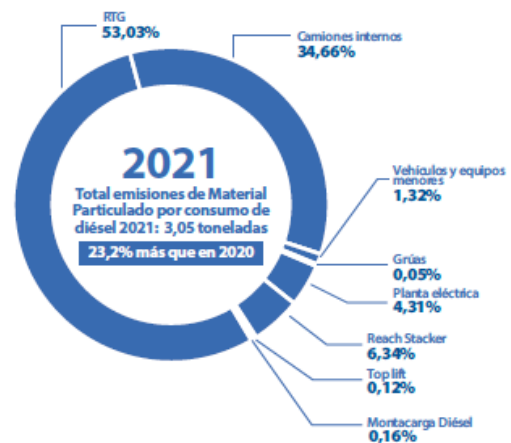
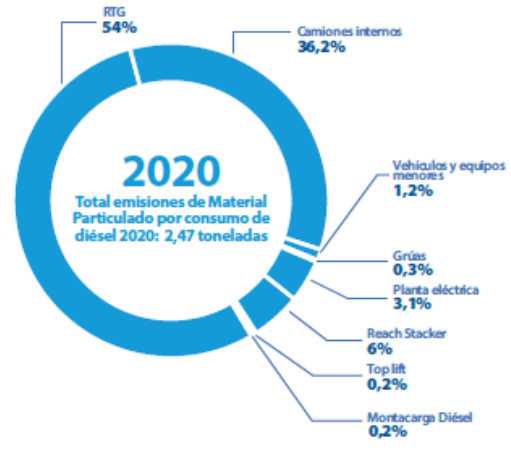
Although the number of ships that arrived at the port in 2021 was 3% less than in 2020 (38 fewer ships arrived in 2021), the average dockage time of each ship increased in 54 minutes generating higher emissions of CO<sub>2</sub>e.



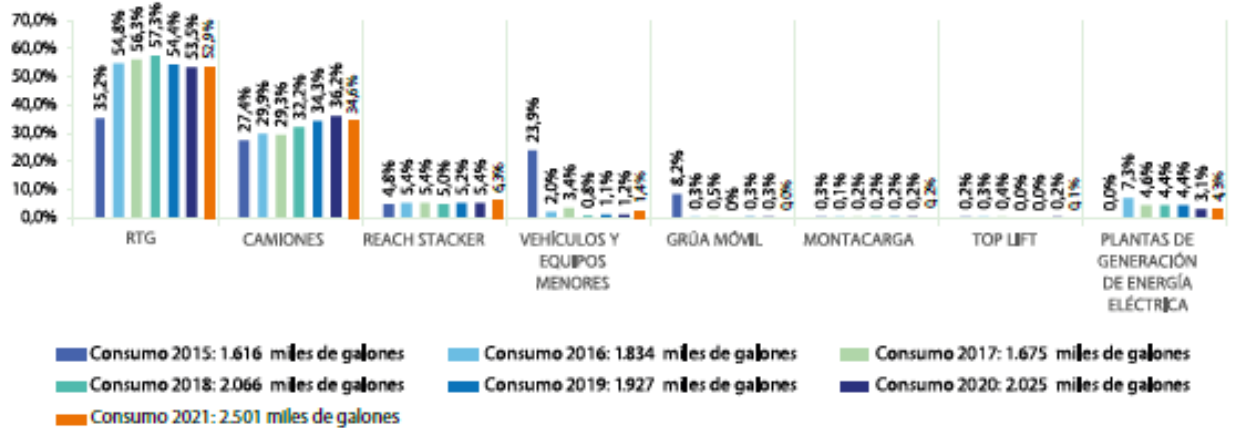
# EMISSIONS OF PARTICULATE MATERIAL FOR USE OF FUELS, SCOPE 1

Particulate emissions in 2021 had an increase of 23.2% compared to 2020, derived from more fossil fuels consumption in the terminal. The trucks and the RTG cranes are responsible for the 87.5% of emissions of particles.

Taking into account the future project of electrification of the RTG cranes, emissions of particles could be reduced by half, that is, it would be emitted annually less than 1.5 tons of particulate material.



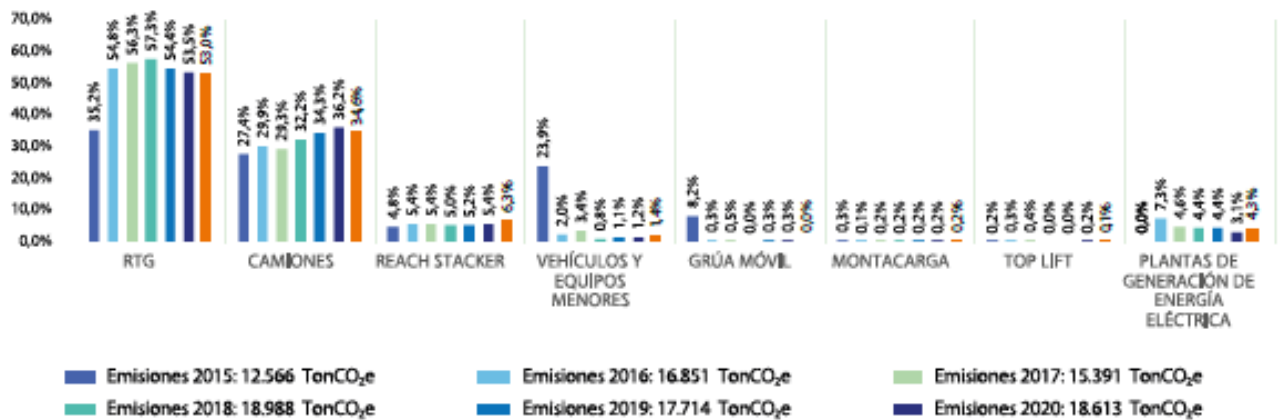
# PERCENTAGE DISTRIBUTION OF CONSUMPTION OF FUELS, SCOPE 1



Since 2018, RTG have a systematic tendency to decrease in terms of percentage participation, going from 57.3% in 2018 to 52.9% in 2021. Likewise, trucks, heavy fuel consumers, showed for first time a percentage reduction in consumption.

The electric power generation and reach stacker plants slightly increased their percentage.

# PERCENTAGE DISTRIBUTION OF THE CO<sub>2</sub>EQUIVALENT EMISSIONS BY FUEL CONSUMPTION, SCOPE 1

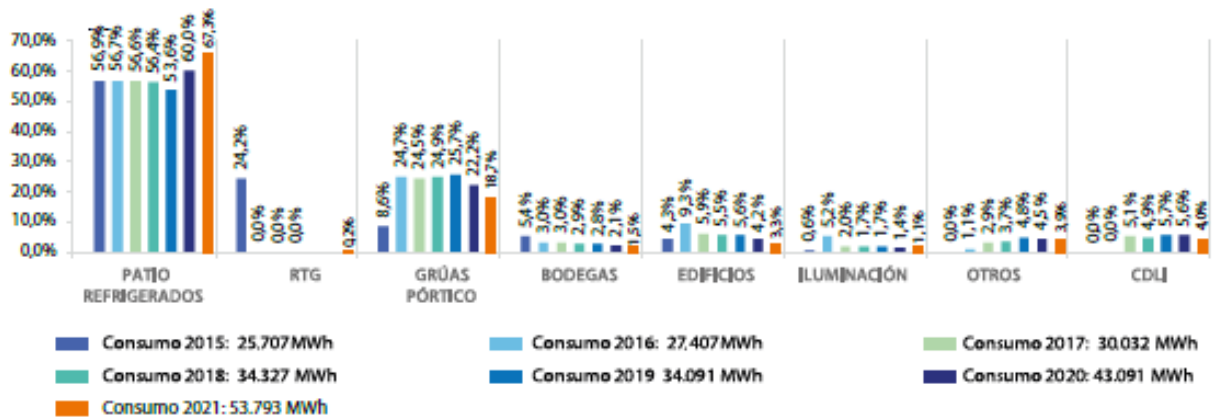


A greater consumption of fossil fuels is reflected in the participation of equivalent CO<sub>2</sub> emissions in similar proportions: 23.2% increase between 2020 and 2021. The net emissions of CO<sub>2</sub>equivalent in the year 2021 were 4,314 tons more than in 2020. Being the trucks and RTG cranes the equipment that contributes 80% of the increase in CO<sub>2</sub>equivalent emissions (3,435 tons more in 2021).

