



Communicative
Greenhouse
Gas Inventory
2018
Base year



Index

03	Introduction
05	Our strategy
06	Governance structure
08	External commitments
08	CDP
09	Brazilian GHG Protocol Program
09	Climate Forum
09	Climate change and the capital market
10	Strategic initiatives
10	Carbon Pricing
11	Climate Change Adaptation Plan
12	Our emission inventory
12	Methodology
14	2018 Results

How to use this document

INTRODUCTION **MENU**
Navigate through the side menu for the chapters of your interest

ARROWS
Navigate page by page using the arrows in the lower left corner

HOME
Click this icon to return to the index

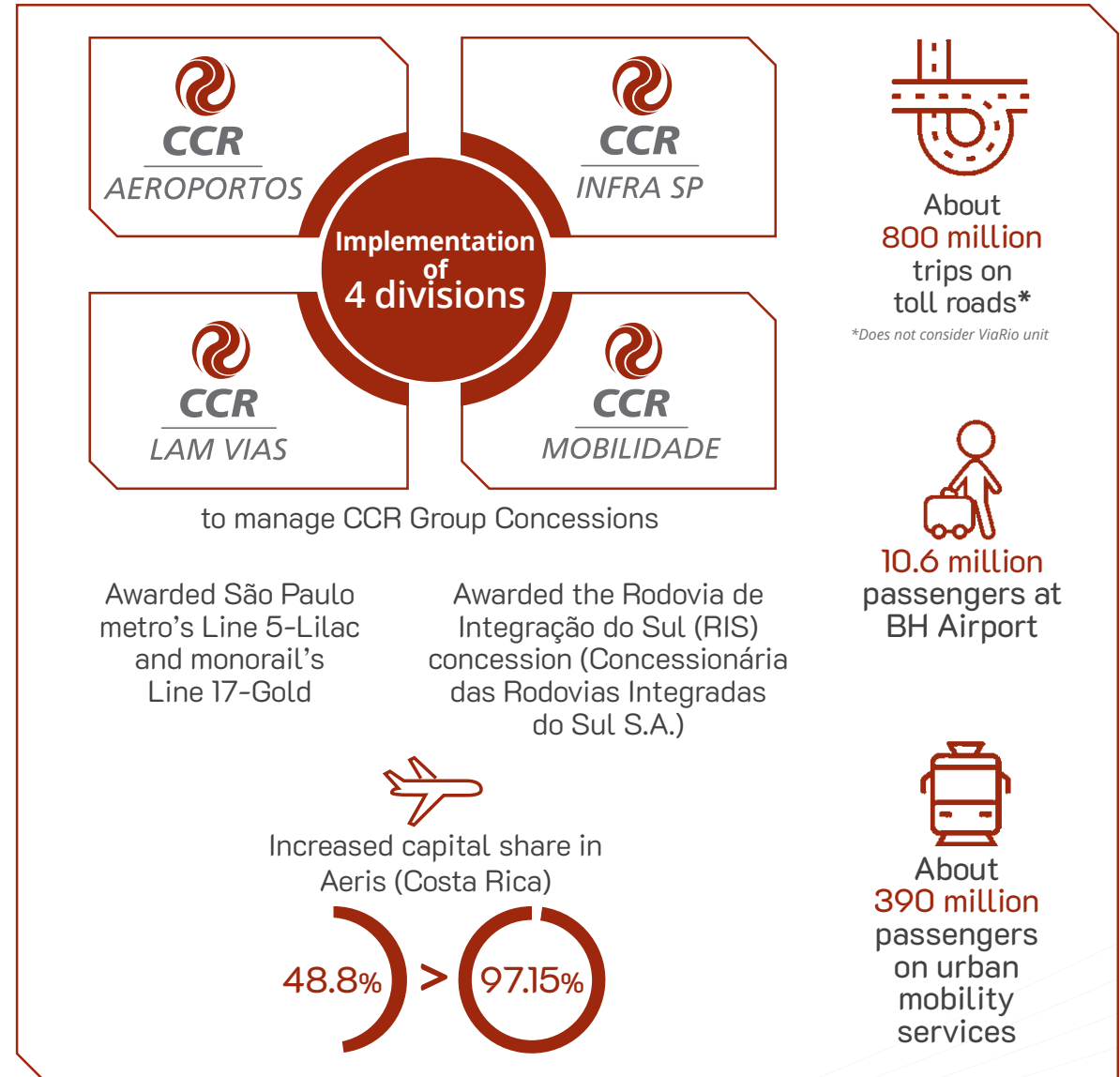
PRINT
Use this shortcut to print PDF content

Introduction

For 20 years, the CCR has made solutions feasible for investments and infrastructure services. There are 21 business units in Brazil and abroad, managing toll roads, urban mobility systems and airports. This portfolio of concessions is managed through four divisions: CCR Aeroportos, CCR Infra SP, CCR Lam Vias and CCR Mobilidade.

In addition to this structure, the CCR Group has a Shared Services Center, made up of CCR Actua, CCR Engelog and CCR EngelogTec, companies that drive the growth and increase the competitiveness of business by providing administrative, engineering and information technology services. The CCR Institute subsidizes the management structure, centralizing business unit's private social investments in projects that promote local community development.

Highlights in 2018



Respect for people and a commitment to preserve the environment are the foundation of the CCR Group business model. That is why the company invests and works in an integrated manner to manage the impacts of its activities, mitigate risks and drive opportunities that enhance its social and environmental performance. Management of greenhouse gas (GHG) emissions, a central theme of this publication, is part of this commitment.

CCR Group has published its GHG emissions inventory on the Brazilian GHG Protocol Program website's public record since 2012. This communicative version is aimed at expanding reporting of information to the company's stakeholders, strengthening accountability in relation to plans and actions to fight and adapt to climate changes.

