



ECA 2019 Carbon Footprint Report

Calculation of the European Court of Auditors' carbon footprint using the Bilan Carbone® methodology



ECA 2019 Carbon Footprint Report



- 1 **Executive summary**
- 2 **Context of the study**
- 3 **Overview of the Bilan Carbone[®] method**
- 4 **Overall results**
- 5 **Results per scope**
- 6 **Offsetting**

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1 Executive summary



923.2
FTE¹



Three
buildings



9 203 tCO₂e

Total 2019 GHG emissions 10 tCO₂e/FTE¹
(total uncertainties 17%)

38%

Passenger transport is the
largest source of emissions



-14%

Overall decrease in
emissions between 2014 and
2019: ±1.45% per year



Offset: 7 745 tCO₂e

The total emissions offset for 2019 can be reduced to 7 745tCO₂e
(8.39 tCO₂e/FTE¹), as the ECA uses 100% green electricity

¹ Full-time equivalent.

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Context of the study

2013

The ECA launches the **EMAS²** project.

2016

First EMAS certification.

2020

The ECA monitors and reports on its emissions every year using the **Bilan Carbone[®]** methodology.

This is the first year the ECA decides to offset unavoidable GHG emissions (generated in 2019).

2014

The ECA adopts its first environmental policy.

Goal: continuous improvement of the ECA's environmental performance.

2019

2nd EMAS certification.

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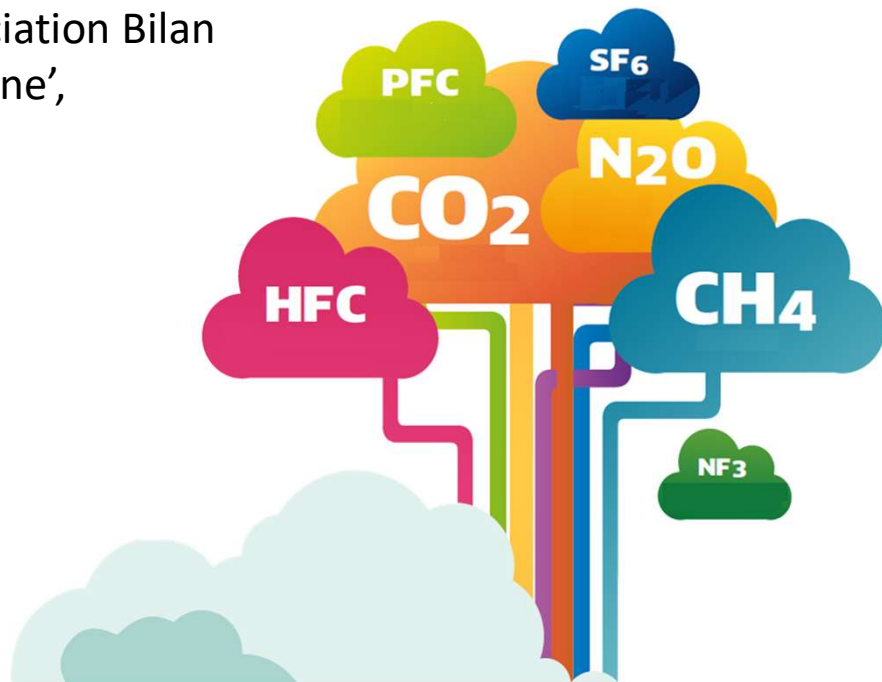
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Overview of the Bilan Carbone® method

The Bilan Carbone® method was developed in 2004 by the French Environment and Energy Management Agency, ADEME, to quantify organisations' GHG emissions.

