



GHG Inventory
2016

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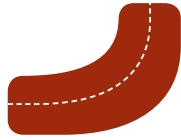




About the Organization

CCR S.A. was created in 1999 to offer investment solutions and infrastructure services, while contributing to the socioeconomic and environmental development of the regions where it operates.

Concessions



10
toll roads

4

concessions in urban mobility
(subway – São Paulo and Bahia –, ferry
lines and VLT)



4

airports

Businesses

Toll Roads

CCR NovaDutra, CCR ViaLagos, CCR RodoNorte, CCR AutoBAn, CCR ViaOeste, CCR RodoAnel, CCR SPVias, Renovias, ViaRio and CCR MSVia



3,265 km

of toll roads

OUR TOLL ROADS HAVE:

+ R\$4.028

billion
in investments

640

monitoring
cameras

90

Rescue
vehicles

154

tow trucks

74

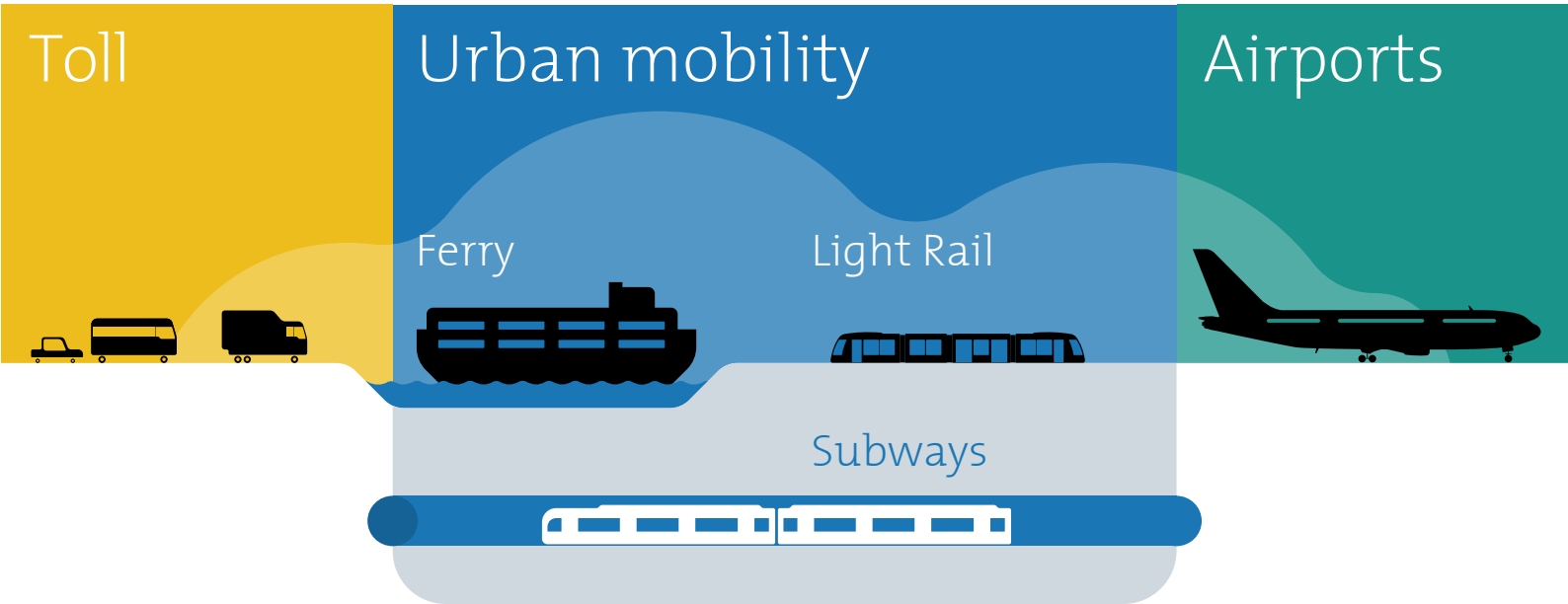
traffic inspection
vehicles

72

toll
plazas

2.382

emergency telephones



Toll

Urban mobility

Airports

Ferry

Light Rail

Subways

Urban mobility

ViaQuatro and CCR Metrô Bahia, Barcas, VLT Carioca

IN THE CITIES:

25

stations (ViaQuatro, CCR Barcas and CCR Metrô Bahia)

43

trains

18

vessels

Airports

BH Airport, Quiport, Aeroporto Internacional Juan Santamaria, Curaçau International Airport, Total Airport Services - TAS

IN BH AIRPORT:

Terminal

132,000

m²

Passengers handled:

9.6

million/year

Destinos

49 regular and 4 seasonal destinations - domestic (44 regular and 4 seasonal) and international (5 permanent) destinations
Taxi cooperatives

Shared Services Center

CCR Actua (administrative services)

CCR Engelog (engineering)

CCR EngelogTec (information technology)



GHG Emissions

Sustainability is a universal matter in CCR Group. This topic is part of our strategic planning as an advantage to protect and create business value, so that it brings benefits to society, the government and investors.

Strategy-wise, the company has developed the Corporate Climate Change Program to guide its efforts related to greenhouse gas emissions. In the first materiality study, conducted in 2013, one of the seven relevant issues identified was emissions and climate changes. Back then, the work comprised a comprehensive analysis and surveys involving stakeholders.

The materiality process was revisited in 2016 to update the relevant issues from the standpoint of business strategy and stakeholders' perception. The result indicated operational eco-efficiency as a relevant issue, including environmental aspects such as greenhouse gas emissions. The importance of this subject is once again reaffirmed to the company.

To learn more about the materiality process developed in 2016, visit: relatoweb.com.br/ccr/2016/pt/processo-de-materia-lidade.html

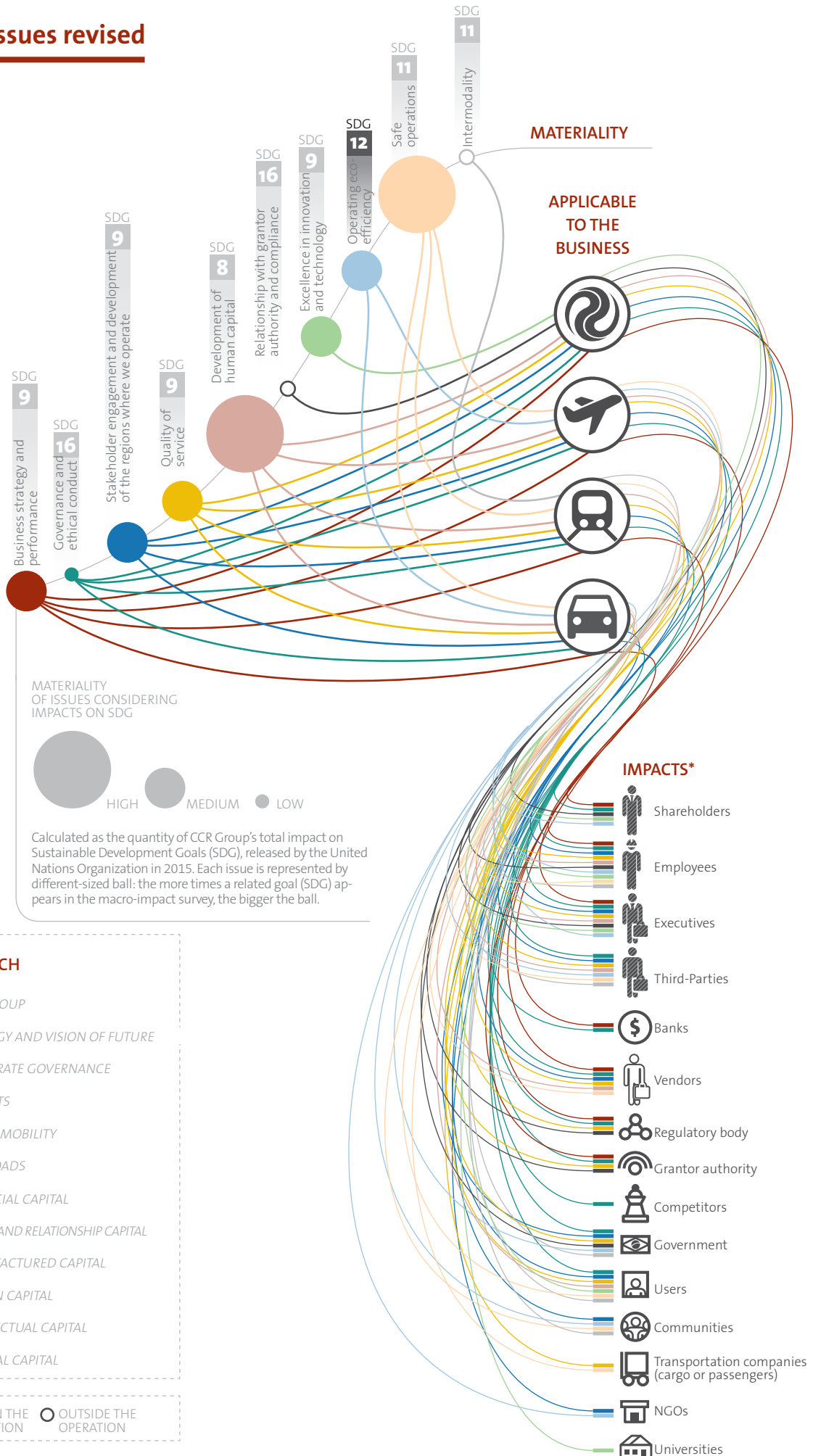
The implementation of the Corporate Program on Climate Changes culminated in the development of a Corporate Policy on Climate Changes (Política Corporativa de Mudanças