ANNUAL AND SUSTAINABILITY REPORT 2018

In addition to the emissions inventory, CCR Group issues a series of publications as part of its Annual and Sustainability Report. They can be found online at www.grupoccr.com.br/ri2018/en:



- **Annual & Sustainability Report 2018:**

understand how CCR Group and its units generate value for stakeholders within six different types of capitals (financial; human; natural; manufactured; intellectual; and social and relationships)



Click here to access



- **GRI Guidebook:**

see CCR Group's performance through indicators that meet the GRI Standards



Click here to access



- **Online version:**

access summarized Annual & Sustainability Report 2018 content, with interactive resources and accessibility for stakeholders



Click here to access



- **Report on Activities of the CCR Institute:**

learn more about the achievements of the CCR Institute through its proprietary programs, the projects it supports and its campaigns in 2018

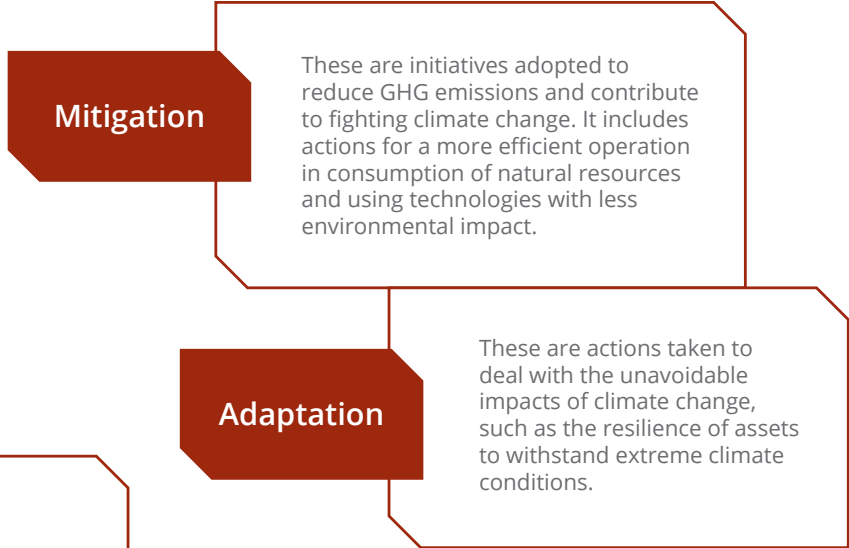


Click here to access

Our strategy

CCR Group's business strategy is aligned with a global agenda of sustainable development, such as mobilizing to combat climate change. As a signatory of the United Nations (UN) Global Compact, which engages corporate organizations around ten universal principles to promote sustainable growth and corporate citizenship, the company incorporates the Sustainable Development Goals (SDGs) into its governance and decision-making processes.

One of the 17 SDGs proposed by the UN regards planning for actions to stop the rise of the planet's average temperature, caused by a greater concentration of greenhouse gasses (GHG) in the atmosphere, and the climate changes resulting from this, with the potential to cause large-magnitude social, economic and environmental impacts. CCR Group's strategy of action is therefore connected to the 2030 Agenda and the targets of SDG 13.



Sustainable Development Goal 13

Take urgent action to combat climate change and its impacts

1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS	

To make this form of action legitimate and to enhance it, the company has built a Materiality Matrix, with strategic themes for sustainability management (learn more in the Annual and Sustainability Report's GRI Guidebook). One theme is Operational Ecoefficiency, which covers aspects of environmental management (energy consumption, waste disposal, etc.) and risks and opportunities related to climate change. In this last aspect, the Group's business uses actions and initiatives geared toward both mitigating and adapting to climate changes (learn more in the box above).

The Climate Change Policy, approved in 2011 and revised in 2016, is the instrument that directs how CCR Group and business units assess externalities and manage impacts within this theme.

Governance structure

The CCR Group governance structure assures that sustainability is strategically placed within decision-making and is aligned with the General Goals and Guidelines (GGGs) that are part of the General Business Plan. Among other responsibilities, the Risks and Reputation Committee is in charge of the guidelines related to integrated risk mapping (including analysis of the Risk Management Policy and Mitigation Plan), considering the environmental and social risks associated with CCR Group, among other things.

Work is done at CCR Actua to manage socioenvironmental indicators, engage employees and communicate and maintain relations with external stakeholders. Units have employees who serve as Advanced Sustainability Posts, managing this topic in a way that is closer to the reality of each business, making exchange of good practices possible.

With this management structure, CCR Group is continually advancing in developing solutions and innovations that improve the ecoefficiency of its processes. And this is how actions are consolidated by CCR Group to make the main commitments undertaken in its Climate Change Policy a reality.

Main commitments of CCR Group's Climate Change Policy:

- Include the issue in strategic and investment decision-making processes
- Engage external stakeholders to enhance understanding of climate change
- Incorporate analysis of GHG emissions into supplier selection and development
- Widely disseminate the Policy and publish the GHG emissions inventory on an annual basis
- Participate in voluntary initiatives, contributing to a low-carbon economy
- Manage risks associated with climate change by implementing adjustment strategies
- Promote new services, products or business models that make it possible to reduce GHG emissions
- Set targets for direct or indirect reduction of emissions
- Define variable compensation criteria linked to improving performance on the issue
- Anticipate compliance with regulatory regimes still under discussion



[Click here](#) to see the full CCR Group Climate Change Policy

Climate change: global context



Click on the numbers to learn more about regulatory milestones, market pressures and the role of companies in combating global warming



External commitments

CCR Group's participation in external initiatives geared toward the theme of climate change is strategic to enhancing governance of this theme within the company. Through interaction with organizations recognized for their work and qualification, the areas responsible for sustainability management identify trends and opportunities, spreading knowledge and information for business units to enhance their risk management tools and mitigation and adjustment plans.

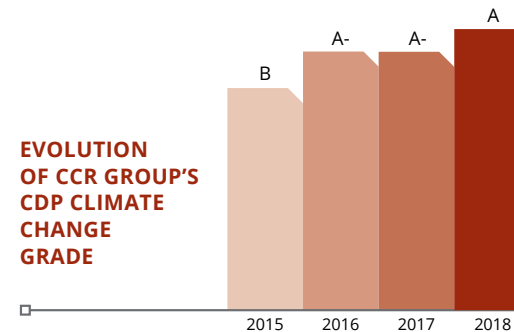
CDP

CDP is an international organization whose members include companies around the world, supporting investor analyses of risks, impacts and opportunities related to environmental management of business. Since 2010, CCR Group has voluntarily responded to the organization's questionnaire covering climate change.