As the port advances in the electrification of RTG cranes, the participation percentage will continue to drop, while the contribution of trucks may maintain the growth trend, as has been the case since 2015.



# DISTRIBUTION OF CONSUMPTION OF ELECTRICAL POWER, SCOPE 2

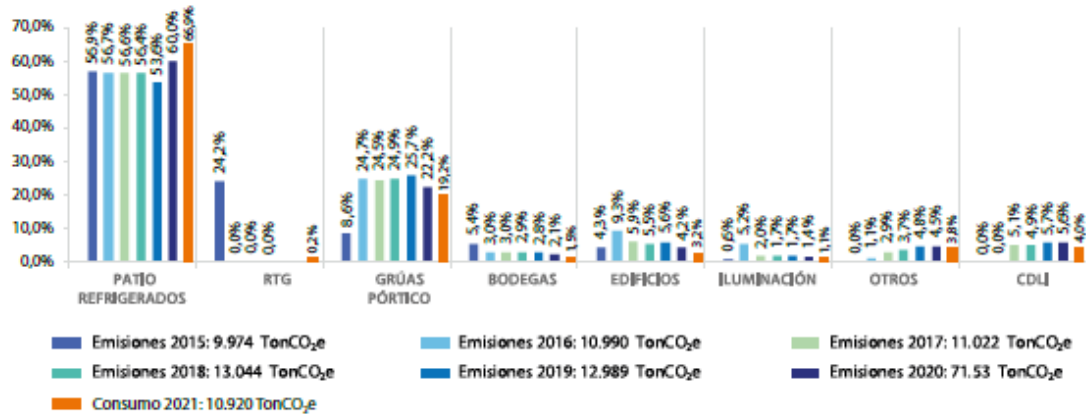


Compared to 2021, Contecar increased the consumption of electrical energy in 29.2%, compared to 2020.

Is important the increase in participation in energy consumption in the refrigerated yards by 53.6% from 2019 to 67.3% by 2021.

The opposite occurred with the buildings, cranes and CDLI which maintain a reduction in the share of electricity consumption from the 2019.

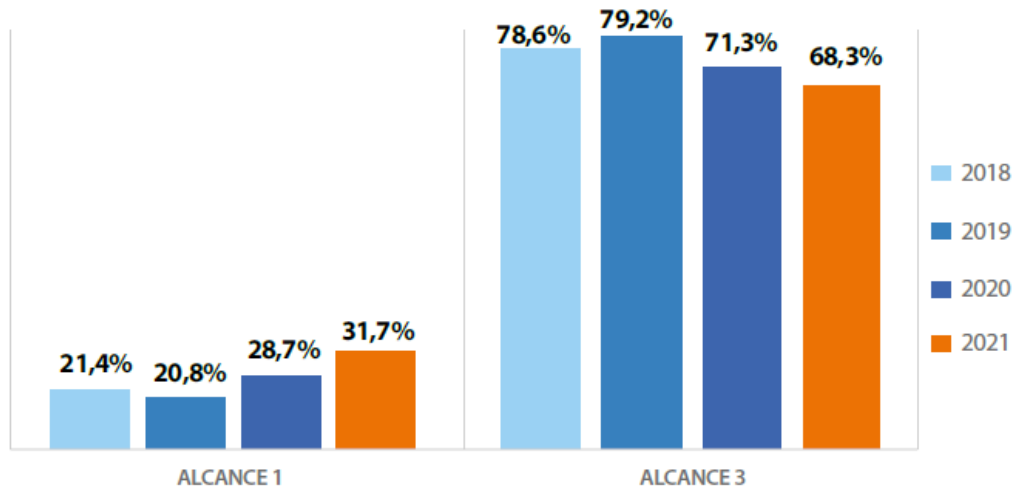
# PERCENTAGE DISTRIBUTION OF EMISSIONS OF CO<sub>2</sub> EQUIVALENT FOR THE CONSUMPTION OF ELECTRICAL POWER, SCOPE 2



In 2021 due to the effect of a 22.3% higher emission factor and the global containers crisis that led to major energy consumption for storage of refrigerated containers, the port increased by 52.7% CO<sub>2</sub>equivalent emissions.

The generation of energy with the photovoltaic system reduced emissions by 382 tons of CO<sub>2</sub> equivalent. 77% of the energy generated by this system was used by refrigerated containers, which favored the participation percentage was lower by 0.4%.

# HISTORICAL DISTRIBUTION OF FOSSILS FUEL CONSUMPTION SCOPE 1 AND 3



In 2021, the use of fossil fuels in the three scopes increased by 11.3% (802 thousand gallons) compared to 2020.

Compared to 2020, in 2021 Scope 1 increases its percentage participation due, mainly, to a greater operation of trucks and cranes, caused by more internal cargo moves: while the TEUs grew 8.7%, the mobilization of TEUs that include internal movements, grew 18.4%

## Fossil fuel consumption (Scope 1+3):

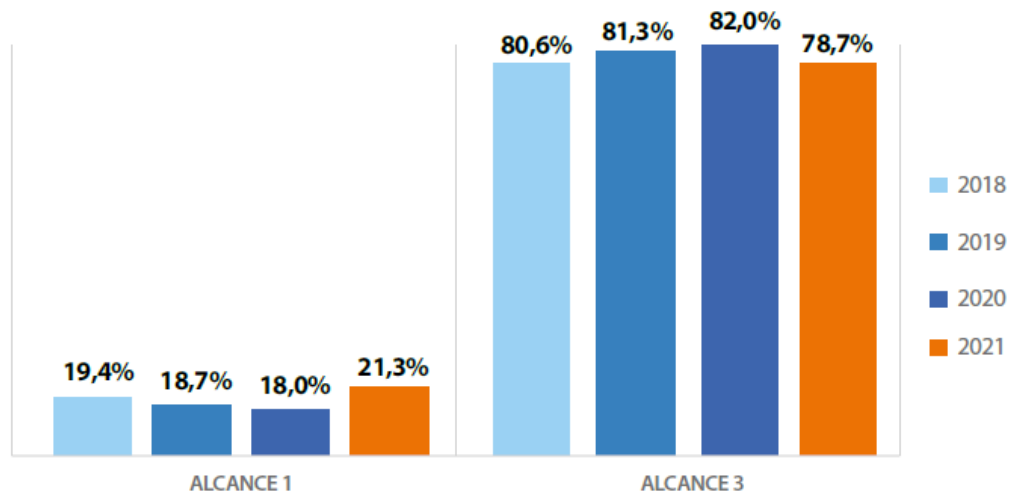
2018: 9,634 thousand gallons

2019: 9,286 thousand gallons

2020: 7,069 thousand gallons

2021: 7,869 thousand gallons, 9.3% more than in 2020

# PERCENTAGE DISTRIBUTION OF EMISSIONS OF CO<sub>2</sub> EQUIVALENT FOR FOSSIL FUELS CONSUMPTION SCOPE 1 AND 3



In 2021, Scope 1 increases its share in total emissions, going from 18% (in 2020) to 21.3% in 2021.

The increase in Scope 1 emissions was affected due to the higher fuel consumption of trucks and RTG cranes. In Scope 3, the increase was given by longer time spent by ships in the terminal, increasing on average, an additional 54 minutes.