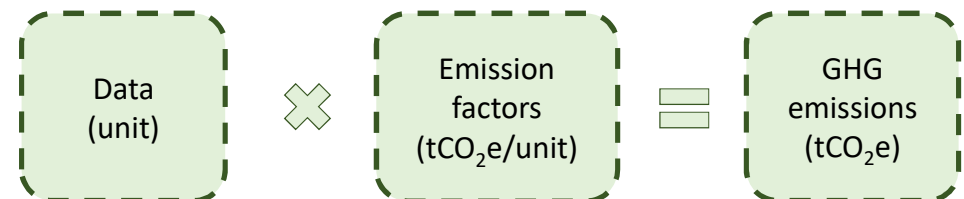
It is promoted by the 'Association Bilan Carbone',



The method **takes account of the following gases:**

- ✓ Kyoto Protocol gases: CO₂, CH₄, N₂O, SF₆ hydrofluorocarbons (C_nH_mF_p), perfluorocarbons (C_nF_{2n+2}), NF₃
- ✓ other non-Kyoto Protocol gases (CFCs)
- ✓ water vapour emitted by planes in the stratosphere

As it is not feasible to measure GHG emissions directly, the Bilan Carbone® method estimates GHG emissions by multiplying data on an organisation's activity by an emission factor (EF).



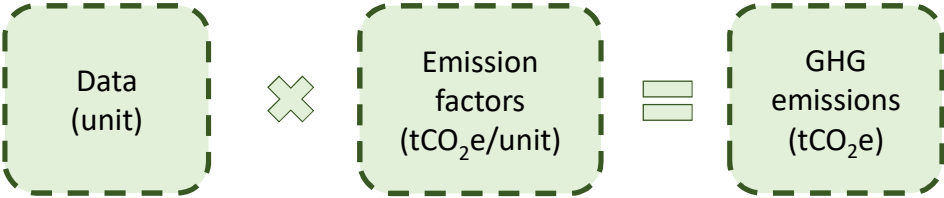
3

Overview of the Bilan Carbone® method

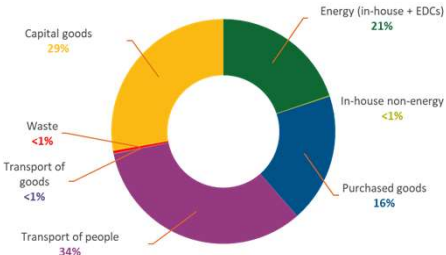
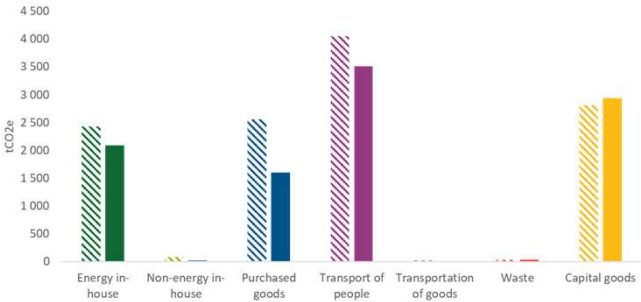
Step 1: Collect activity data



Step 2: Apply the emission factors taken from the Bilan Carbone® database (v. 8.1)