The responses companies provided each year are published on the CDP website, along with a grade varying between D- and A. This score considers criteria such as the scope and transparency of information, level of organizational understanding of the topic, management structure and mechanisms and contribution of operations to fighting climate change. In 2018, CCR Group was given the highest grade for the first time. Moreover, the institution awarded the group the CDP Supplier Engagement Leader 2018 award, for its participation in the CDP Supply Chain (find out more in the box).

ENGAGEMENT IN THE SUPPLY CHAIN

CCR Group also participates in the CDP Supply Chain movement, which promotes supplier engagement in strategies to combat climate changes and other relevant environmental impacts. Companies operating in the supply chain are invited to respond to questionnaires, which contribute to evaluation of the governance model, strategy, risk and impact management and mechanisms to quantify GHG emissions in their operations. In 2018, CCR Group invited 164 suppliers in its value chain to take part in CDP Supply Chain.



[Click here](#)
to access the
CDP website

Brazilian GHG Protocol Program

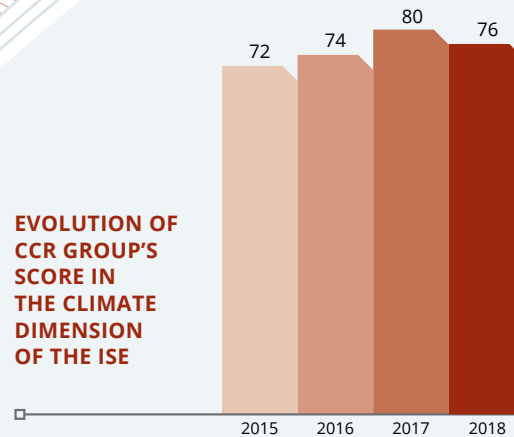
The world's most widely used method to quantify GHG emissions, the GHG Protocol, has been used by CCR Group since 2012. The company uses the tool provided by the Brazilian GHG Protocol Program, which is responsible for adapting the methodology developed in the USA to the Brazilian context.

Through this tool, CCR Group identifies sources of emissions in its value chain and measures the amount of GHG emitted into the atmosphere each year. The emissions inventory is made available in the Public Record of Emissions and data submitted is verified by an external and independent company, assuring the reliability of information and of the management model.



[Click here](#) to access the Public Record of Greenhouse Gas Emissions

EVOLUTION OF CCR GROUP'S SCORE IN THE CLIMATE DIMENSION OF THE ISE



Climate Forum

Throughout 2018, CCR Group maintained its participation in the Climate Forum – Business Action on Climate Change, which under the coordination of Ethos Institute – Business and Social Responsibility, works to monitor and foster development of public policies to promote innovations and solutions aimed at a low-carbon economy. Members of the initiative are aligned with the commitments in the Open Letter to Brazil on Climate Change, released in 2015, upon the occasion of the 21st Climate Change Conference (COP-21), held in Paris, where a new global agreement aimed at combating the increase in the planet's average temperature was established.

Climate change and the capital market

As a publicly traded company with shares traded in the Novo Mercado segment, CCR Group has, without interruption since 2012, been a constituent of the main indices of the B3 (Brasil, Bolsa e Balcão), which assess corporate sustainability and climate change management: the Corporate Sustainability Index (ISE) and the Carbon Efficient Index (ICO2).

Companies selected for inclusion in the ISE portfolio are assessed in relation to the different dimensions of sustainability and corporate governance management at their businesses, including aspects related to climate risks and opportunities. In the climate dimension, the graph shows CCR Group's performance over recent years. Scores obtained by the company are a reflection of enhanced management and action plans so that business units work with a focus on contributing to fighting climate change.

The ICO2 is an index that encourages investors and companies to direct efforts toward consolidation of a low-carbon economy. Companies listed in this index are recognized for their transparent accountability and better performance in intensity of GHG emissions.

Strategic initiatives

Projects developed corporately by CCR Group contribute to the resilience of operations in relation to climate change and to adapting the company within a low-carbon economy. These studies constitute a proactive management approach to this theme and represent managerial advances based on mapping of emissions. The greenhouse gas (GHG) inventory is the first step for CCR Group to understand its impact on global warming and key opportunities for improvement. Initiatives such as the Climate Change Adaptation Plan and Carbon Pricing are tools that allow strategies to be created, considering the company's context and external references.

Carbon Pricing

Worldwide, companies and governments have been discussing and testing out carbon pricing models. They have the common premise of attributing a monetary value to a certain amount of GHG emissions, which allows for financial accounting of the impact on climate change. This kind of tool can be used by governments through laws or be voluntarily used by companies (see more in the boxes at right).

In line with global trends, in 2017 CCR Group began an internal carbon pricing project that adheres to its Climate Change Policy, with the goal of enhancing mechanisms to incorporate this theme into strategic decisions and assessment of project returns, comparing and prioritizing investments and forecasting risks associated with any Brazilian legislation that could institute mandatory pricing in the country.

Throughout 2018, the study looked at various scenarios and models used around the world for carbon pricing as well as the experiences of other companies. Starting in 2019, CCR Group will rely on a tool that will allow for analysis of its impact on the climate change context, using a hypothetical cost for each metric ton of CO₂ equivalent as a reference. Based on this mapping, a corporate strategy will be able to be created on this topic, if necessary.

Mandatory pricing

Defined by a government, laws are established to charge fees or tariffs for each tCO₂e emitted or for a cap and trade system. Within this model, all organizations can incur costs for the emissions they generate or they can turn their positive carbon capture balance into revenue, through sales to other actors.

Voluntary pricing

Adopted by companies, the main goals of this system are financial measurement of the risks and opportunities associated with climate change and operation and simulation of cap and trade systems. It can also support decision-making on investments and projects that mitigate GHG emissions.

Climate Change Adaptation Plan

The creation of the CCR Group's Climate Change Adaptation Plan (CCAP) reached two milestones in the last year: conclusion of studies for the toll road segment and the start of work geared toward urban mobility services. This project involves surveying historical data related to climate events and analysis of external references and climate models, in order to identify and prioritize potential risks to operations in the future, in addition to proposing the adaptation measures established in the Monitoring Plan.

The CCAP aimed at toll roads was done in six stages (learn about them at right) and considered eight CCR Group concessions, assessing specific points for each of them and their exposure to climate events, such as severe rains, tropical cyclones and fires. Scenarios projected within this initiative, as well as suggested plans of action, were done looking to the year 2040. Considered as short-term within the context of climate change, this horizon gives projections and resource planning by the company for adaptation actions a more reasonable level of predictability.