## CO<sub>2</sub> equivalent emissions (Scope 1+3):

**2018: 97,850 tons**

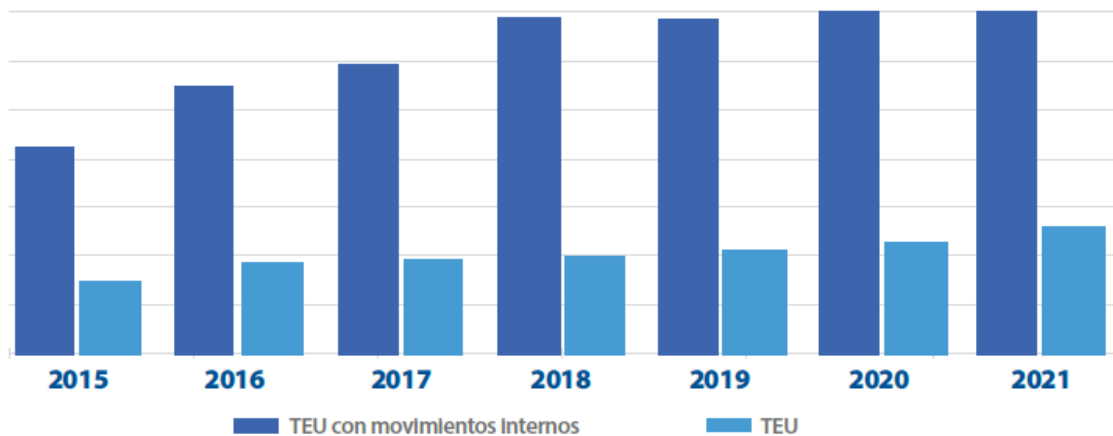
**2019: 94,530 tons**

**2020: 103,315 tons**

**2021: 113,459 tons, 9.8% more than in 2020**

# YEAR-ON-YEAR COMPARISON 2015 – 2021 OF MOVEMENTS OF TEU AND CONSUMPTION AND EMISSIONS VS. LOAD MOVEMENTS

## TEU MOVEMENT IN CONTECAR



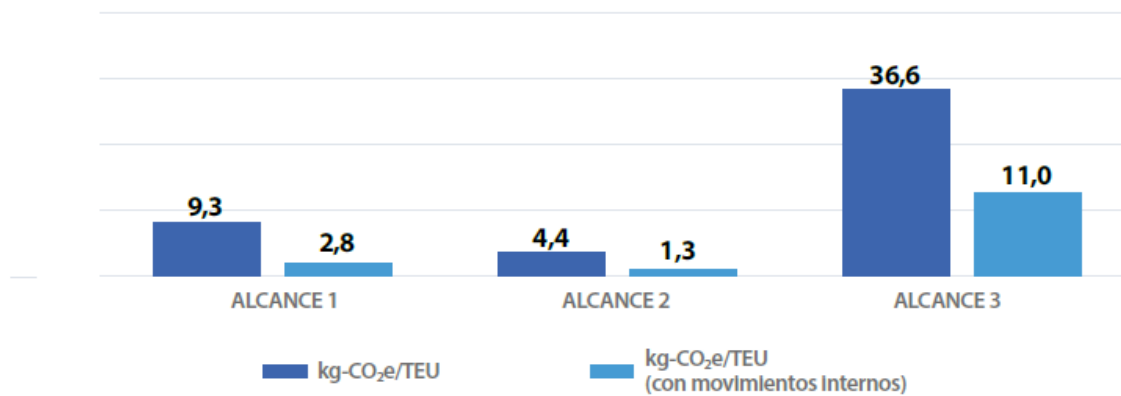
TEUs moves are defined as follows: TEUs as port output (hereinafter TEU) and TEU that include internal movements within the premises (TEU with internal movements).

The TEUs as a port output represent around a quarter of the total internal movements of TEU, which reflects a high level of cargo

moves before the departure and the impact of the global logistics crisis

In 2021, TEU growth was 8.1% with in relation to 2020, while, in the same period, TEUs with internal moves were 18.4% higher, that is, due to the container crisis, the port required to increase its operation which was reflected in higher energy consumption.

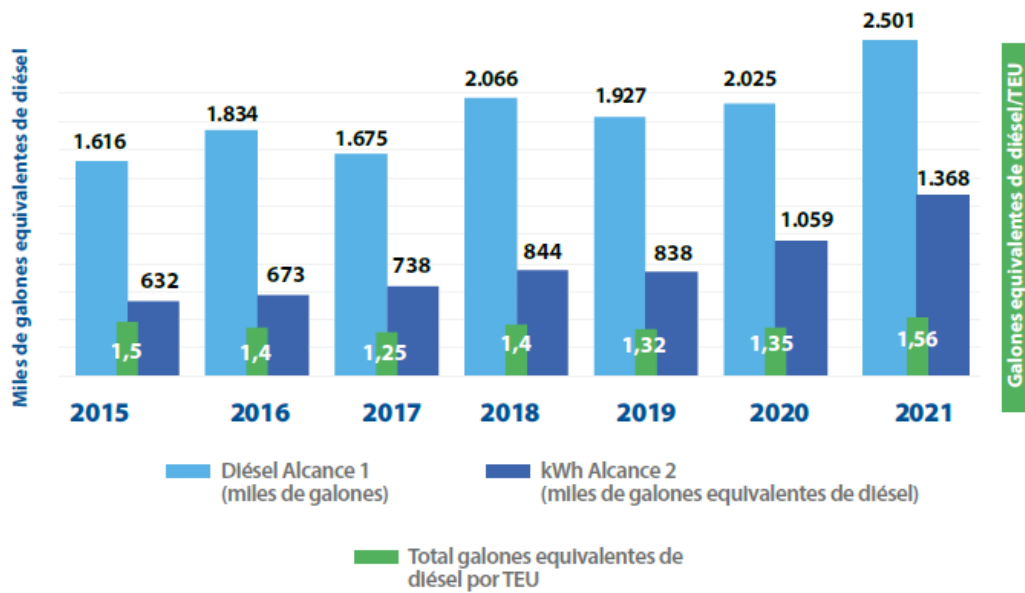
# CO<sub>2</sub>EQUIVALENT EMISSIONS PER TEU PER SCOPE 2021



In 2021, emissions per TEU with internal movements were 3.3 times more than TEUs as an output. This is a reflection of the greater efforts done by the terminal in the rearrangement of containers due to effects of the COVID-19 pandemic crisis.

Scope 3 emissions per TEU, which are external emissions not controllable by the terminal, are still almost three times the emissions in Scopes 1 and 2.

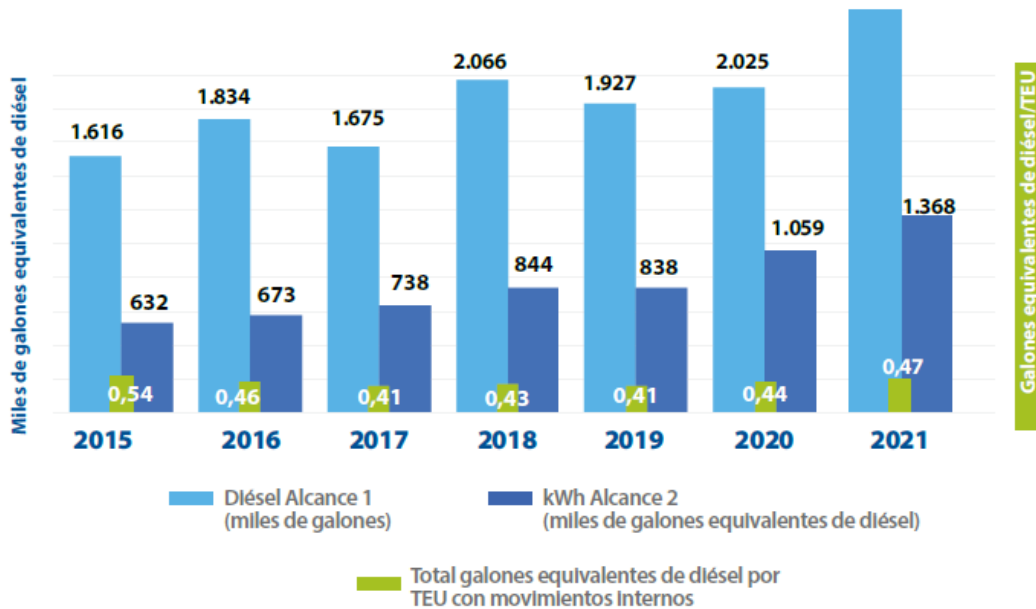
# DIESEL CONSUMPTION, POWER ENERGY AND GALLONS EQUIVALENTS PER TEU



The increase in TEUs with internal movements plus the high demand for energy by the refrigerated containers, increased CO2 equivalent emissions, impacting the indicator of equivalent gallons per TEU, which went from 1.35 in 2020 to 1.56 equivalent gallons per TEU in 2021, that is, an increase of 16.1%.