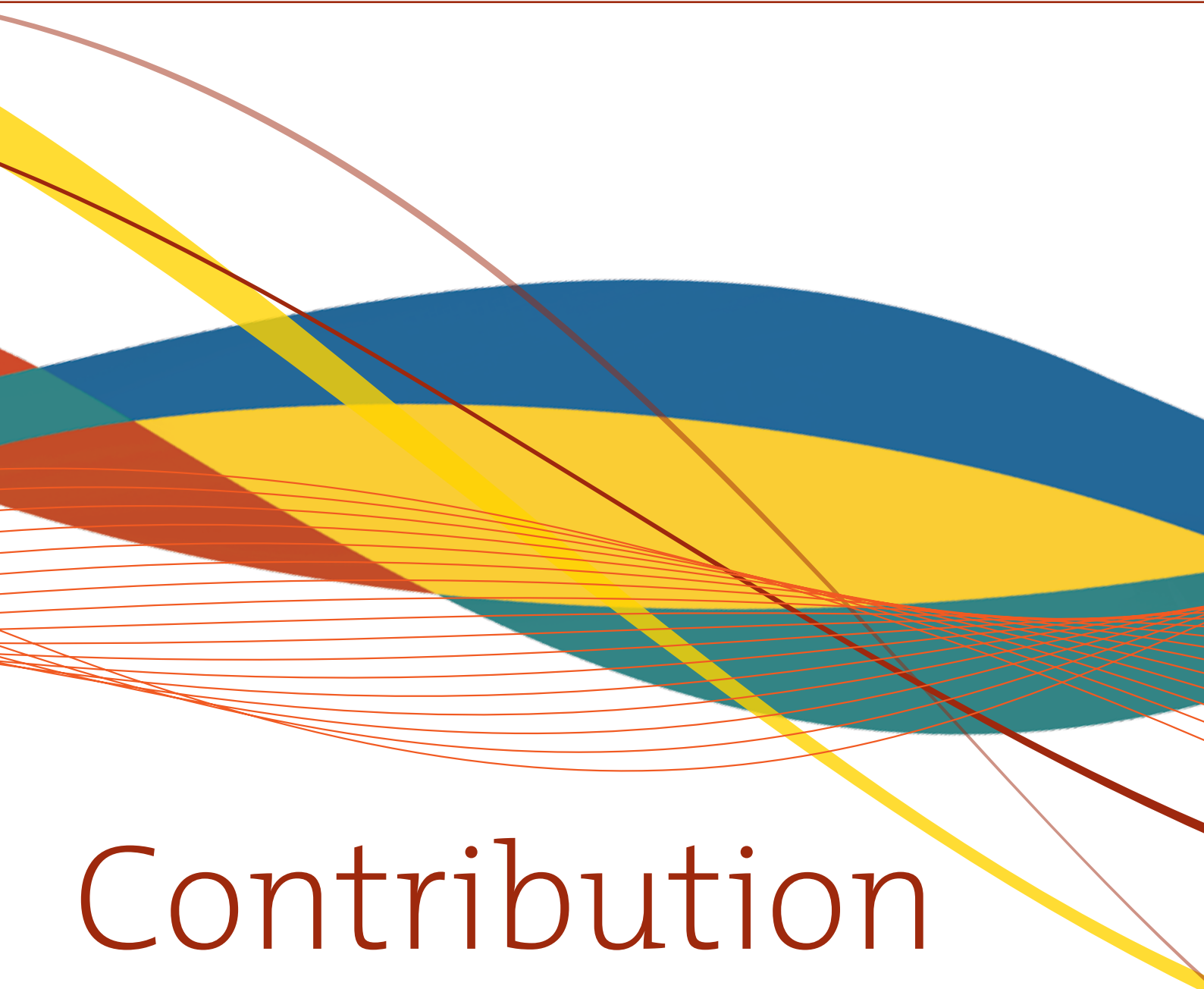
Climáticas - PCMC), whose structure is based on mitigation and adjustment guidelines. The purpose is to manage CCR Group's GHG emissions.

CCR Group's PCMC is available on: http://ri.ccr.com.br/grupoccr/web/conteudo_pt.asp?idioma=0&conta=28&tipo=47157

CCR Group's efforts devoted to Climate Changes are increasingly better every year. Our management focused on information about consumption of environmental resources to make our operations viable allows us to set targets for emission reduction and develop corporate and operational action plans.

Material issues revised





Contribution towards fighting climate changes

The CCR Group is committed to taking part in the global efforts to stabilize the concentration of greenhouse gas in the atmosphere and to fight climate changes. The company acknowledges the importance of and urgency in adopting practices to reach environmental balance, to develop a culture of risk mitigation, build a low-carbon economy, and identify opportunities.

Over the last years, investments in urban mobility demonstrate CCR Group's business strategy is in line with its efforts to build a low-carbon economy.

Public transportation contributes towards avoiding emissions from third parties and local populations. That is so because more carbon-intensive transportation, such as private vehicles that

use fossil fuels, are replaced by shared transport systems, which reduce emissions of air pollutants, greenhouse gas, among other benefits.

Investments in urban mobility:

- **CCR Barcas S.A** – maritime passenger transport from and to the cities of Rio de Janeiro, Niterói, Ilha Grande, Mangaratiba and Angra dos Reis
- **CCR MetroBahia** – expansion of the Salvador subway system
- **VLTRio** – implementation of the Light Rail Line (VLT)
- **ViaQuatro** – Line 4-Yellow of the São Paulo subway system.



The subway system administered by ViaQuatro concessionaire is one of the most efficient shared transport systems in terms of GHG emissions. In 2016, its emission was 10 gCO₂e/passenger-km on average, thanks to the Brazilian energy mix, which relies on a high percentage of renewable sources compared to other countries.

In the case of public transportation, the avoided emissions are calculated by comparing the performance of Line 4 with the performance of other transportation modes.

Two studies were used as reference: (A) Study conducted for the Inter-American Development Bank (Logit-CapitalAmbiental:2012) to identify the impacts of

urban bus transportation in the city of São Paulo, by using a survey conducted by the city government to implement the train line Expresso ABC; and (B) 2012 Sustainability Report by Companhia do Metropolitano de São Paulo. The first study estimates that bus transportation emission is 41.8 gCO₂e/passenger-km, which represents avoided emission of 31.8 gCO₂e/passenger-km. The second study indicates the bus transportation system in São Paulo causes an

impact of 52 gCO₂e/passenger-km, that is, six times higher than the impact of Line 4-Yellow, which represents avoided emission of 42 gCO₂e/passenger-km.



Strategy and commitments

CCR Group accounts for the greenhouse gas (GHG) emissions of its business activities since 2012, and it prepares an annual GHG emission inventory according to the guidelines of the GHG Protocol. The inventory is audited by an independent party since 2013 and qualified in the Golden category, which attests the highest level of depth and detail of the information provided. The inventory allows us to evaluate our performance and develop action plans to mitigate our impacts.