Initiated in late 2018, the CCAP for urban mobility services will be conducted throughout 2019, covering the CCR Metrô Bahia, ViaMobilidade and ViaQuatro. All of the lessons accumulated under the Toll Roads CCAP will favor development of this new phase of studies, with the increased qualification of the professionals involved and continual improvement of the process.

Stages of the CCAP

- 1** Definition of points at each unit analyzed by the study
- 2** Mapping of historical climate events at these locations and the respective impacts and costs
- 3** Survey of climate projections in academic studies and studies by organizations such as the National Institute for Space Research (INPE) and the Intergovernmental Panel on Climate Change (IPCC)
- 4** Prioritization of risks identified in a matrix that considers the magnitude of impacts and the frequency of occurrences now and in the future
- 5** Classification of high-priority risks, describing the associated impacts qualitatively and, whenever possible, quantitatively
- 6** Recommendation of adaptation plans, to be analyzed in CCR Group's strategic planning for effective implementation

Our emissions inventory

Methodology

CCR Group adopts the methodology established by the GHG Protocol to carry out the inventory of greenhouse gas (GHG) emissions. Published in 1998 by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), the GHG Protocol is the model most used by companies and governments, in Brazil and around the world, to quantify emissions from their direct and indirect activities.

Since 2008, based on adaptation to the national context, as structured by the Fundação Getulio Vargas Center for Sustainability Studies (GVces), the country has the Brazilian GHG Protocol Program. Aligned with this initiative, CCR Group's inventory includes all units in Brazil over which it maintains operational control, regardless of the equity interest held in these concessions or companies.

The scope of the emissions inventory therefore considers a total of 14 concessionaires - among all segments managed - the three Shared Services Center companies, administrative offices, the CCR Institute and the SAMM. In this edition, the ViaRio and ViaMobilidade concessionaires were included in the survey for the first time. These concessionaires are respectively responsible for operating the Transolympic Expressway in Rio de Janeiro and the Line 5-Lilac metro line in São Paulo.

Another change made to the calculation methodology in the last year was that emissions were accounted for in relation to the use of fertilizers by units that manage toll road concessions and urban mobility systems. These materials are used by concessionaires in planting activities in environmental recovery areas and in their own assets, such as medians.

Operations in Brazil covered by the inventory

TOLL ROADS



URBAN MOBILITY



AIRPORTS



SERVICES COMPANIES



CCR INSTITUTE



CORPORATE OFFICES

+ 3 corporate offices*
* São Paulo, Rio de Janeiro and Brasília

GASSES INCLUDED

The CCR Group emissions inventory considers all types of GHG established by the Montreal and Kyoto Protocols, which took effect in 1989 and 2005, respectively. Each of these gasses has a different potential to contribute to the greenhouse effect and to consequently raising the planet's average temperature. That is why the concentration of this GHG is measured in metric tons of carbon equivalent (tCO₂e).

KYOTO PROTOCOL

CO₂, CH₄, N₂O, HFC-32, HFC-125,
HFC-134, HFC-134a, HFC-143a,
HFC-152a and HFC-227ea

MONTREAL PROTOCOL

HCFC-22, HCFC-141b
and HCFC-124

Emissions sources in the CCR Group inventory

SCOPE 1

Emissions generated directly by the company's operations

- Fuel consumption in vessels, fleet vehicles, generators and compressors
- Consumption of liquefied petroleum gas (LPG) in cafeterias
- Fugitive emissions in cooling and air conditioning equipment
- Fugitive emissions in refilling and acquiring fire extinguishers
- Fertilizer consumption
- Cutting and welding processes
- Effluent treatment
- Suppression of vegetation

SCOPE 2

Emissions resulting from the consumption of electricity acquired from third parties

- Electricity supplied by local distributors, used to operate installations and equipment

SCOPE 3

Indirect emissions, generated by the CCR Group value chain

- Production of materials such as cement, steel, plaster and asphalt
- Imports of parts and materials
- Transportation of solid waste
- Treatment of waste and effluents managed by third parties
- Fuel consumption by external companies
- Fuel consumption of aircraft upon landing and take-off and while cruising
- Emissions from the production chain of fuel consumed by CCR Group
- Outsourced transportation of employees
- Electricity acquired and passed on to third parties

2018 Results

CCR Group

CCR Group's consolidated emissions in 2018 totaled 787,500 metric tons of CO₂ equivalent (tCO₂e), 10% less than the year prior, when 873,900 tCO₂e were on record for the inventory's three scopes. This performance was mostly driven by an 11% reduction in scope 3 emissions, which account for 90% of the company's emissions.

Scope 1 emissions were down by 2% compared to 2017, even with the inclusion of two new units (ViaRio and ViaMobilidade), reflecting the optimization of processes, such as replacing common light bulbs with LED light bulbs, the use of renewable fuels instead of fossil fuels and a drop in water consumption.

Scope 2 emissions were 17% higher, due to expansion of urban mobility services, with the inclusion of ViaMobilidade and the full operation of CCR Metrô Bahia, in addition to the change in the emission factor made by the National Interconnected System (SIN). Real electricity consumption, which is used to calculate this scope's emissions, was lower at nine business units, with a total reduction of over 2,000 MWh.

In relation to scope 3 emissions, performance improved by 11% compared to 2017, mostly as a result of a reduction in emissions related to landings, take-offs and cruising by aircraft travelling through the BH Airport. In addition, a lower volume of emissions related to production of goods and services purchased by CCR Group significantly contributed to this performance.