Although externalities to the normal operation of the terminal have been the ones that have impacted the indicator, the situation could serve to find new opportunities to continue with the reduction of emissions, as progress has been made with obtaining the 3.4% of its electrical energy from clean sources (photovoltaic system).

# DIESEL CONSUMPTION, ELECTRICITY AND GALLON EQUIVALENTS PER TEU (TEU WITH INTERNAL MOVEMENTS)

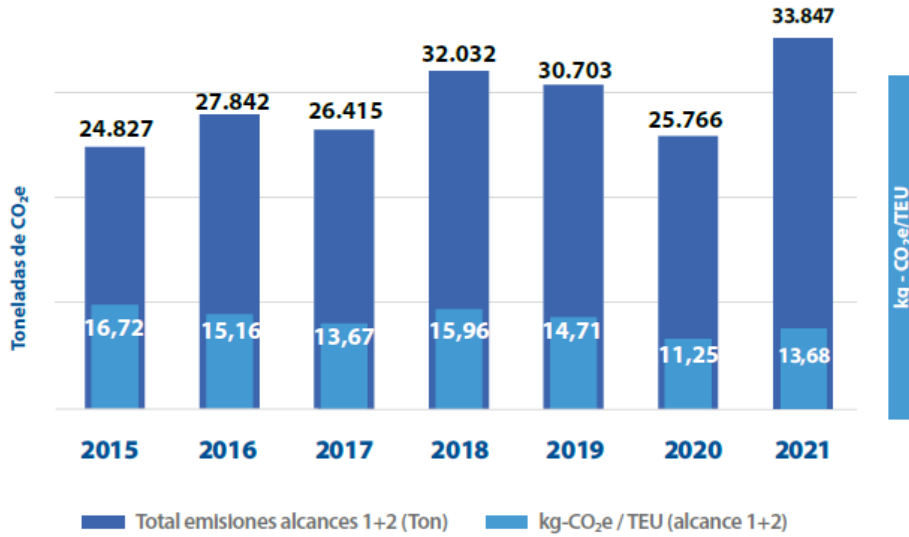


Analyzing energy consumption with the TEUs that include internal movements, the indicator of diesel equivalent gallons per TEU in 2021 it increased 6% compared to 2020: 0.44 and 0.47 gallons diesel equivalent per TEU.

Although the indicator was 6% higher, it did not reflect the increase in consumption of: fuels (23.2%) and energy (29.2%), which shows that the terminal continues in its effort to increase efficiency.



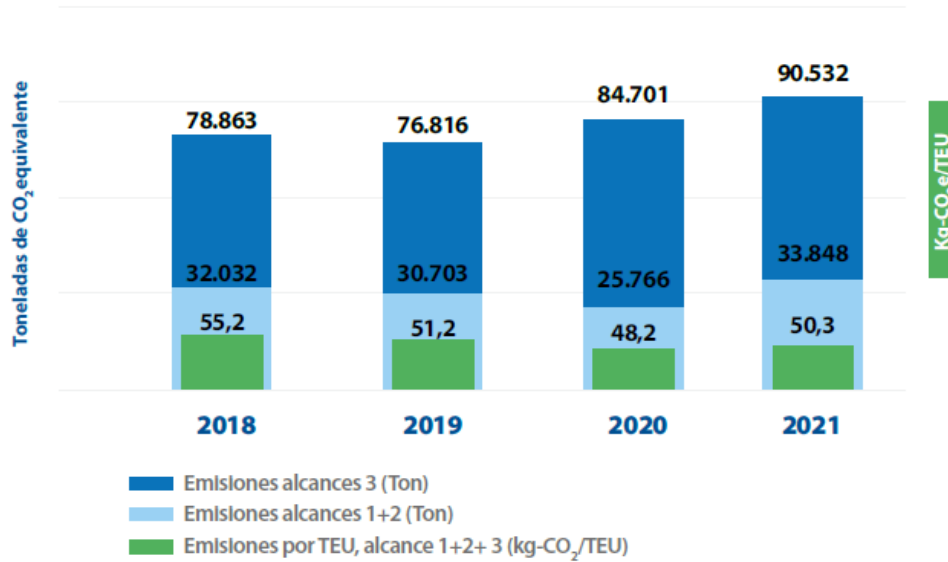
## CO<sub>2</sub>EQUIVALENT EMISSIONS AND KILOGRAMS OF CO<sub>2</sub>/TEU (SCOPES 1 + 2)



CO<sub>2</sub>equivalent emissions from the port are related with Scope 1 and 2. For 2021 the sum of these scopes was 13.68 kilograms of CO<sub>2</sub>/TEU, this value being lower compared to the years 2015, 2016, 2018 and 2019 and higher 21.5% to the one registered in 2020.

Associated with the global logistics crisis due to effects of the pandemic and a higher factor of electrical energy emission, in the year 2021 the emissions were the highest since 2015. However, the indicator of emissions per TEU did not have the same behavior, which reflects that in difficult conditions, the Terminal advances in achieving greater efficiency.

## CO2 EQUIVALENT EMISSIONS AND KILOGRAMS OF CO2/TEU (SCOPES 1 + 2 + 3)

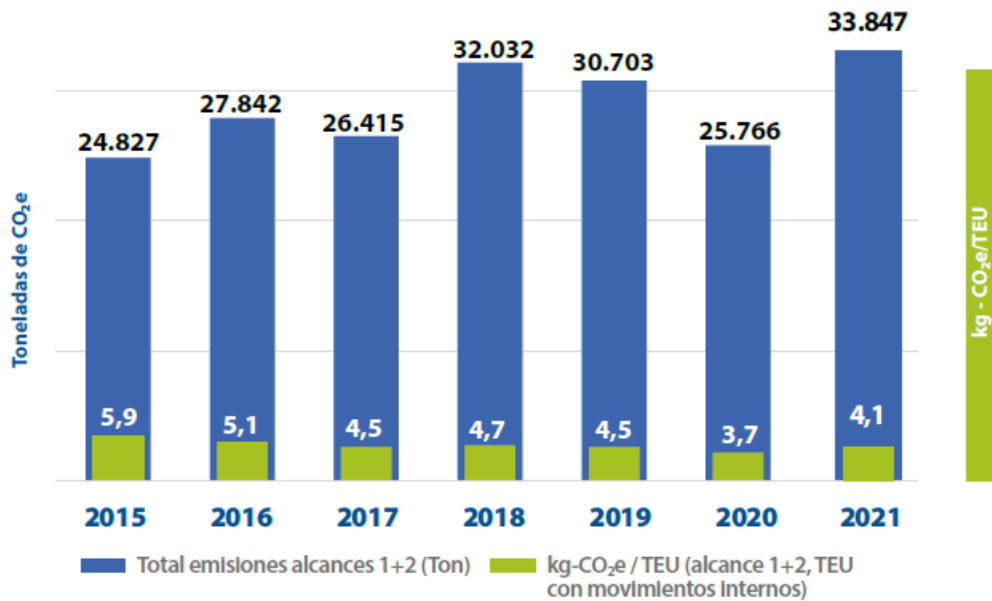


The CO<sub>2</sub> equivalent emissions from the terminal are related to the Scope 1 and 2 and are 2.7 times lower than Scope 3 emissions.