CCR Group also established in 2016 a target for GHG emission reduction for the Business Units CCR AutoBan, CCR NovaDutra, CCR SPVias, CCR RodoNorte, and CCR ViaOeste, which together account for 80% of its gross operating revenue. It means that, throughout 2014-2015-2016, the Group committed to developing actions to reduce and/or offset 5% of Scope 1 (direct emissions, from the company's operations) and Scope 2 (indirect emissions, from energy purchase) GHG emissions over the operational base year of 2012.

CCR Group has publicly taken on commitments on climate changes by taking part in several business initiatives on this matter.

The actions proposed are:

1. reduction and offset of emissions
2. adoption of internal carbon price

The effectiveness of our management of emissions is demonstrated by our being included in the Carbon Efficient Index (ICO2) since its creation, in 2012, and by our increasingly high scores in the climate changes dimension of the Business Sustainability Index (ISE), both by B3 (former BM&FBovespa). We were once again recognized in 2016 by the Carbon Disclosure Leadership Index (CDLI) as one of the most transparent and committed companies in Brazil with regard to management of climate changes.

3. plans for operations adjusted to climate changes considering analysis of the risks and opportunities involved.

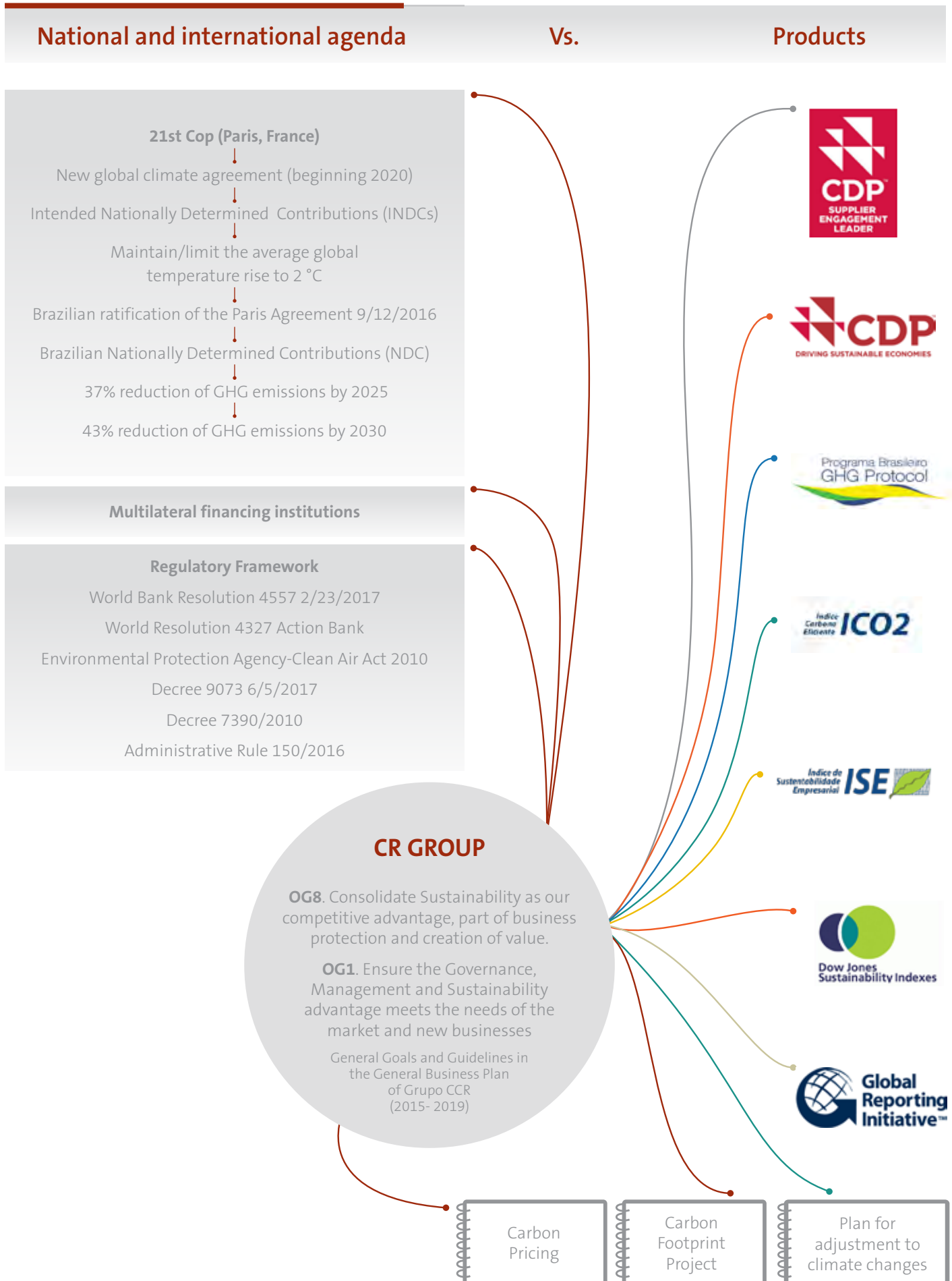
To maintain its intellectual capital on this matter, CCR Group actively participates in forums and/or groups that encourage dialogue, dissemination of good practices on climate changes management, and proposals for public policies.

In 2016, CCR Group launched groundbreaking projects within its corporate climate change program, such as the **Plan for Adjustment to Climate Changes** and the **Carbon Footprint Project**. Both are in line with the national and international agendas for mitigation of and adjustment to climate changes

The initial scope of these initiatives was focused on toll road concessions, which account for 74% of our total revenue. Also, the toll road business is more exposed to operational and reputational risks. Later, the scope will be extended to other lines of business.



We strive to structure our internal carbon price in the coming years, oriented to the business lines for which the group has concessions, in order to add the externalities of a possible national carbon pricing scenario to our strategic planning.





Methodology

CCR Group makes its greenhouse gas (GHG) emissions inventory according to the methodology established by the **Greenhouse Gas Protocol: a Corporate Accounting and Reporting Standard – Revised Edition (GHG Protocol)**, published by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