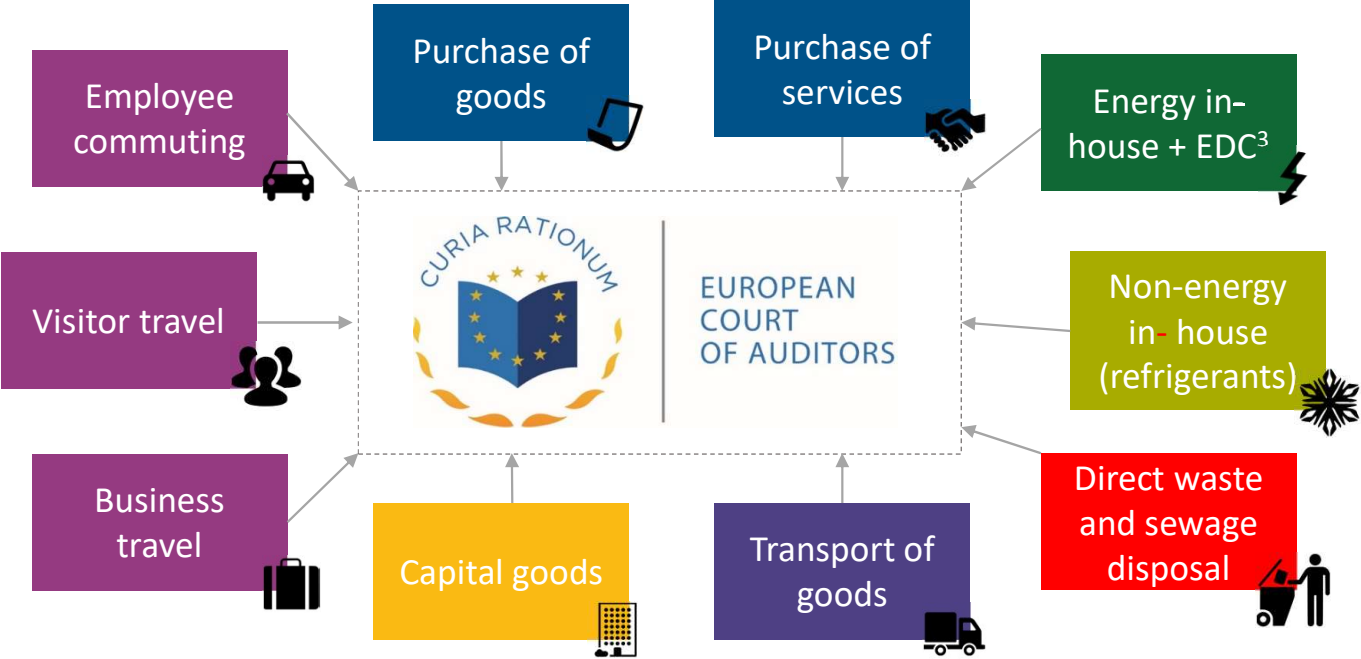
Step 3: Visualise and analyse the results



3

Overview of the Bilan Carbone® method

Operational scope of the Bilan Carbone® method in 2019



The ECA’s footprint exercise includes direct and indirect GHG emissions (Bilan Carbone® scopes 1, 2 and 3).

3 EDC: external data centre.

3

Overview of the Bilan Carbone[®] method

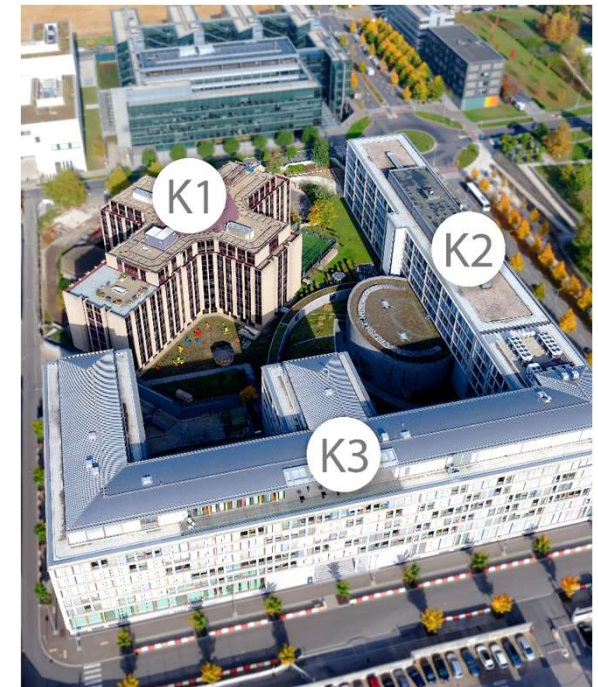
Temporal and organisational boundaries

Bilan Carbone[®] approach: operational control approach

Temporal scope: ECA activities in 2019

Organisational scope: three buildings in Luxembourg (K1, K2, K3)

| Building | Area (m ²) | Employees |
|----------|------------------------|-----------|
| K1 | 23 720 | 325 |
| K2 | 18 619 | 244 |
| K3 | 28 245 | 507 |



These buildings include office space, basements, underground car parks, two cafeterias, a canteen, archives, a library, walkways between buildings, and other amenities.

Activities of ECA officials and other employees: at the end of 2019, there were **923.2** full-time equivalent employees (FTEs).