Since 2019 total Scope 3 emissions have increased, while emissions direct from the port decreased in 2019 and 2020, and increased in 2021 due to the international logistics crisis caused by the pandemic and a higher emission factor of electrical power.

If the indicator of CO<sub>2</sub> equivalent emissions per TEU is compared, the increase in 2021 was 4.35%, which means, it was lower than the growth of total emissions, demonstrating the effort of the terminal in maintaining energy efficiency.

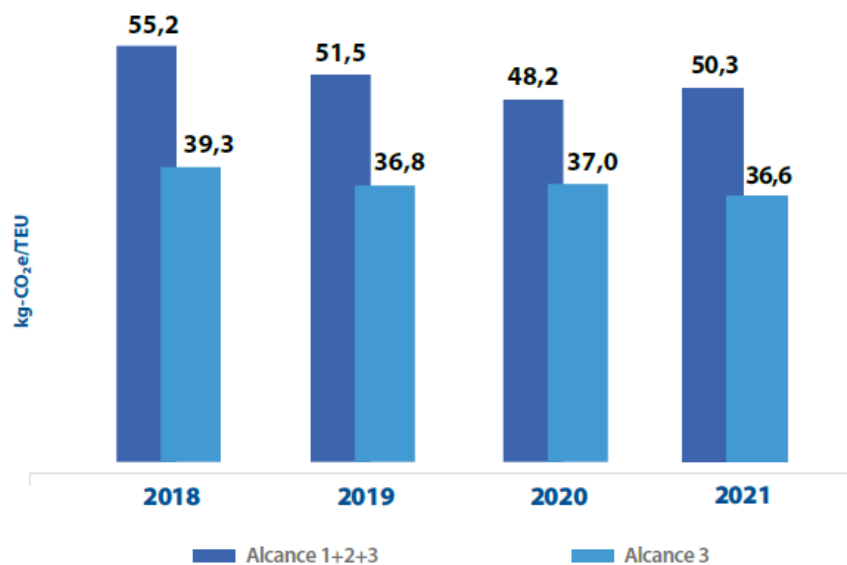
## EMISSIONS OF CO<sub>2</sub> EQUIVALENT AND KILOGRAMS OF CO<sub>2</sub> EQUIVALENT/TEU (SCOPES 1 + 2, TEU WITH MOVEMENTS INTERNAL)



When analyzing the TEUs that include internal movements, it is shown that in 2021 the indicator of CO<sub>2</sub> equivalent/TEU emissions is the second lowest (4.1 CO<sub>2</sub> equivalent/TEU) since 2015.

Compared to the year 2020, the indicator is 11% higher. Several externalities influenced the indicator: the logistics crisis presented worldwide and a 22.3% higher emission factor of national interconnected system.

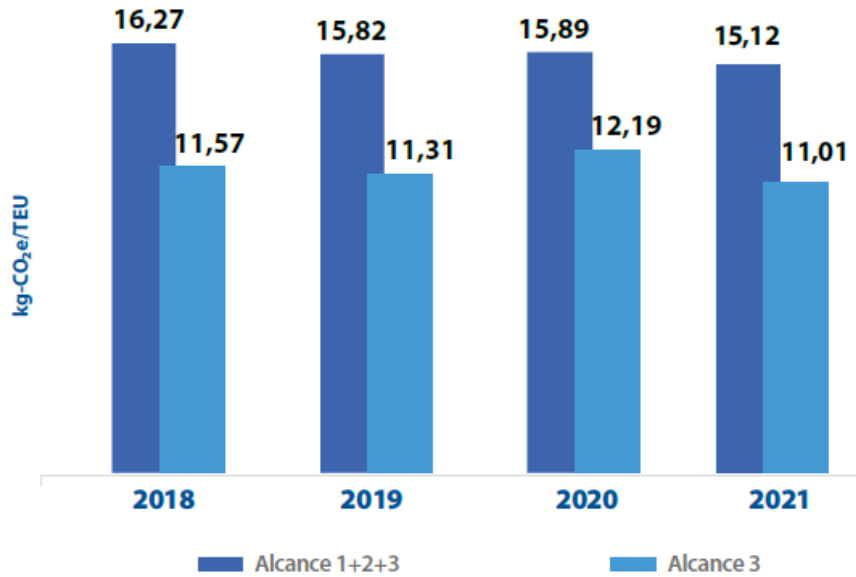
## KILOGRAMS OF CO<sub>2</sub> EQUIVALENT/TEU



Taking into account the total emissions of the three Scopes, it is evident that, despite the higher emissions in the three Scopes during 2021, the CO<sub>2</sub>-equivalent emissions per TEU are the second lowest in four years, slightly increasing by 4.2% compared to 2020.

Scope 3 presents a slight downward trend, which reflects that the increase in emissions is less than the growth of the port (expressed in TEU).

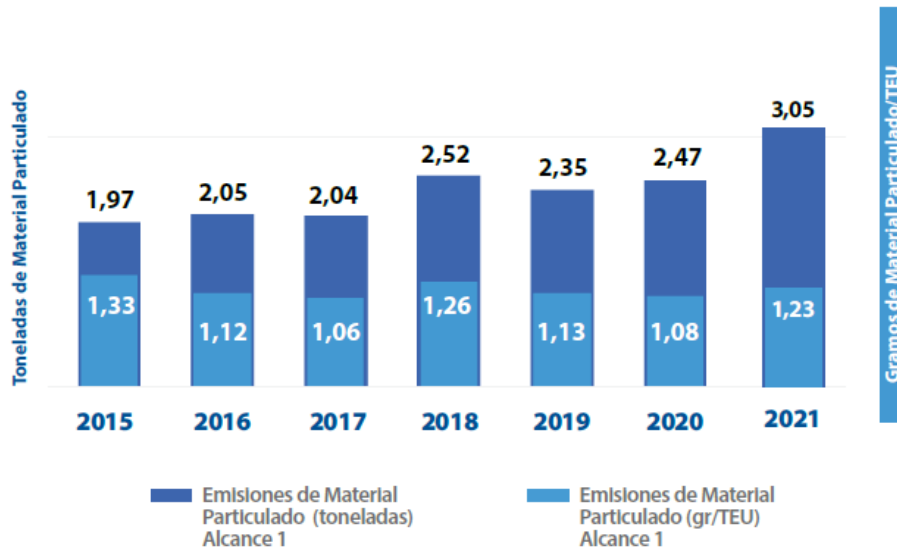
## KILOGRAMS OF CO<sub>2</sub> EQUIVALENT/TEU (TEU WITH INTERNAL MOVEMENTS)



In 2021, the combined emissions of the three Scopes in relation to with the TEUs with internal movements, presented downward behavior, being the best indicator of the four years of analysis.

Although, emissions grew in the terminal, the indicator is positive, which evidence that it was possible to maintain efficiency despite the high number of TEU movements that had to carry out in the midst of the logistics crisis.

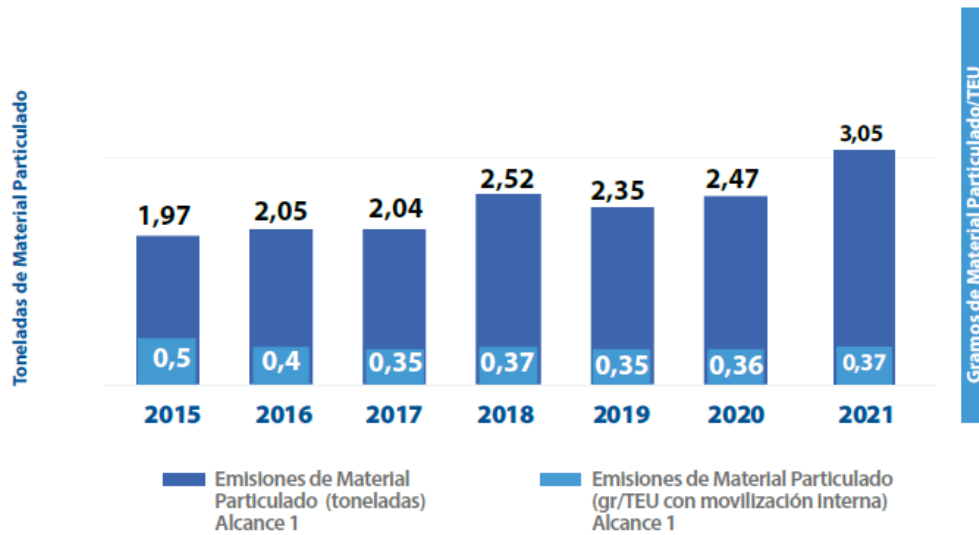
# MATERIAL EMISSIONS PARTICULATE AND EMISSIONS PER TEU



The increased consumption of fossil fuels in 2021 led to an increase in particles in the same proportion: 23.2% more than in 2020, going from 2.47 to 3.05 respectively.