INVENTORIED GASES

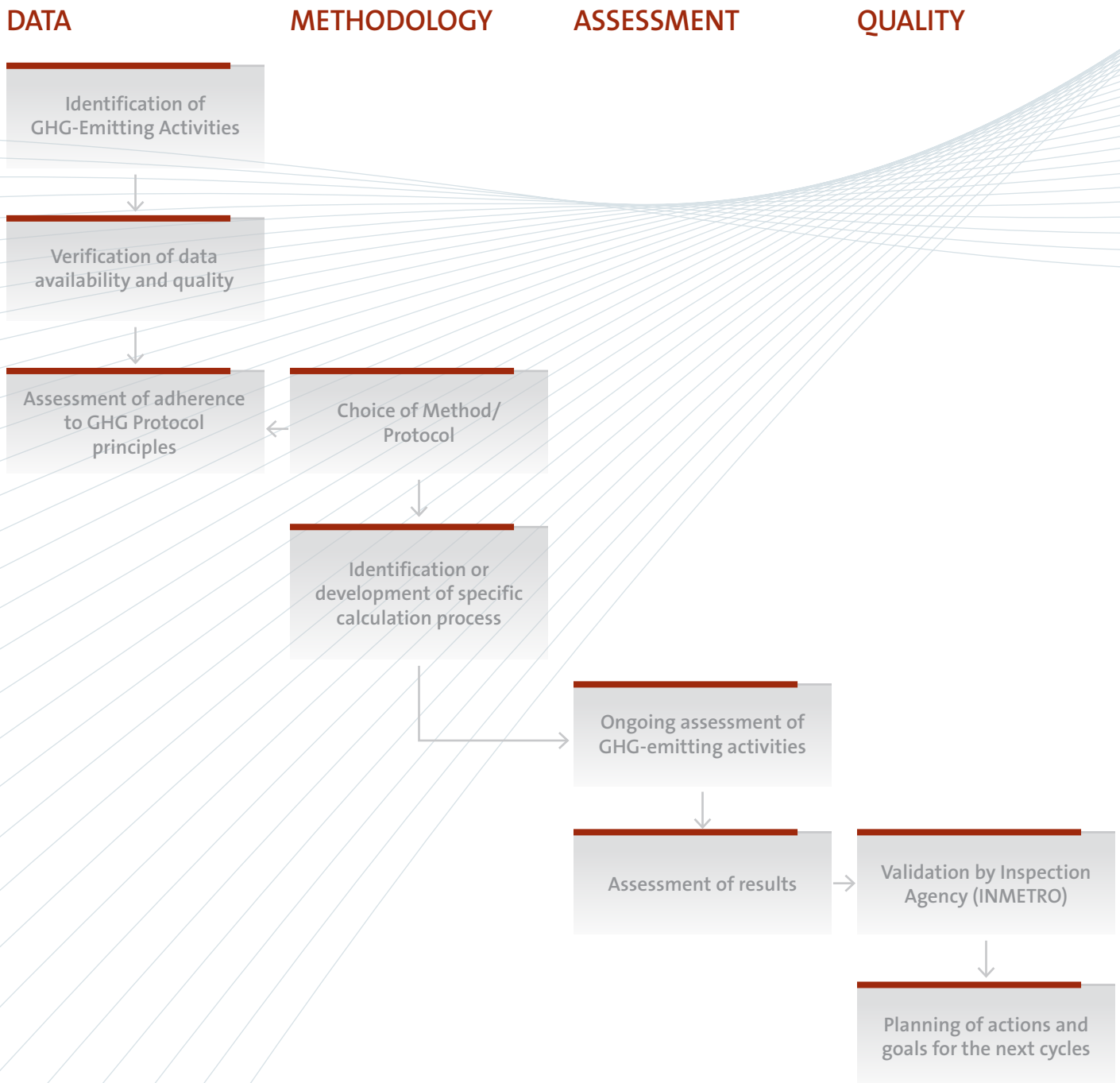
KYOTO PROTOCOL GASES

- CO₂
- CH₄
- N₂O
- HFC-32
- HFC-125
- HFC134a

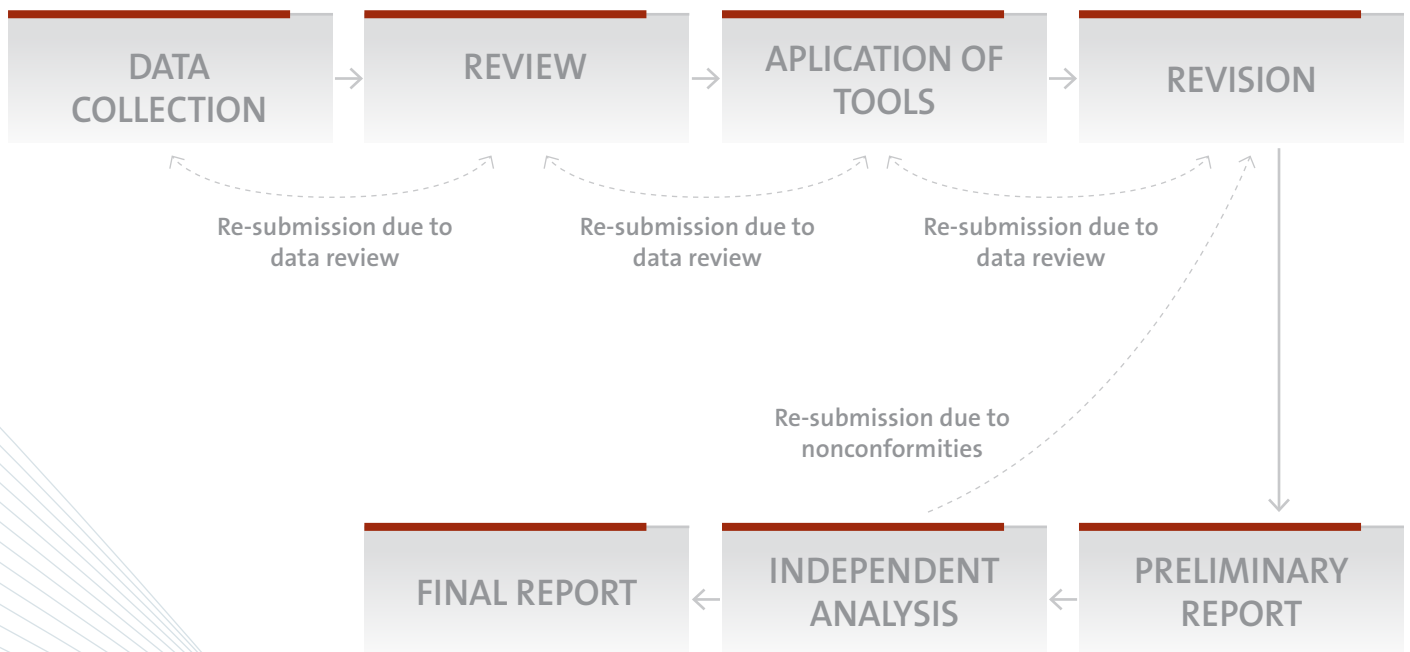
MONTREAL PROTOCOL GASES

- HCFC-22
- HCFC-141b

Process to make the inventory



Inventory execution

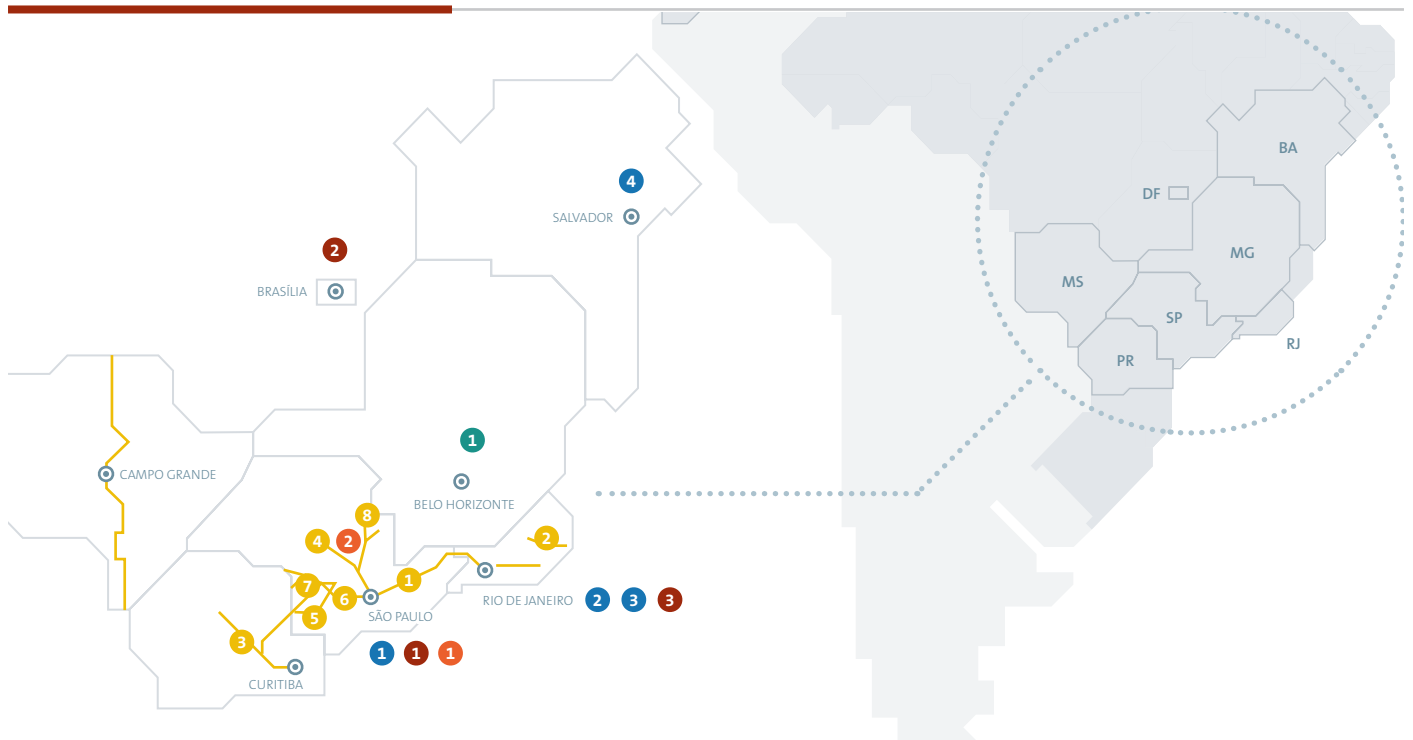


Organizational limits

Due to diverse activities and management models, since 2010 we chose to inventory our total GHG emissions from business activities from the perspective of Operational Control.

However, only business activities in Brazil were included in the GHG Inventory.

We used the centralized collection approach: required information is obtained from our many operational units and controlled by software managed by our sustainability department, which gathers and accounts for the data.