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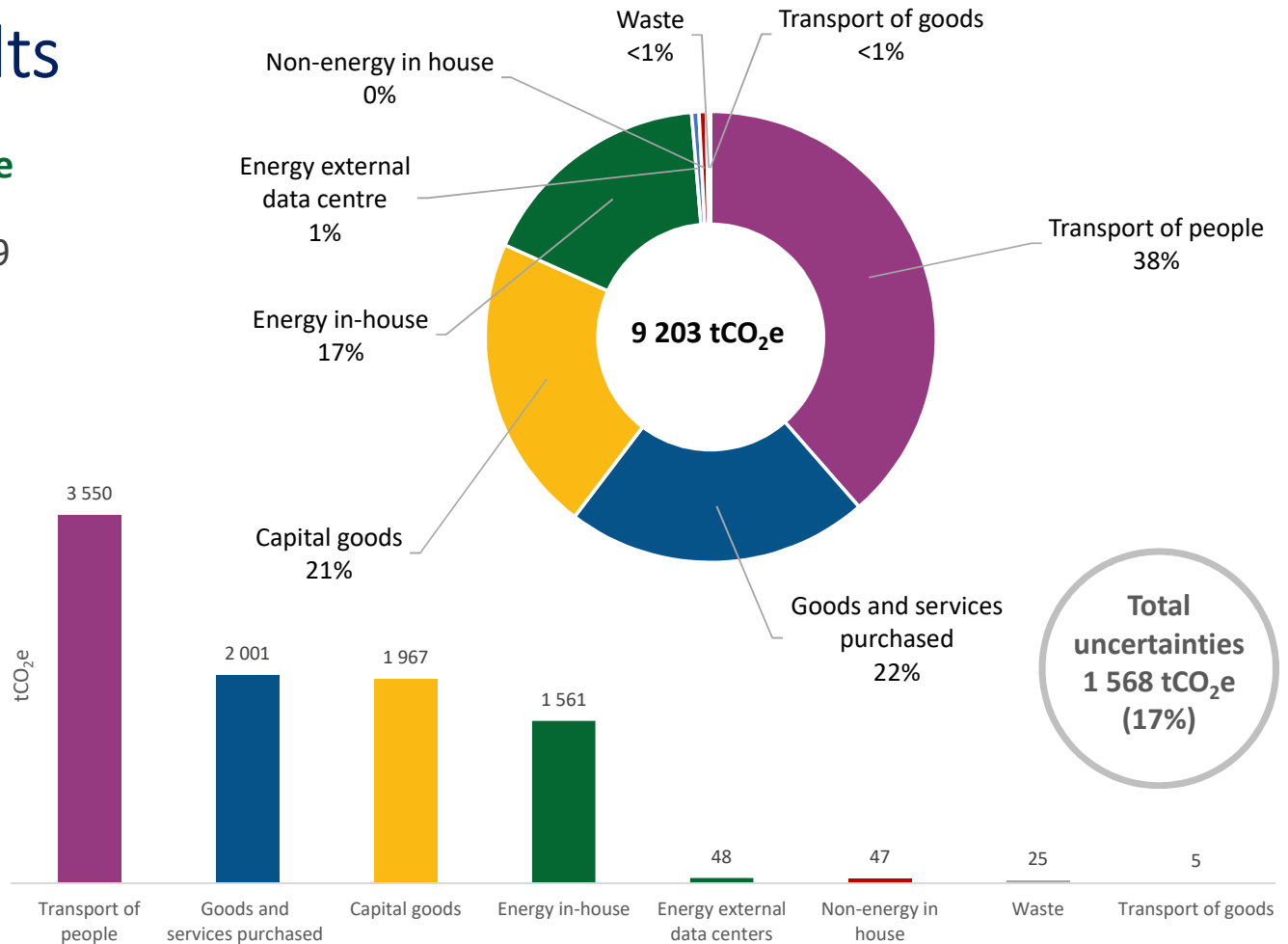
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Overall results

2019 Bilan Carbone® results

- ✓ Total GHG emissions stood at **9 203 tCO₂e**
- ✓ The largest sources of emissions in the 2019 Bilan Carbone® were:
 - **passenger transport (38%)**
 - **goods and services purchased (22%)**
 - **capital goods (21%)**
 - **energy (in-house + EDC) (18%)**
- ✓ Non-energy in house, waste, and transport of goods made up the remaining 1%