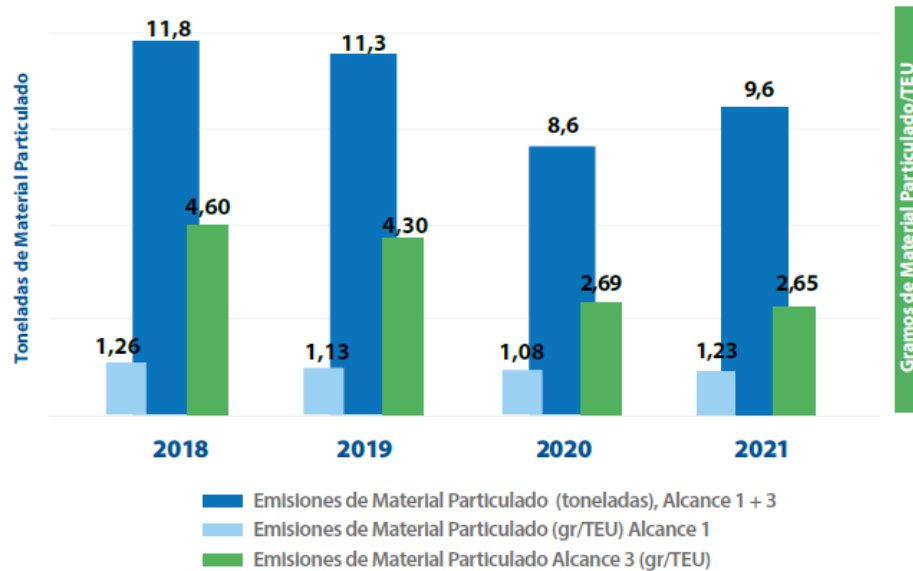
The growth of the particle emissions indicator per TEU was 14%: 1.08 in 2020 to 1.23 gr/TEU in 2021. In other words, this indicator did not have the same growth of emissions of particles (+23.2%), which reflects that it is a question of maintaining efficiency in the processes of the terminal.

## EMISSIONS OF PARTICULATE MATERIAL AND EMISSIONS PER TEU WITH MOVEMENTS INTERNAL



When carrying out the analysis of the TEUs with internal movements, in 2021 the growth of the emission indicator per TEU was 4.1%, going from 0.36 in 2020 to 0.37 gr/TEU in 2021. The value of the indicator in the last year is equal to that registered in 2018 and lower than that of the years 2015 and 2016.

# MATERIAL EMISSIONS PARTICULATE AND EMISSIONS PER TEU, SCOPE 1 AND 3

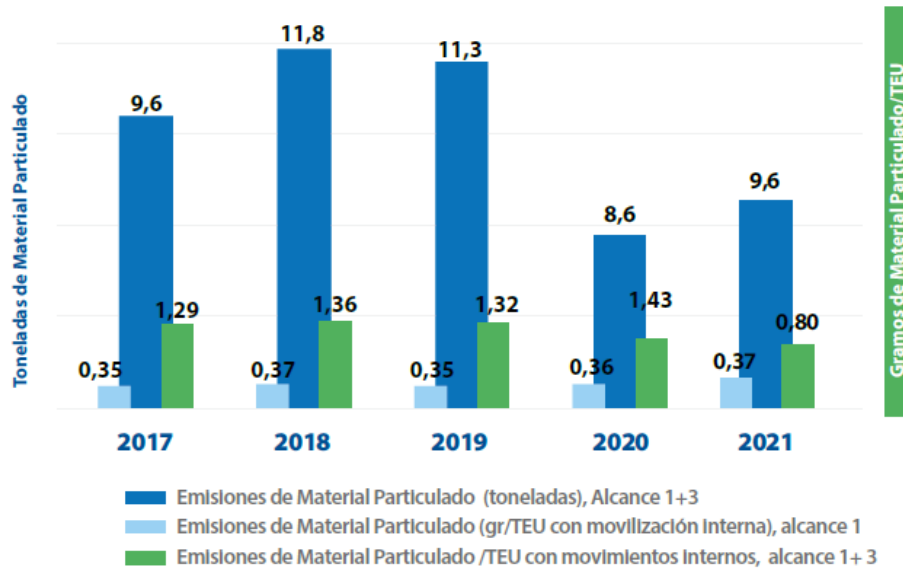


Regarding the year 2020, in 2021 the emissions of particulate matter of Scope 1, expressed in grams/TEU increased by 14%, from 1.08 to 1.23 grams/TEU.

If the emissions of Scopes 1 and 3 are added, the particulate matter in the year 2021, compared to 2020, it increased 11.3%, issuing an additional ton of particles.



# PARTICULATE MATERIAL EMISSIONS AND EMISSIONS PER TEU (TEU WITH INTERNAL MOVEMENTS) SCOPE 1 AND 3



The analysis of the emissions of particulate matter per TEU that include the internal movements, indicates that compared to 2020, in 2021 increased by a ton. The indicator expressed in emissions of Particulated Material by TEU with internal movements of Scopes 1+3, it went from 0.89 to 0.80gr/TEU, it had a 10% reduction.

# SPO I

## CARBON FOOTPRINT

### *PROGRESS IN ENVIRONMENTAL RESPONSIBILITY*

The graphs in this report include: the structure of fuel consumption (Scope 1) and consumption of electrical energy (Scope 2) during the year 2021, and historical 2018-2021 of energy consumption and of the CO<sub>2</sub>equivalent emissions of the port to the two scopes.

Since port activity is directly related with the use of a tugboat and it is a team that is part of its operation, these emissions were accounted for within Scope 1.

Since the terminal does not include the handling of TEUs or cargo in general, the indicators of emissions per unit are not applicable, with which the analysis focuses towards the quantification of energy, emissions CO<sub>2</sub>equivalent and particulate matter.

The two main sources of energy consumption are: i) the tugboat in Scope 1, whose consumption was 9,790 gallons (95.1% of the total) in the year 2021, and the lighting of the terminal in Scope 2, which is practically the only source of consumption electric.

When comparing the CO<sub>2</sub>equivalent emissions of the Scopes 1 and 2 it is observed that while emissions Scope 1 emissions tend to increase, Scope 2 emissions tend to decrease. Added the emissions of the two Scopes, it is observed that in 2021 these increased: by 1% in relation to the year 2020, 22% compared to 2019 and 2.4% compared to the year 2018.

Regarding scope 3, which correspond to emissions external to the port, these are associated to the boats that arrived at the port. In 2021, the total number of moored vessels was three. These vessels belong to foreign governments, whose technical characteristics are not public and consequently it was not possible carry out the calculations of the respective emissions following the methodology applied.