THE UNITS INCLUDED IN THE 2016 GHG INVENTORY ARE:

BUSINESS OFFICES

- 1 São Paulo
- 2 Brasília
- 3 Rio de Janeiro

TOLL ROADS

- 1 CCR RodoAnel
- 2 CCR ViaLagos
- 3 CCR NovaDutra
- 4 CCR RodoNorte
- 5 CCR AutoBAN
- 6 CCR ViaOeste
- 7 CCR SPVias
- 8 CCR MSVia

URBAN MOBILITY

- 1 ViaQuatro
- 2 CCR Barcas
- 3 CCR Metrô Bahia

AIRPORTS

- 1 BH Airport

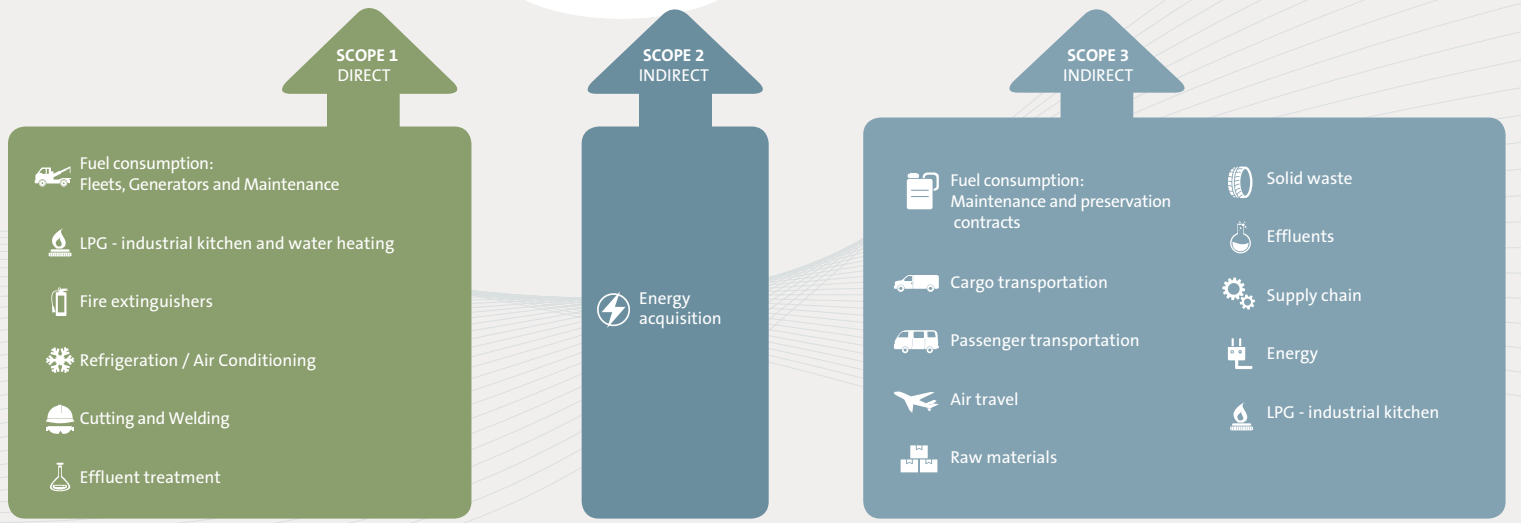
SERVICES

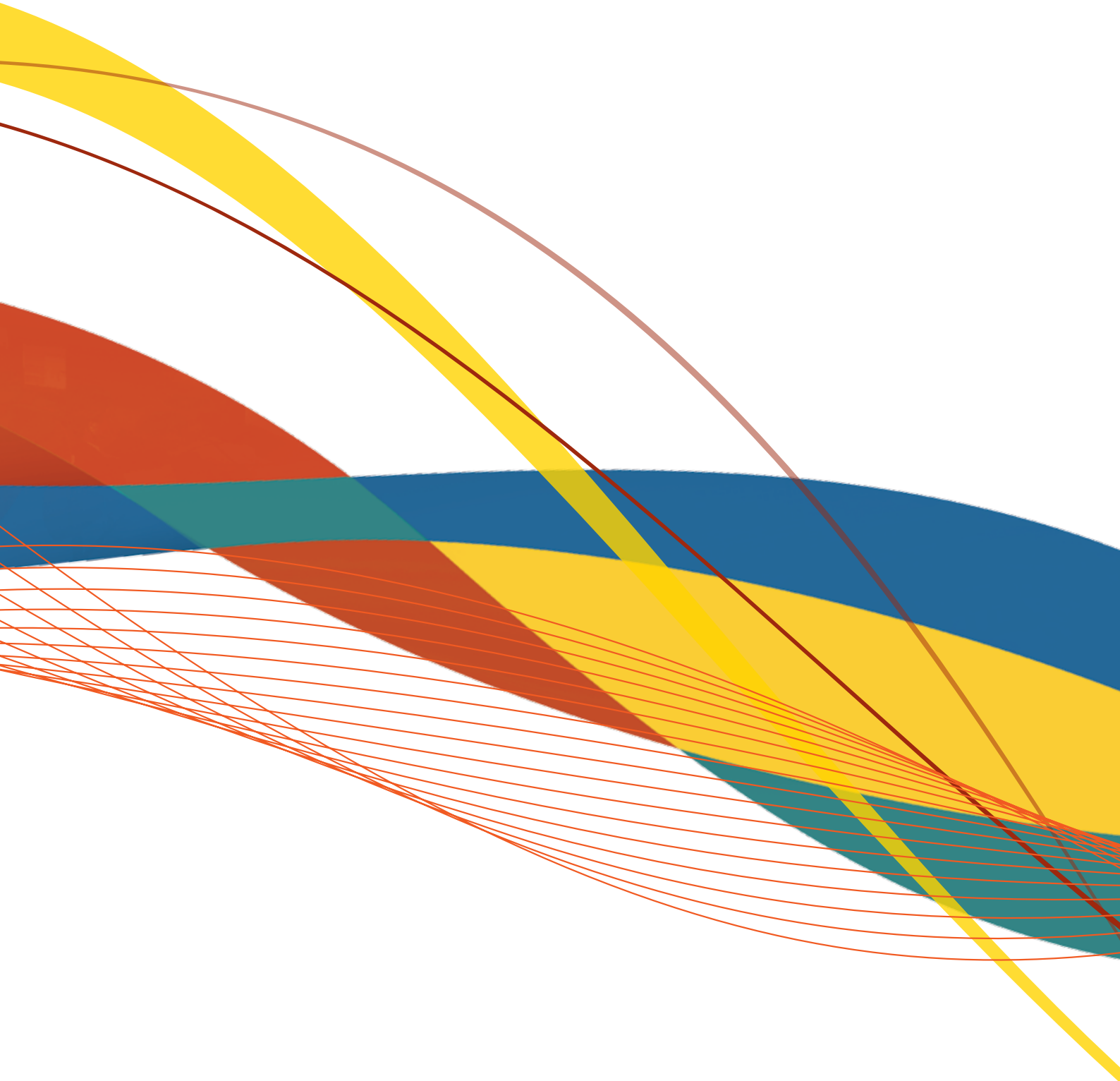
- 1 CCR Actua, CCR Engellog e CCR EngellogTec
- 2 Samm

Operational limits

The 2016 inventory covered all direct and indirect emissions from Scope 1, 2 and 3 activities, as per the GHG Protocol definition

Emissions by Scope





2016 Results

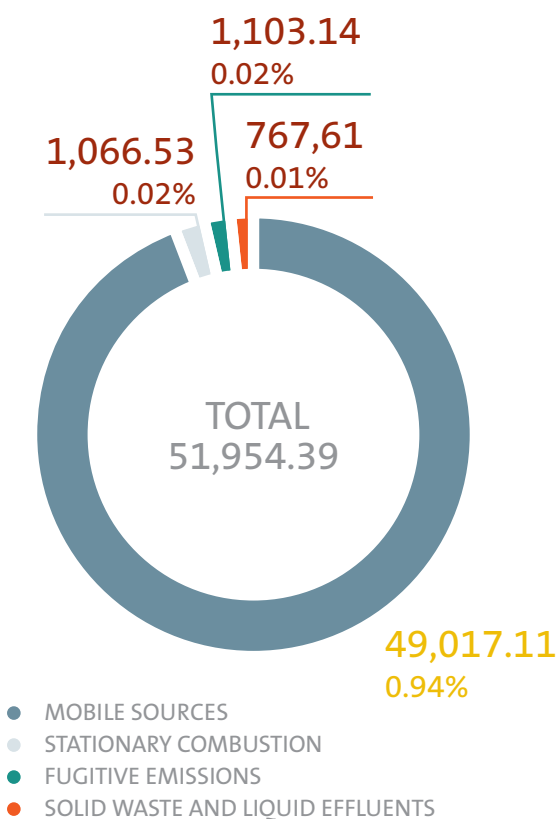
In 2016, CCR Group emitted 855,819 tCO₂e vs. 145,007 tCO₂e in 2015.