55% of CCR Group units reduced their GHG emissions in 2018

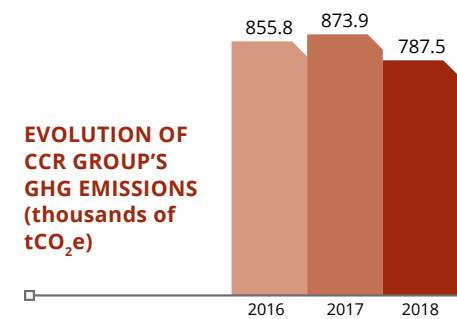
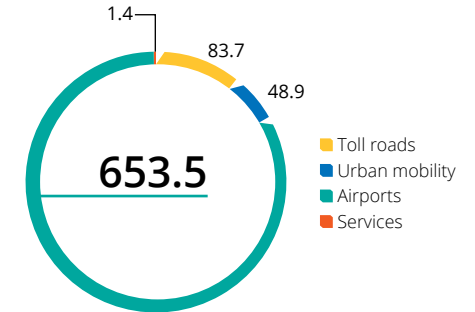


10% reduction in total emissions, even with the inclusion of 2 units in the inventory



9 units lowered their electricity consumption during the year

CCR GROUP'S GHG EMISSIONS BY SEGMENT (thousands of tCO₂e)



PURCHASE OF CARBON CREDITS

In line with its Climate Change Policy, CCR Group acquired 1,195 metric tons of carbon credits in June 2019. This offset regards the total differences in scope 1 and 2 emissions from 2018 to 2017, considering the business units inventoried. Credits came from projects under the auspices of the Kyoto Protocol (UN): "Generation of Renewable Wind Energy (Santa Vitória do Palmar e Chuí Wind Farm)," "Cogeneration by the Rio Pardo Energy Plant (CERPA)" and "Renewable Energy at the Cristalino Small Hydro Plant - PR" (based on the Clean Development Mechanism - CDM methodology); and "Renewable Energy at the Cristalino Small Hydro Plant - MG" (based on the Verified Carbon Standard - VCS methodology).

CCR Group emissions by emission source (tCO₂e)

	2018	2017	2016
Scope 1			
Mobile sources	43,049	46,692	49,017
Land-use change*	14,765	10,861	na
Fugitive emissions	2,314	3,654	1,103
Effluents	961	890	768
Stationary combustion	674	1,155	1,067
Agricultural emissions**	8	na	na
Total	61,771	63,252	51,955
Scope 2			
Energy acquisition	18,074	15,399	11,509
Scope 3			
Other scope 3 emissions	647,917	715,971	720,549
Purchased goods and services	31,549	52,306	46,242
Activities related to fuel and energy not included in scopes 1 and 2	19,069	16,935	15,984
Waste produced by operations	4,597	5,846	5,216
Commute of employees (home-work)	1,500	1,564	1,662
Business travel	1,768	1,393	1,374
Transportation and distribution (upstream)	840	713	930
Leased assets (the company as lessee)	430	499	397
Total	707,669	795,227	792,354

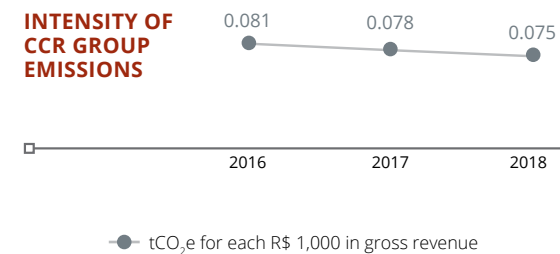
*Category included in 2017.

**Category included in 2018.

Intensity of emissions

The CCR Group's rate of total emissions divided by consolidated gross revenue (including construction revenue) was 4% less in 2018, year-over-year. This result was achieved because total emissions were 10% lower for the year, while consolidated gross revenue was down by 7%.

INTENSITY OF CCR GROUP EMISSIONS



Toll roads

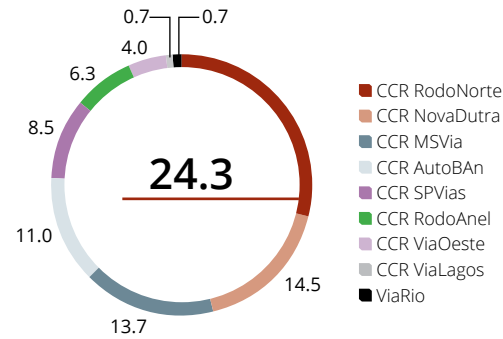
In 2018, CCR Group included a new unit in the scope limit of the emissions inventory: ViaRio, a concessionaire that manages the Transolympic Expressway, in Rio de Janeiro. Even with this inclusion, toll roads had around 15% fewer emissions year-over-year.

In scope 1, different initiatives contributed to this performance, particularly those impacting emissions related to fuels consumed by the concessionaires' fleet of vehicles (mobile sources). Replacement of old vehicles and changing fossil fuels for biofuels, use of alternative means of locomotion and fewer kilometers travelled made an 8% reduction in this aspect feasible compared to performance in 2017.

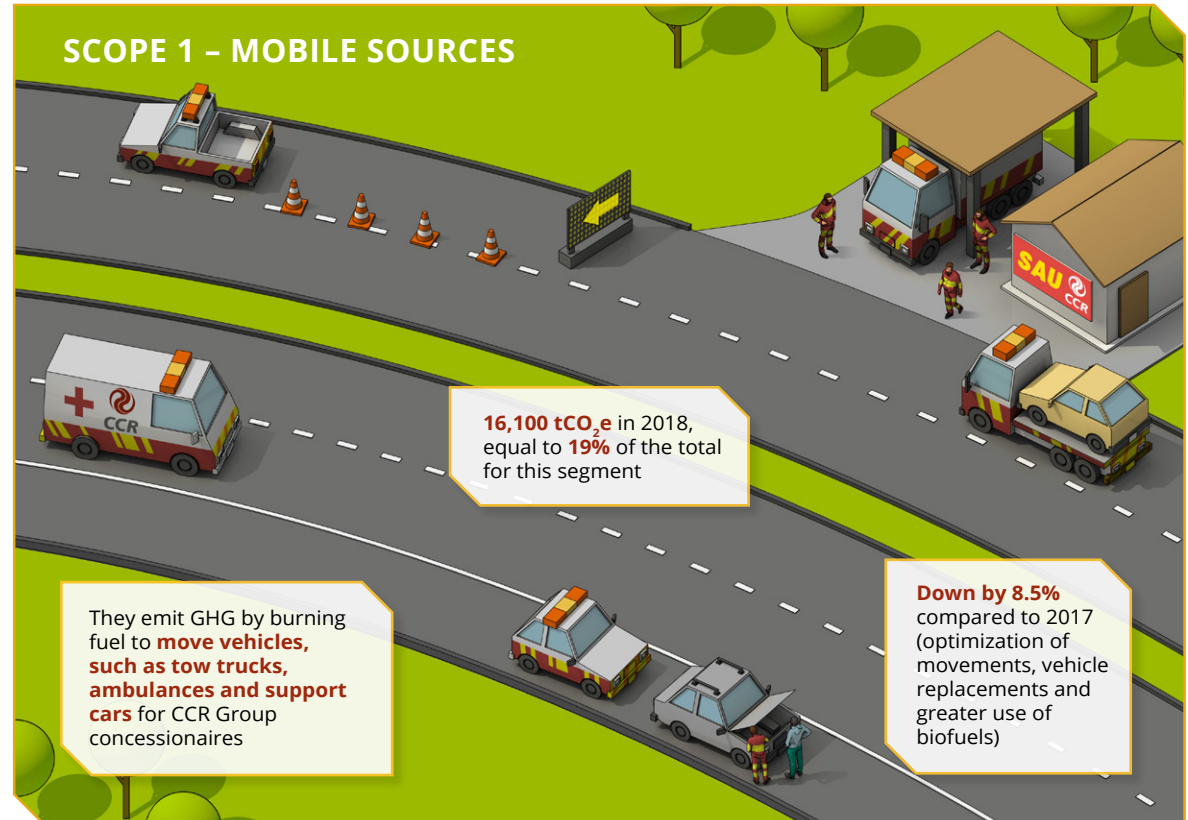
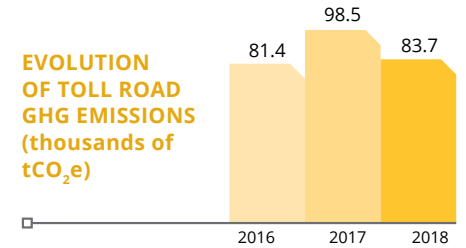
Using the same basis of comparison, scope 2 emissions fell by 11%. This improvement is chiefly due to a change made by SIN to the emission factor, brought about by a reduction in the use of fossil fuels in the national energy matrix, an externality over which CCR Group has no control.