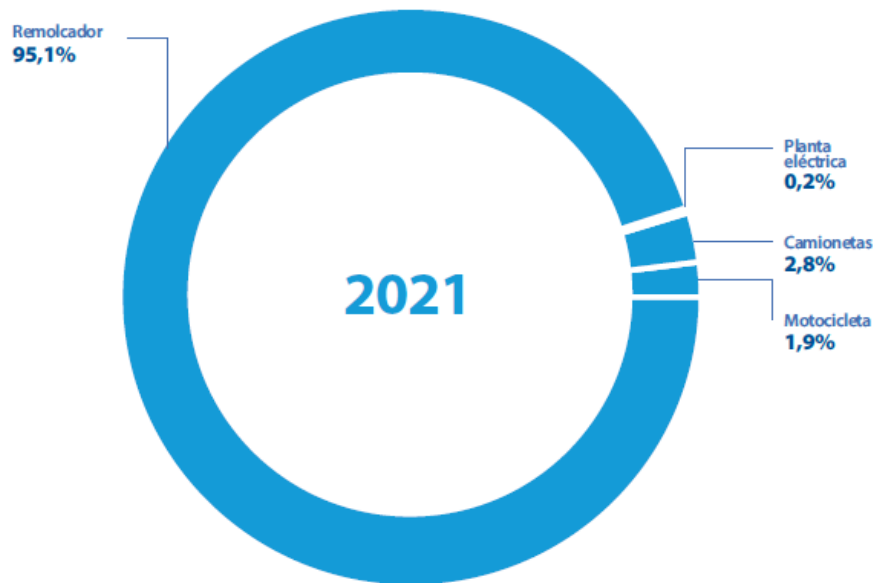
In conclusion, the terminal has a low impact on in terms of energy consumption and therefore, it's GHG and particle emissions, due to the few equipment it has (both electrical and fossil fuel consumption).

March 2022

# EMISSIONS 2021

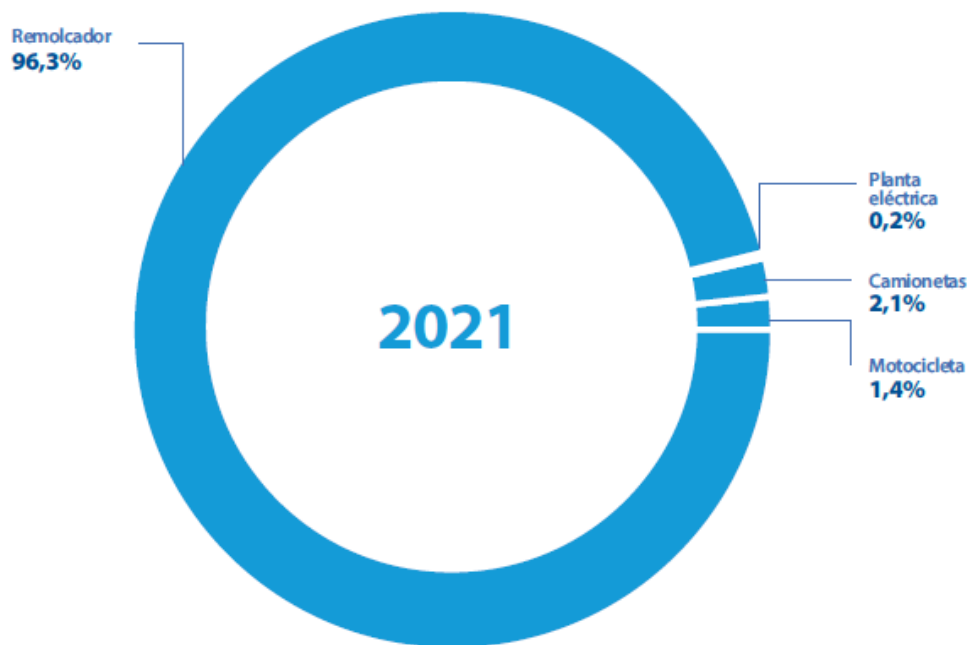
## DISTRIBUTION OF FUEL CONSUMPTION SCOPE 1

In 2021 the consumption of fossil fuels was 10,294 gallons. SPOI for the operation and commercial activity has a tugboat that consumes 95.1% of the fuel. The emissions of this tugboat are included within the direct emissions from the terminal and are part of Scope 1. The other three equipment consume the remaining 4.9% of fuels.



# CO2 EQUIVALENT EMISSIONS BY FUEL CONSUMPTION SCOPE 1

In 2021, 94.4 tons of equivalent CO2 were generated by the consumption of fossil fuels (Scope 1). The tugboat is responsible for 96.3% of the GHG emissions. The remaining 3.7% of the emissions correspond to the use of trucks, a motorcycle and a power plant. The power plant only consumed fuel in one month during the year.

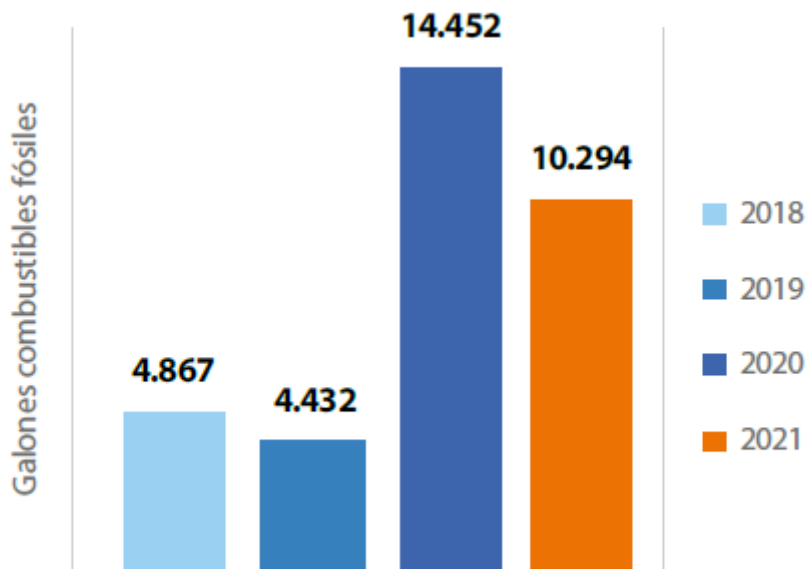


# EMISSIONS 2021

## HISTORICAL FOSSILS FUEL CONSUMPTION IN THE TERMINAL SCOPE 1

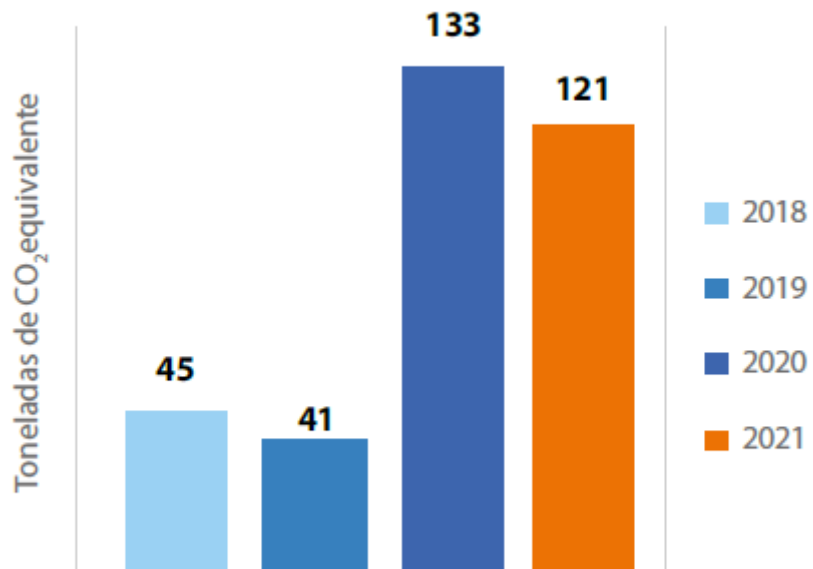
In 2021, the consumption of fossil fuels at the terminal was 10,294 gallons.

SPOI, for its operation, has a tugboat which consumes 95.1% of the fuel. Emissions from this tug are included within the direct emissions of the port and are part of Scope 1. Additionally there are three other equipment which together consume the remaining 4.9% of fuels.