In 2015, the BHAirport unit was added to our GHG inventory. However, in this first year, only scope 1 and 2 emissions and, partially, scope 3 emissions were added to the inventory. For 2016, we committed to determining all scope-3 emissions of the airport, which accounts for 85% of the company’s total emissions.

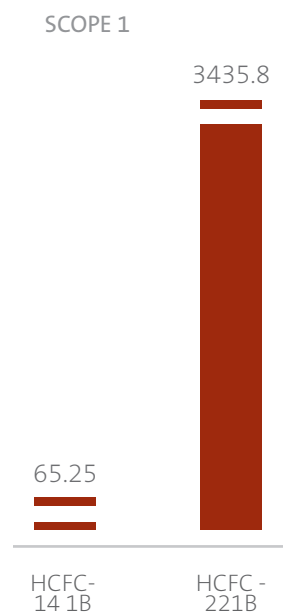
Scope 1 emissions (51,954.39 tCO₂e) reduced by 7% over 2015

This reduction was the result of several internal actions that optimized processes, such as: replacement of fossil fuels for renewable fuels, campaigns to drive awareness of the use of environmental resources, reduction in the number of employees commuting from one unit to another, meetings by teleconference, among other operational initiatives.

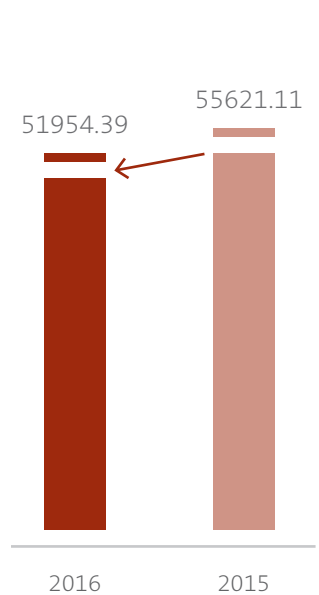
EMISSION BY CATEGORY - SCOPE 1
tCO₂e



CCR GROUP EMISSIONS - GASES NOT COVERED BY THE KYOTO PROTOCOL
tCO₂e



CCR GROUP EMISSIONS SCOPE 1 (2016) VS. SCOPE 1 (2015)
tCO₂e



Our Scope 2 emissions (11,509.13 tCO₂e), referring to acquisition of energy from the grid, also decreased (28%) over 2015.

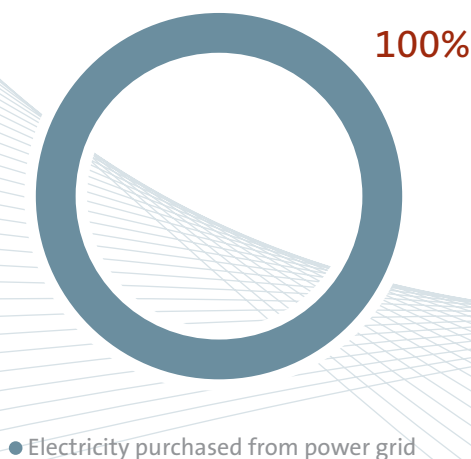
This reduction is connected with the Brazilian energy emission factor, which reduced by 52% over 2015.

Even though a few Business Units reduced their energy consumption, our total consumption in kwh was higher if compared to 2015.

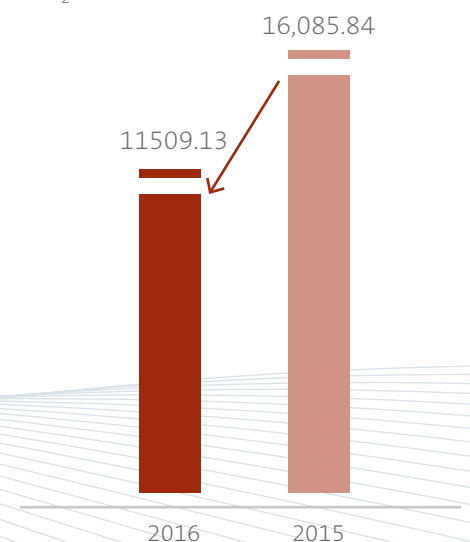
ACTIONS THAT REDUCED ENERGY CONSUMPTION IN 2016

- lamps: replacement of fluorescent tube lamps, compact, dichroic, sodium and metal vapor, for LED-equivalent lamps, in back offices, operational bases and AVIS;
- air conditioning: switching off of the hot hair function in all air conditioners at work places; implementation of automatic timer to switch off air conditioners at 8 PM every day, and automatically switch them on at 7 AM the next day; campaign to drive awareness of air conditioner use at temperature 23 to 25 oC; and notices to make all employees aware, those who access information at the time they log in to their computer.
- educational campaigns on conscious consumption. In the World Environment Day, a campaign was launched on social media sharing tips on how to reduce energy consumption in households and in everyday life activities.

EMISSIONS BY CATEGORY - SCOPE 2



CCR GROUP EMISSIONS - SCOPE 2 (2016) VS. SCOPE 2 (2015)
tCO₂e



Scope 3 emissions total 792,355.21 tCO2e, 93% of our total emissions.

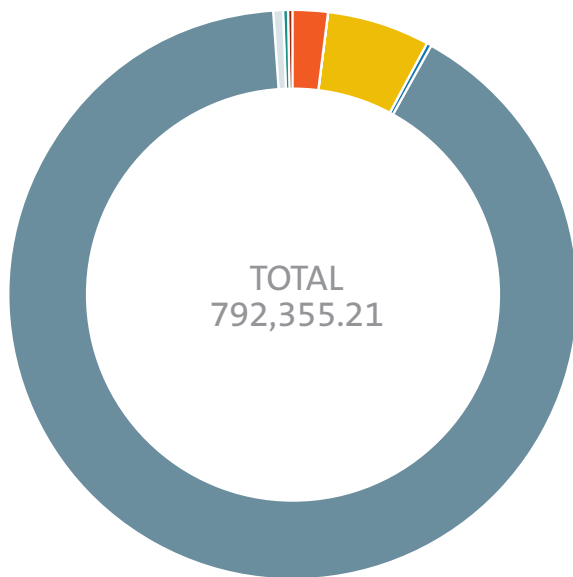
In 2016, these emissions were quite different from those of the 2015 GHG inventory. That was because the BH Airport unit was added to the scope 3 calculation.

The largest source of GHG emissions in the airport is related to the aircrafts. Emissions are obtained separately for the following stages of the flight: LTO cycle (Landing and Takeoff) and cruise stage (GHG emissions related to the flight route, landing and takeoff excluded). In the cruise stage, GHG emission was 502,563.51 tCO2e and in LTO cycle, 217,985.91 tCO2e.

Purchased Goods and Services was the next category in Scope 3 emissions (46,242.23), which represents purchase of raw materials, especially cement, which has been used a lot in the expansion works of MSVia concessionaire.