4

Overall results

Emission results by building

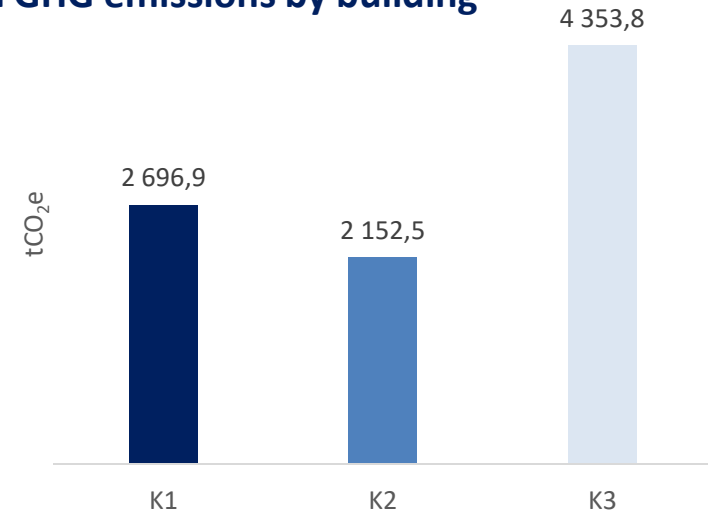
Emissions were divided between the buildings according to the staff headcount in each building.

| Building | No of occupants | Share (%) |
|--------------|-----------------|-------------|
| K1 | 325 | 30% |
| K2 | 244 | 23% |
| K3 | 507 | 47% |
| Total | 1 076 | 100% |

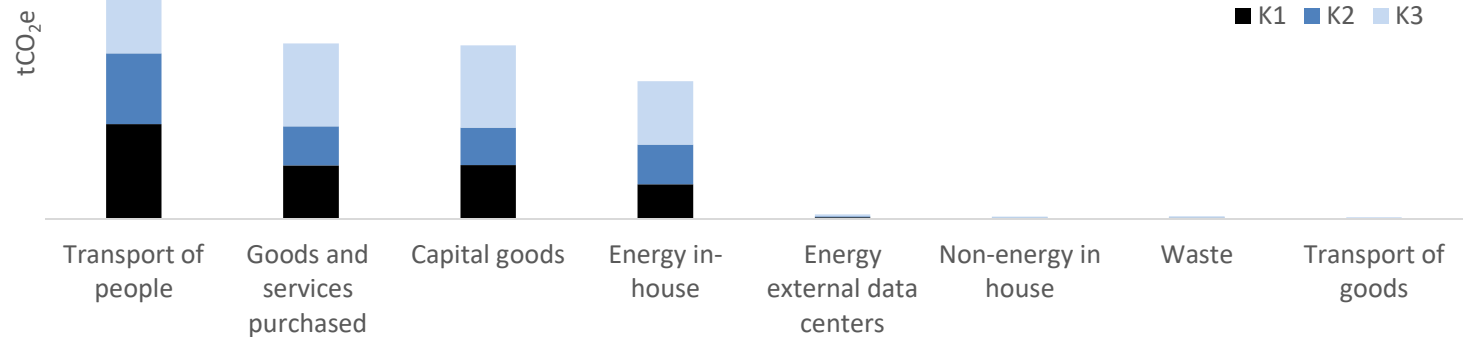
| Building | tCO ₂ e |
|--------------|--------------------|
| K1 | 2 696.9 |
| K2 | 2 152.5 |
| K3 | 4 353.9 |
| TOTAL | 9 203.3 |

K3 houses the most employees and thus produces the largest share of emissions.