# HISTORICAL CO2 EMISSIONS EQUIVALENT FOR CONSUMPTION OF FOSSIL FUELS SCOPE 1

CO2 equivalent emissions from the consumption of fossil fuels in 2021 were 121 tons, 9% less than in 2020. The years 2018 and 2019 presented relatively low emissions when compared to 2020 and 2021, evidencing that in these last two years the operation of the tugboat has been greater.

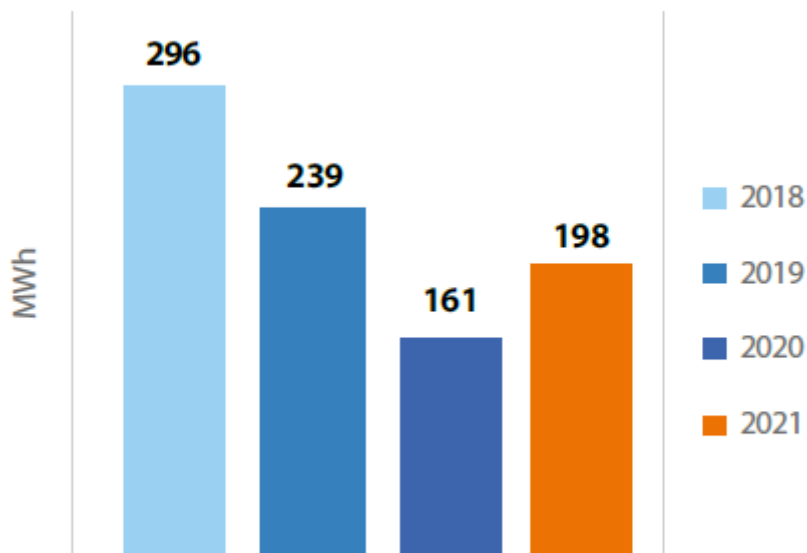


# EMISSIONS 2021

## HISTORICAL POWER ENERGY CONSUMPTION SCOPE 1

Between 2018 and 2020, the consumption of electrical energy was lower. In 2021, the year of economic reactivation to despite the COVID19 pandemic, energy consumption increased 23% compared to the 2020; even so it was lower by 33% and 17% than 2018 and 2019 respectively.

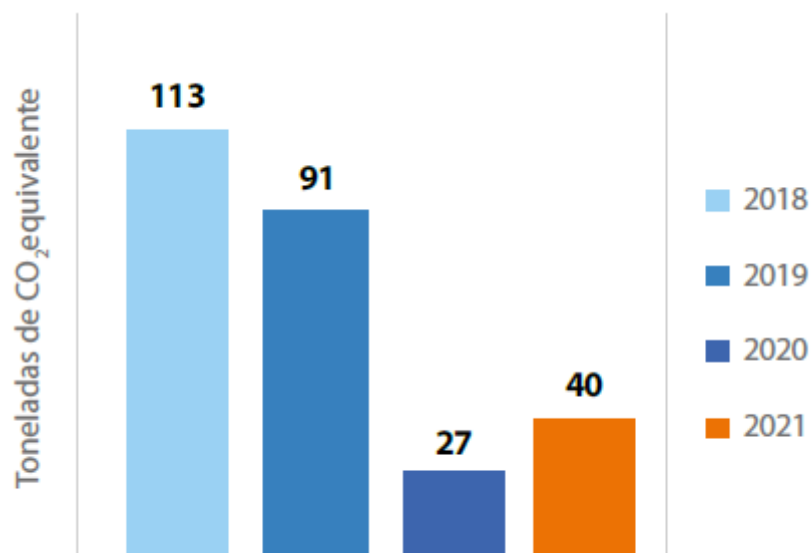
SPOI does not have port equipment or buildings with high consumption; therefore the use of energy is mainly associated with its general lighting of the terminal.



# HISTORICAL CO2 EMISSIONS EQUIVALENT FOR POWER ENERGY CONSUMPTION SCOPE 2

A CO<sub>2</sub>equivalent emission, in addition with more energy consumption, was affected by the national emission factor that is updated by the government every year. This is how it can be seen in the graph that the downward trend is more pronounced than consumption itself between the years 2018 and 2020.

In the year 2021, by increasing energy consumption and having an emission factor of 22.3% greater than that presented in 2020, CO<sub>2</sub>equivalent emissions were higher 50% compared to 2020 and they continue to be lower 64% and 56% compared to the years 2018 and 2019 respectively.

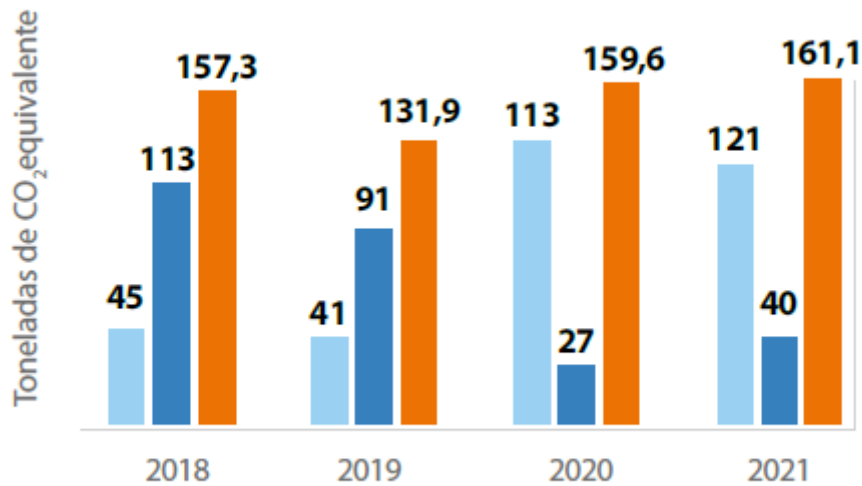




# EMISSIONS 2021

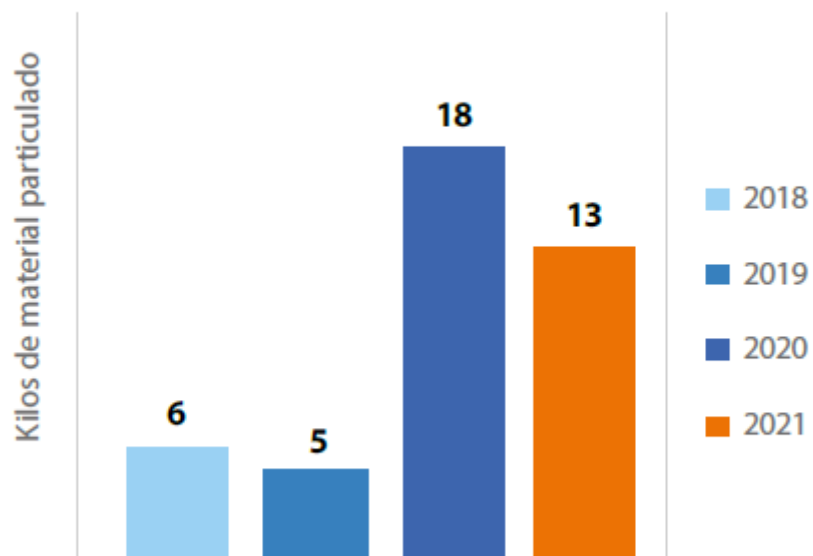
## HISTORICAL EMISSIONS OF CO2 EQUIVALENT, SCOPE 1 AND 2

When comparing the equivalent CO2 emissions of Scopes 1 and 2, it is observed that while Scope 1 emissions tend to increase, Scope 2 emissions tend to decrease. Adding the emissions of the two Scopes, it is observed that in the year 2021 these increased by 1% in relation to the year 2020, 22% compared to 2019 and 2.4% in comparison with the year 2018.



# HISTORICAL PARTICULATE MATERIAL EMISSIONS BY CONSUMPTION OF FOSSIL FUELS SCOPE 1

The emissions of particulate matter in SPOI are directly related to the use of the tugboat. In 2021, these emissions were 29% less than those registered in 2020 and a little more than double those calculated in 2018 and 2019.





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