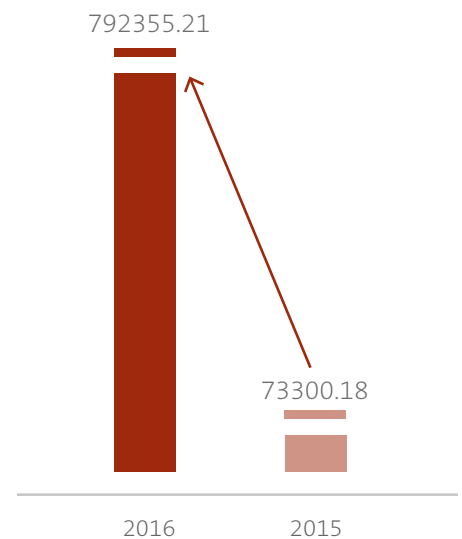
EMISSIONS BY SCOPE 3 CATEGORIES

Data in tCO2e



CCR GROUP EMISSIONS - SCOPE 3 (2016) VS. SCOPE 3 (2015)

Data in tCO2e



- ACTIVITIES RELATED TO FUEL AND ENERGY NOT INCLUDED IN SCOPES 1 AND 2
15,984.22 | 2.02%
- LEASED ASSETS (THE COMPANY AS LESSEE) 396.88 | 0.05%
- PURCHASED GOODS AND SERVICES
46,242.23 | 5.84%
- COMMUTE OF EMPLOYEES (HOME-WORK)
1,662.33 | 0.21%
- OTHER SCOPE 3 EMISSIONS
720,549.42 | 90.04%
- WASTE PRODUCED BY OPERATIONS
5,215.65 | 0.66%
- TRANSPORTATION AND DISTRIBUTION (UPSTREAM) 930.46 | 0.12%
- BUSINESS TRAVEL
1,374.02 | 0.17%

Improvement of 5% in meeting the business target to reduce emissions over 2012 for the Business Units CCR AutoBAn, CCR NovaDutra, CCR SPVias, CCR RodoNorte, and CCR ViaOeste:

REDUCTION TARGETS

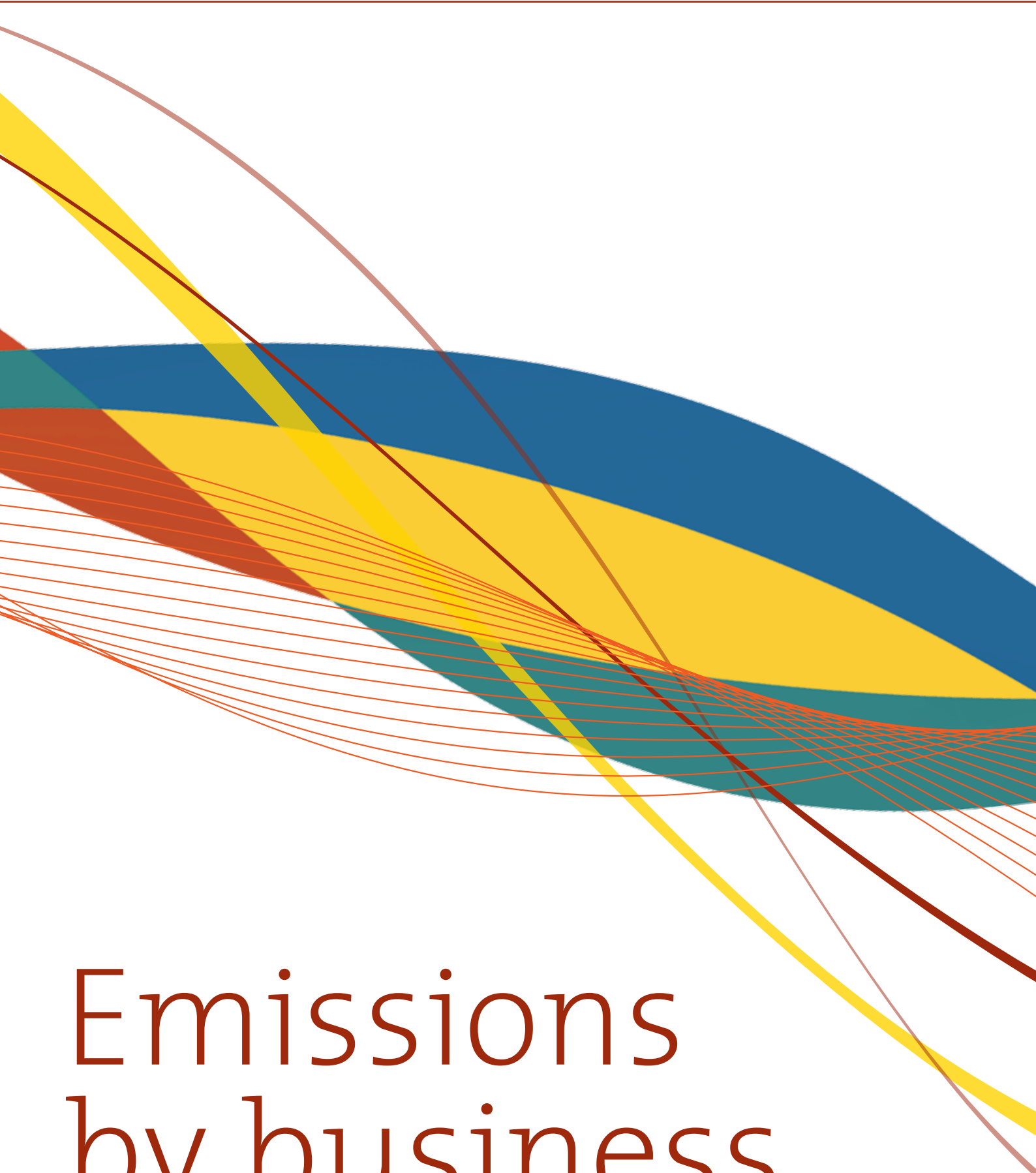
	TARGET CALCULATION (TONS CO2E)						AVERAGE 2013-2016	
	2011	2012	2013	2014	2015	2016	TCO2E	Δ% 2012
Scope I	16,421	16,757	15,210	14,300	12,411	12,736	13,664	-18%
Scope II	903	2,042	2,825	4,019	3,594	2,278	3,179	56%
Total	17,324	18,799	18,035	18,319	16,005	15,014	17,453	-7%

TOTAL 1,2,3 EMISSIONS YEAR 2016
(TONS CO2E)

855,819

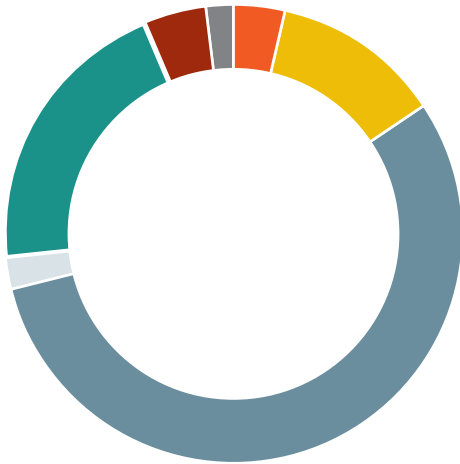
RENEWABLE CO2 EMISSIONS

5984.74562



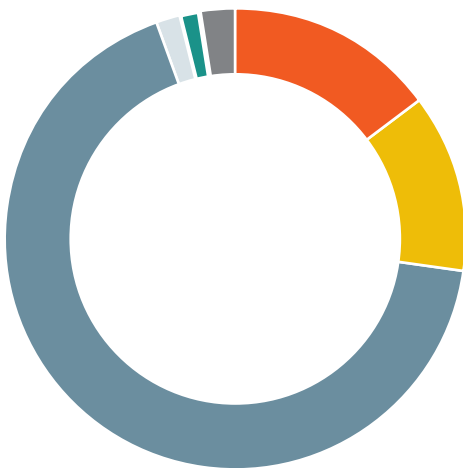
Emissions by business

EMISSIONS BY CATEGORY BRAZILIAN PROGRAM GHG
PROTOCOL - TOLL ROADS



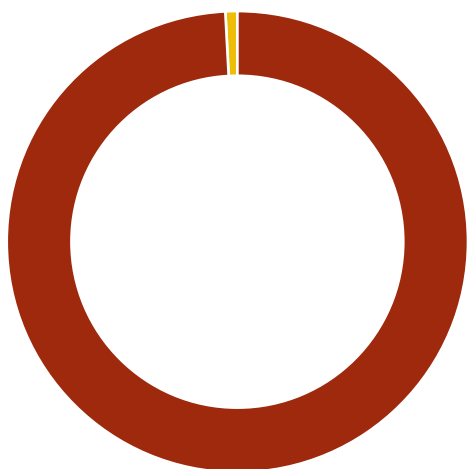
- ENERGY ACQUISITION 3,65%
 - ACTIVITIES RELATED TO FUEL AND ENERGY NOT INCLUDED IN SCOPES 1 AND 2 12,12%
 - PURCHASED GOODS AND SERVICES 55,61%
 - COMMUTE OF EMPLOYEES (HOME-WORK) 2,04%
 - MOBILE SOURCES 20,42%
 - WASTE PRODUCED BY OPERATIONS 4,27%
 - OTHERS 1,89%
- STATIONARY COMBUSTION 0,66%
 - EFFLUENTS 0,28%
 - FUGITIVE EMISSIONS 0,52%
 - TRANSPORTATION AND DISTRIBUTION (UPSTREAM) 0,29%
 - BUSINESS TRAVEL 0,13%