The largest drop in emissions for the year was found in scope 3, whose main emission sources are the purchase of materials and inputs and consumption of fuel by third-party companies. The 40% reduction gained in 2018 is the result of a lower volume of works by the CCR SPVias concessionaire. In 2017, the unit had a sharp increase in emissions because of work doubling the lanes on the SP-255 highway.

TOLL ROADS GHG EMISSIONS BY BUSINESS UNIT
 (thousands of tCO₂e)



EVOLUTION OF TOLL ROAD GHG EMISSIONS
 (thousands of tCO₂e)



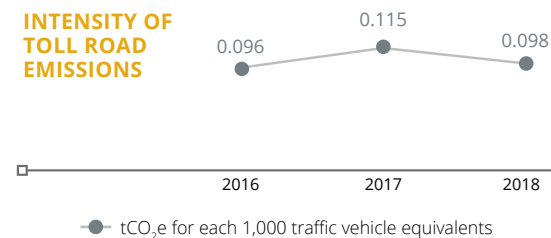
Toll roads emissions by emission source (tCO ₂ e)	2018	2017	2016
Scope 1			
Mobile sources	16,105	17,594	16,600
Land-use change*	14,765	8,802	na
Fugitive emissions	561	1,379	427
Stationary combustion	548	609	537
Effluents	257	243	231
Agricultural emissions**	7	na	na
Total	32,243	28,627	17,795
Scope 2			
Energy acquisition	3,028	3,393	2,978
Scope 3			
Purchased goods and services	30,410	50,289	45,276
Activities related to fuel and energy not included in scopes 1 and 2	13,657	11,215	9,867
Waste produced by operations	2,384	2,979	3,478
Commute of employees (home-work)	1,500	1,564	1,662
Transportation and distribution (upstream)	387	362	240
Business travel	118	104	105
Total	48,456	66,513	60,628

*Category included in 2017.

**Category included in 2018.

Intensity of emissions

Steady traffic volume at concessions, based on Brazil's economic scenario, and less consumption caused the intensity of emissions in this segment to see similar performance to absolute emissions. The rate, measured using the number of equivalent vehicles trafficking on CCR Group toll roads, was 15% lower in 2018 compared to the year before.



Urban mobility

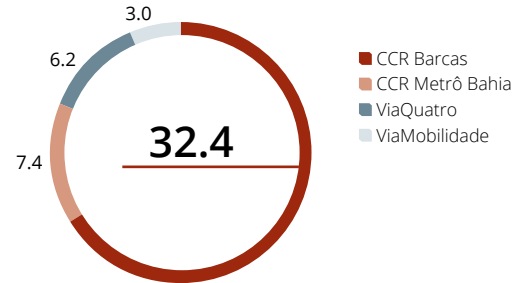
Urban mobility services were responsible for emitting 48,900 tCO₂e in 2018, 6% less year-over-year, even with the inclusion of ViaMobilidade in the inventory. This performance is explained by a reduction in scope 1 and 3 emissions, partially offset by an increase in scope 2 emissions.

In scope 1, the main source of emissions was marine diesel consumption at CCR Barcas, which was 10% lower than in 2017, motivated by initiatives to optimize the travel network.

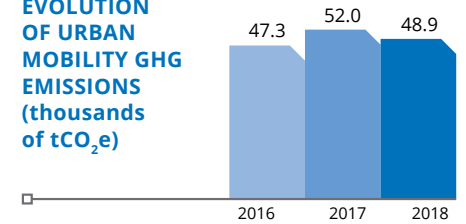
Marine diesel also impacted scope 3 emissions, where the most significant source is related to the sum of emissions related to the fuel production chain. In 2018, this source of emissions was 6% lower year-over-year.

There was an increase in emissions during the year in scope 2, which consolidates emissions resulting from electricity consumption. In the last year, this consumption rose by 73%, due to full operation of lines 1 and 2 of CCR Metrô Bahia, the three new ViaQuatro stations and startup on ViaMobilidade operations. Even with a lower SIN emission factor, emissions in this scope rose by 34.9% for the year.