Total GHG emissions by building



Emission categories by building



4

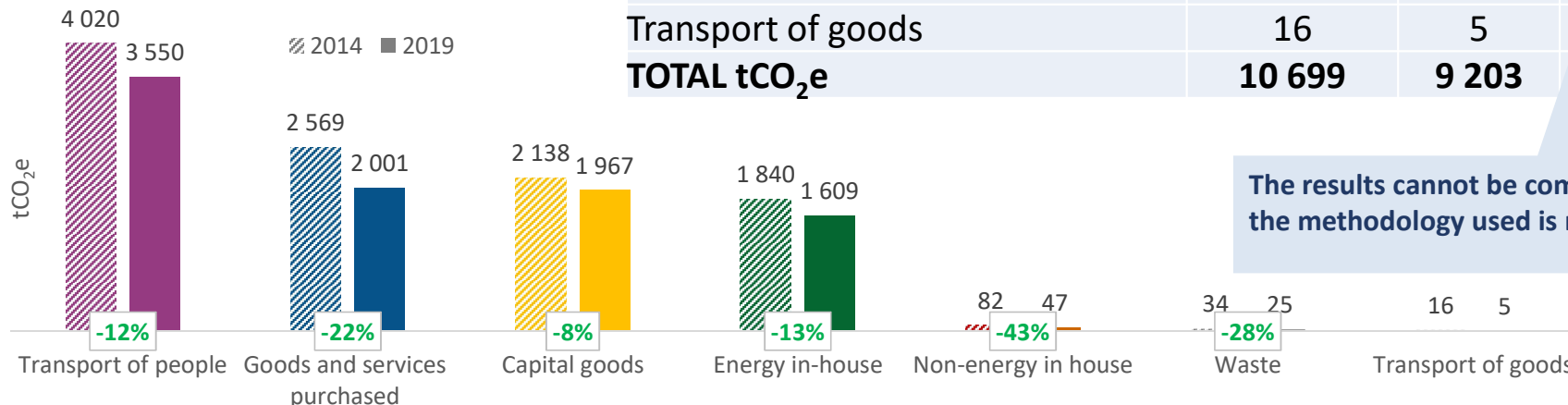
Overall results

Bilan Carbone® comparison* between 2014 and 2019

Overall, emissions decreased by **14%** between 2014 and 2019 (-3% per year).

| Emission sources tCO ₂ e | 2014 | 2019 | Variation 2014-2019 |
|-------------------------------------|---------------|--------------|---------------------|
| Transport of people | 4 020 | 3 550 | -12% ↓ |
| Goods and services purchased | 2 569 | 2 001 | -22% ↓ |
| Capital goods | 2 138 | 1 967 | -8% ↓ |
| Energy in house | 1 840 | 1 609 | -12% ↓ |
| Non-energy in house | 82 | 47 | -43% ↓ |
| Waste | 34 | 25 | -28% ↓ |
| Transport of goods | 16 | 5 | |
| TOTAL tCO₂e | 10 699 | 9 203 | -14% ↓ |

The methodology has evolved over the years, gaining in precision



The results cannot be compared, as the methodology used is not the same

*Isometric comparison may result in data that differ in the 2019 carbon footprint when the same category is analysed for both years.