EMISSIONS BY CATEGORY BRAZILIAN PROGRAM GHG
PROTOCOL - URBAN MOBILITY



- ENERGY ACQUISITION 14,83%
 - ACTIVITIES RELATED TO FUEL AND ENERGY NOT INCLUDED IN SCOPES 1 AND 2 12,45%
 - MOBILE SOURCES 67,23%
 - WASTE PRODUCED BY OPERATIONS 1,67%
 - TRANSPORTATION AND DISTRIBUTION (UPSTREAM) 1,42%
 - OTHERS 2,40%
- PURCHASED GOODS AND SERVICES 0,34%
 - STATIONARY COMBUSTION 0,85%
 - COMMUTE OF EMPLOYEES (HOME-WORK) 0,00%
 - FUGITIVE EMISSIONS 0,51%
 - BUSINESS TRAVEL 0,70%

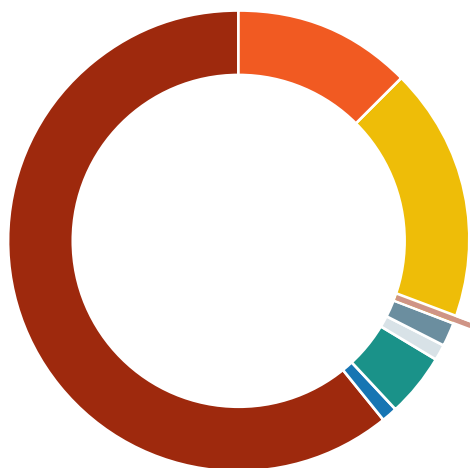
EMISSIONS BY CATEGORY BRAZILIAN PROGRAM
GHG PROTOCOL - AIRPORTS



● OTHER SCOPE 3 EMISSIONS **99,23%**
● OTHERS **0,77%**

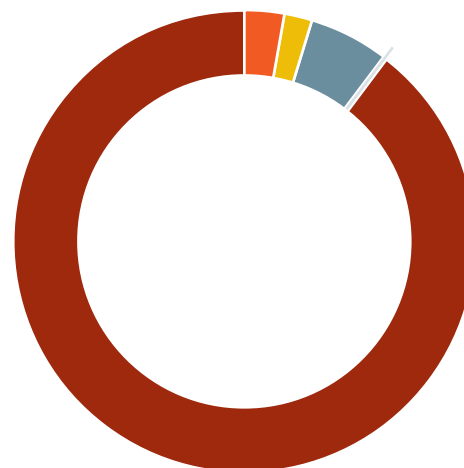
- ENERGY ACQUISITION **0,20%**
- ACTIVITIES RELATED TO FUEL AND ENERGY NOT INCLUDED IN SCOPES 1 AND 2 **0,02%**
- LEASED ASSETS (COMPANY AS LESSEE) **0,05%**
- PURCHASED GOODS AND SERVICES **0,11%**
- STATIONARY COMBUSTION **0,02%**
- EFFLUENTS **0,07%**
- FUGITIVE EMISSIONS **0,06%**
- MOBILE SOURCES **0,07%**
- WASTE PRODUCED BY OPERATIONS **0,13%**
- TRANSPORTATION AND DISTRIBUTION (UPSTREAM) **0,00%**
- BUSINESS TRAVEL **0,04%**

EMISSIONS BY CATEGORY BRAZILIAN PROGRAM
GHG PROTOCOL - SHARED SERVICES CENTER

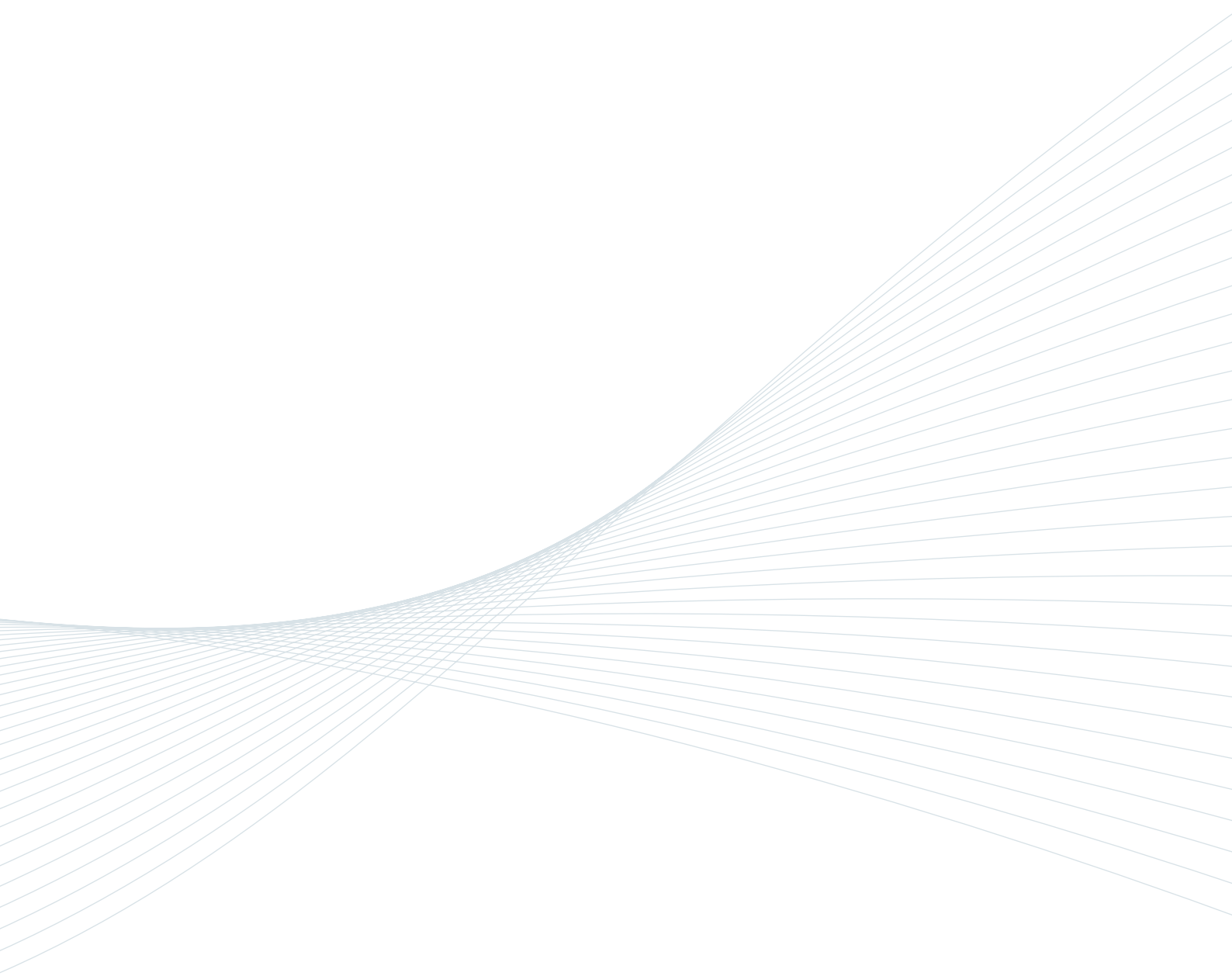


● ENERGY ACQUISITION **12,68%** ● STATIONARY COMBUSTION **1,76%**
● ACTIVITIES RELATED TO FUEL AND ENERGY NOT INCLUDED IN SCOPES 1 AND 2 **18,27%** ● FUGITIVE EMISSIONS **1,04%**
● PURCHASED GOODS AND SERVICES **0,03%** ● MOBILE SOURCES **4,43%**
● WASTE PRODUCED BY OPERATIONS **1,16%**
● BUSINESS TRAVEL **60,62%**

EMISSIONS BY CATEGORY BRAZILIAN PROGRAM
GHG PROTOCOL - BUSINESS OFFICES



● ENERGY ACQUISITION **3,12%** ● MOBILE SOURCES **5,98%**
● ACTIVITIES RELATED TO FUEL AND ENERGY NOT INCLUDED IN SCOPES 1 AND 2 **2,10%** ● WASTE PRODUCED BY OPERATIONS **0,07%**
● BUSINESS TRAVEL **88,74%**



Credits

CCR
Communication and sustainability team

CCR ACTUA
Communication and sustainability team

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