URBAN MOBILITY GHG EMISSIONS BY BUSINESS UNIT (thousands of tCO₂e)



EVOLUTION OF URBAN MOBILITY GHG EMISSIONS (thousands of tCO₂e)



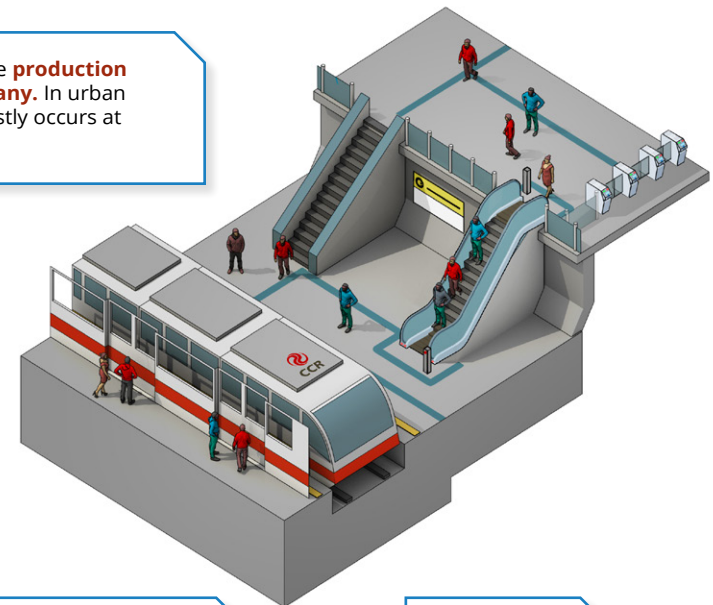
SCOPE 2

Accounts for emissions generated in the **production of electricity consumed by the company**. In urban mobility services, this consumption mostly occurs at stations and in moving trains

13,400 tCO₂e in 2018, equal to 27% of the total for this segment

Up by 34.9% compared to 2017 (expansion of system)

Full operation of CCR Metrô Bahia lines 1 and 2



3 new ViaQuatro stations

Startup of ViaMobilidade

Urban mobility emissions by emission source (tCO₂e)

	2018	2017	2016
Scope 1			
Mobile sources	26,541	28,678	31,819
Fugitive emissions	1,590	2,054	240
Stationary combustion	108	529	378
Land-use change*	0	2,059	na
Agricultural emissions**	1	na	na
Total	28,240	33,320	32,437
Scope 2			
Energy acquisition	13,399	9,931	7,018
Scope 3			
Activities related to fuel and energy not included in scopes 1 and 2	5,229	5,534	5,890
Waste produced by operations	1,294	1,426	790
Business travel	339	355	330
Transportation and distribution (upstream)	328	330	672
Purchased goods and services	64	1,067	162
Leased assets (the company as lessee)	33	0	0
Commute of employees (home-work)	1	1	1
Total	7,288	8,713	7,845

*Category included in 2017.

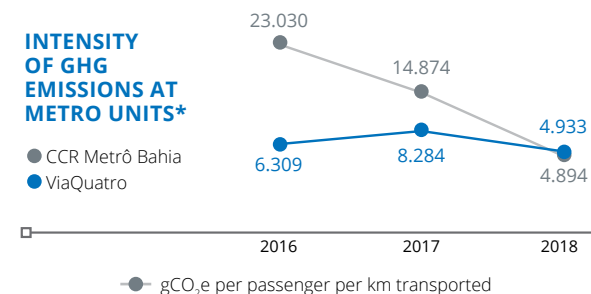
**Category included in 2018.

Intensity of emissions*

Because of the different operating models between segments, CCR Group monitors the rates of emissions intensity for each unit on an individual basis. The most significant reduction was 67%, at CCR Metrô Bahia, which tripled the number of passengers transported. At ViaQuatro, the rate fell by 40%, due to new stations being opened during the year, an increase in the number of passengers transported and a reduction in total emissions volume. At CCR Barcas, performance improved by 6%, resulting from a lower number of passengers transported and a 9% drop in total emissions volume for this unit.

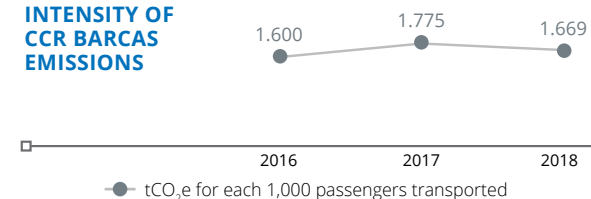
*ViaMobilidade was not incorporated into this indicator due to operations starting in August 2018.

INTENSITY OF GHG EMISSIONS AT METRO UNITS*



*Data for 2017 for CCR Metrô Bahia was restated.

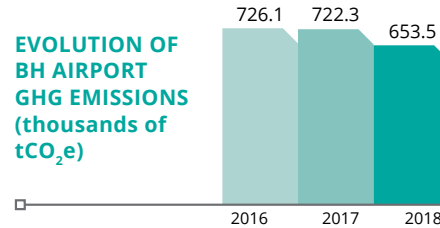
INTENSITY OF CCR BARCAS EMISSIONS



Airports

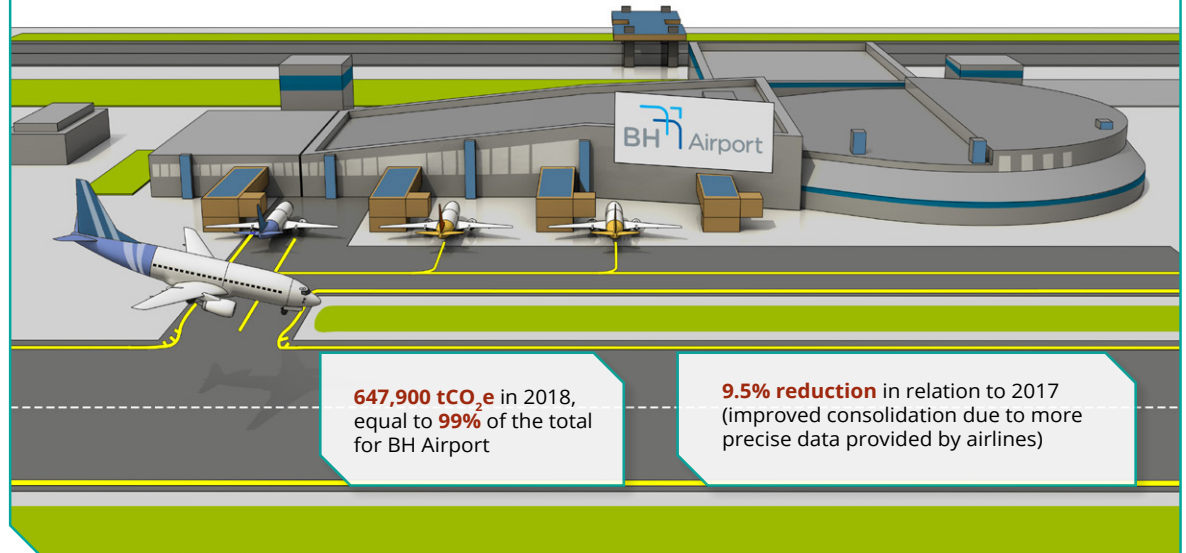
This segment considers BH Airport, which manages Confins International Airport, in Minas Gerais. The main source of emissions for this operation (responsible for over 99% of all emissions) is under scope 3 and accounts for emissions resulting from fuel consumption in landing, take-off and cruising by the aircraft that move through the airport. In 2018, improved consolidation of this source, based on greater precision in data provided by airlines, led to a 10% reduction in total BH Airport emissions.