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5 Result per scope

Passenger transport



Passenger transport

Data and assumptions

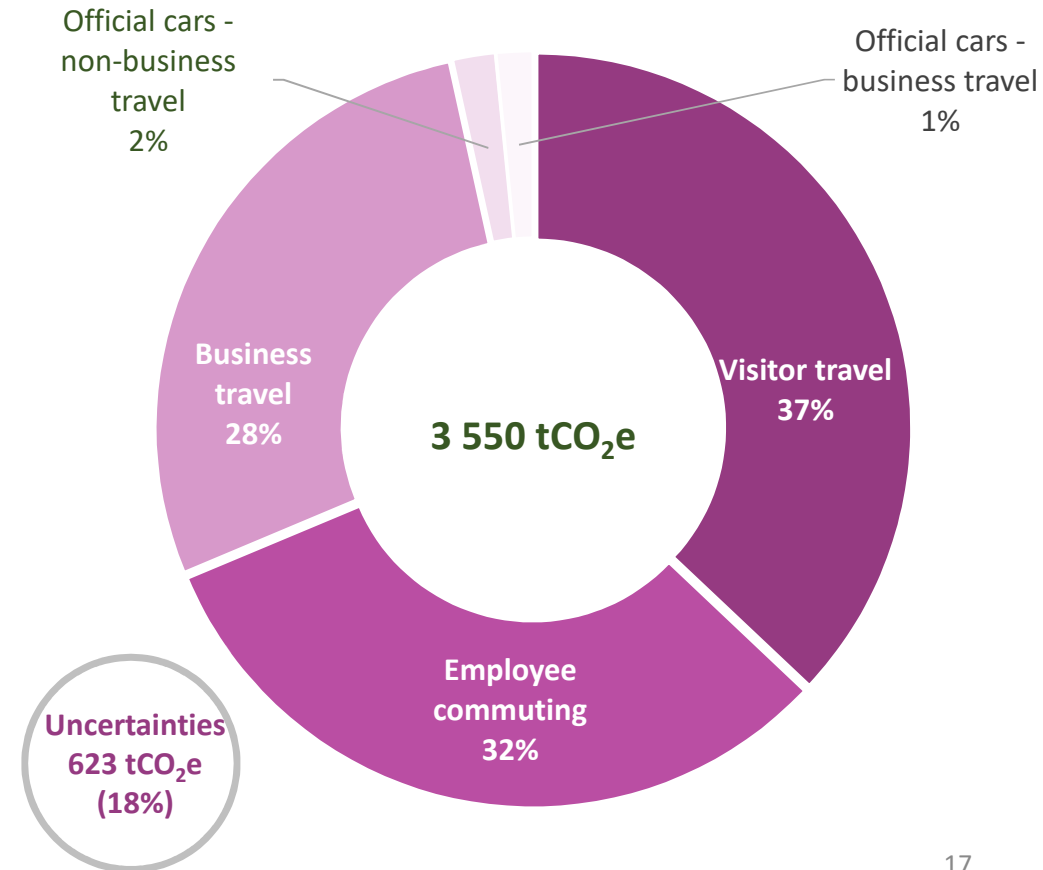
Emission sources

- ✓ Use of official cars (owned and leased)
- ✓ Employee commuting between home and work
- ✓ Business travel
- ✓ Visitor travel

Results

| Transport of people | tCO ₂ e | km | Litres ⁴ |
|-------------------------------------|--------------------|-------------------|---------------------|
| Visitor travel | 1 316 | 5 218 444 | - |
| Employee commuting | 1 122 | 4 848 930 | - |
| Business travel | 989 | 4 098 015 | - |
| Official cars - non-business travel | 66 | 278 848 | 22 644 |
| Official cars - business travel | 57 | 228 042 | 18 517 |
| Total | 3 550 | 14 672 279 | 41 161 |

Emissions from the transport of people by type of travel (with official car breakdown)



⁴ Litres were used for the carbon footprint calculation for official cars

5 Result per scope

Passenger transport



Visitor travel

Data provided

Number of visitors by country of origin in 2019:

- ✓ 109 visits
- ✓ 2881 visitors

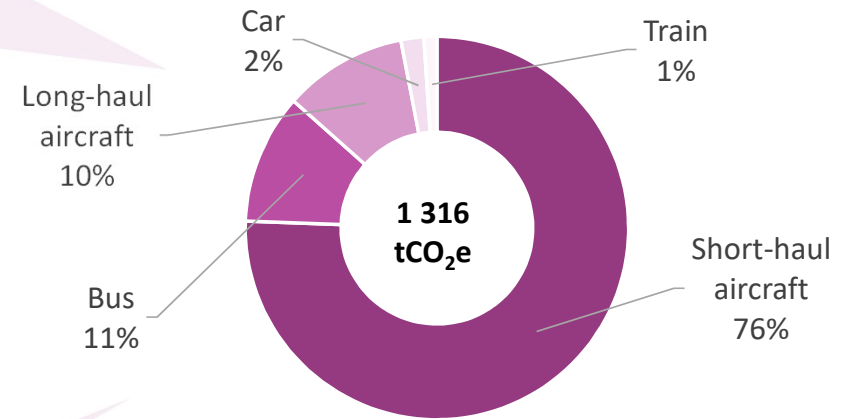
Assumptions regarding mode of transport

- ✓ Short-haul aircraft: AT-BG-CY-DK-EE-ES-FI-IE-IT-LT-LV-PL-PT-RO-Macedonia
- ✓ Long-haul aircraft: Brazil-Norway-USA
- ✓ Car: BE-LU
- ✓ Bus: CZ-DE-NL
- ✓ Train: FR