Scope 1 emissions remained unchanged from the consolidated standpoint. An increase in emissions related to effluents, caused by a greater number of passengers during the year, was offset by a reduction in mobile sources, resulting from new departure gates (fingers) that reduced the demand to transport passengers to planes by bus. In scope 2, energy consumption rose by 1%; however, the lower SIN emission factor resulted in a 22% reduction in emissions.



OTHER SCOPE 3 EMISSIONS

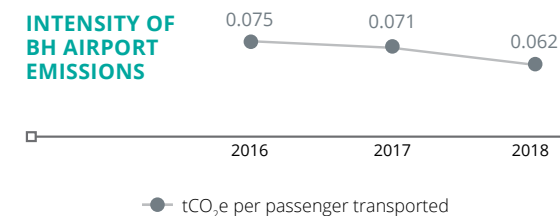
Aircraft consume fuel at different intensities when landing and taking off and during the time that the flight is cruising (at an altitude of over 3,000 feet). Emissions generated by this consumption are accounted for **under scope 3 of the BH Airport inventory**



BH Airport emissions by emission source (tCO ₂ e)	2018	2017	2016
Scope 1			
Effluents	703	647	537
Mobile sources	277	309	498
Fugitive emissions	164	221	432
Stationary combustion	7	5	141
Total	1,150	1,182	1,608
Scope 2			
Energy acquisition	1,580	1,988	1,427
Scope 3			
Other scope 3 emissions	647,917	715,971	720,549
Purchased goods and services	1,073	951	804
Waste produced by operations	909	1,431	942
Leased assets (the company as lessee)	398	499	397
Business travel	232	222	268
Transportation and distribution (upstream)	126	21	19
Activities related to fuel and energy not included in scopes 1 and 2	75	78	128
Total	650,729	719,173	723,107

Intensity of emissions

In 2018, improvement to the calculation methodology for the biggest source of emissions at BH Airport (fuel consumption by aircraft moving through the airport) significantly contributed to reducing the unit's total emissions by 10%. This performance, along with a 4% increase in the number of departing passengers, led to a 13% drop in the rate of emissions intensity for the unit.



Services

Comprised of the Shared Services Center (CSC) and by the corporate offices in Brasília, Rio de Janeiro and São Paulo, as well as the CCR Institute, this group is basically made up of administrative operations, whose emissions vary little over time.

However, total emissions volume in 2018 was 35% higher than in 2017, as a result of a 50% increase in emissions related to air travel by employees, accounted for under scope 3.

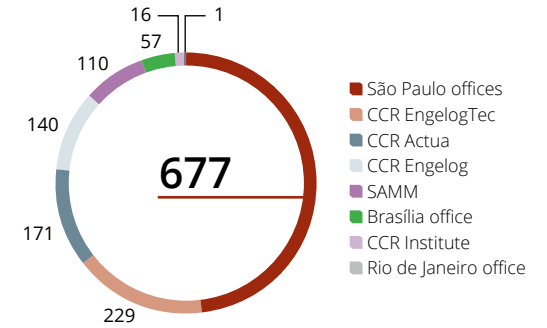
Under scope 2, energy consumption was down by 3%, associated with the reduction in the SIN emission factor, leading to a 22% reduction year-over-year. A 12% hike in scope 1 emissions is due to a greater volume of emissions in the vehicle fleet at units.

3 units lowered their GHG emissions in 2018: the Rio de Janeiro office, SAMP and EngelogTec

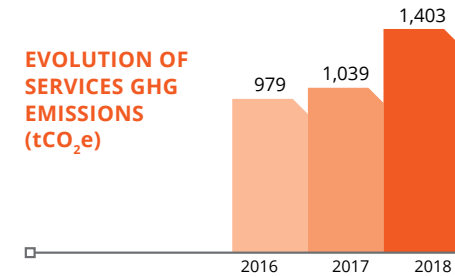


21% reduction in emissions related to power consumption

SERVICES GHG EMISSIONS BY UNIT (tCO₂e)



EVOLUTION OF SERVICES GHG EMISSIONS (tCO₂e)

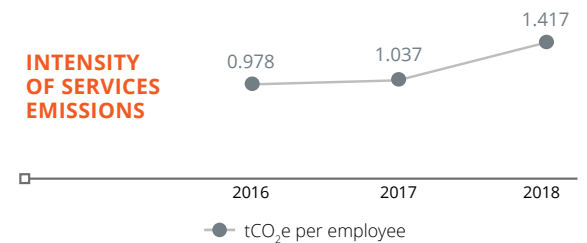


Services emissions by emission source (tCO₂e)

	2018	2017	2016
Scope 1			
Mobile sources	127	112	101
Stationary combustion	12	12	11
Fugitive emissions	0	0	4
Total	139	124	116
Scope 2			
Energy acquisition	68	86	86
Scope 3			
Business travel	1,079	712	671
Activities related to fuel and energy not included in scopes 1 and 2	109	108	100
Waste produced by operations	9	9	6
Total	1,196	829	777

Intensity of emissions

The substantial increase in air travel by CCR Group employees, combined with a 1% reduction to the company's staff, led to a 37% increase in the rate of emissions intensity at Services units and corporate offices.



CREDITS

General Coordination

CCR Group's Sustainability and
Communication Team

**Content, design
and infographic**

usina82