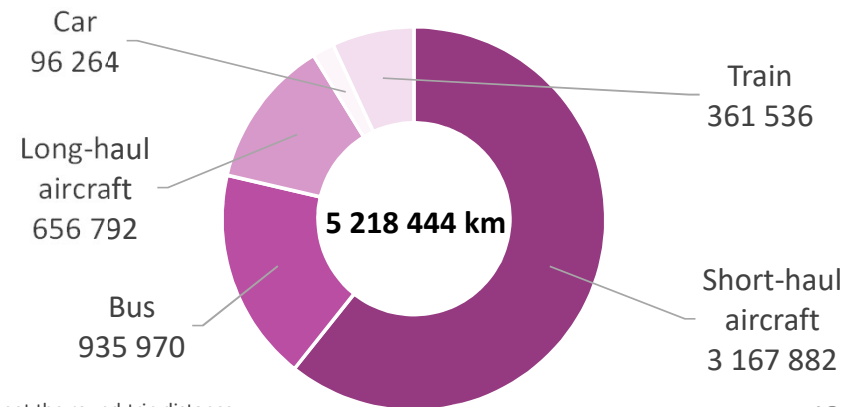
Plane: 86% of the GHG emissions for 73% of the kilometres travelled.

Train: 1% of the GHG emissions for 7% of the kilometres travelled.

Sources of 2019 GHG emissions from the transport of visitors



Kilometres⁵ travelled by visitors



⁵ EcoAct used its internal distance-calculator tool to estimate the distance between the country of origin and Luxembourg, and multiplied it by two to get the round-trip distance.

5 Result per scope

Passenger transport



Employee commuting

Data provided

- ✓ The ECA conducts an employee commuting survey every 18 months
- ✓ 496 participants in the 2019 survey

Hypothesis

- ✓ Teleworking days were not included in the calculation.

Extrapolated results

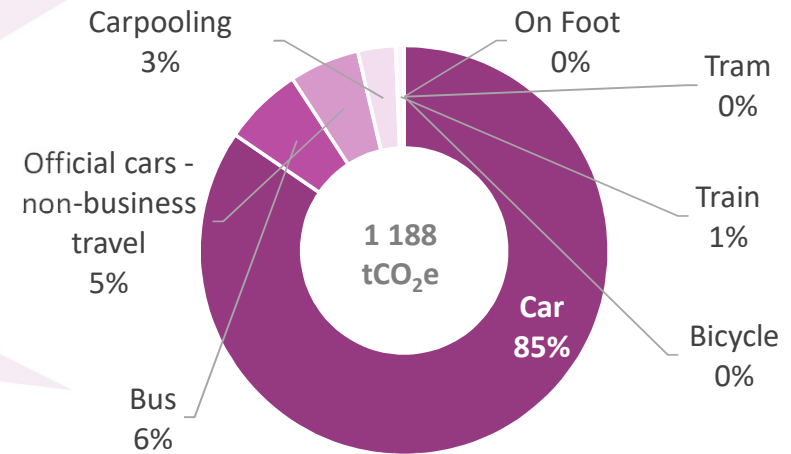
| Employee commuting | tCO ₂ e | km |
|-------------------------------------|--------------------|------------------|
| Car | 1 004 | 3 806 044 |
| Bus | 75 | 483 325 |
| Official cars - non-business travel | 66 | 278 848 |
| Carpooling | 35 | 132 829 |
| Train | 8 | 201 050 |
| Tram | 0 | 21 741 |
| Bicycle | 0 | 165 544 |
| On Foot | 0 | 38 397 |
| Total | 1 188 | 5 127 778 |

-16% in one year, due mainly to the new teleworking scheme in place since 1 June 2019

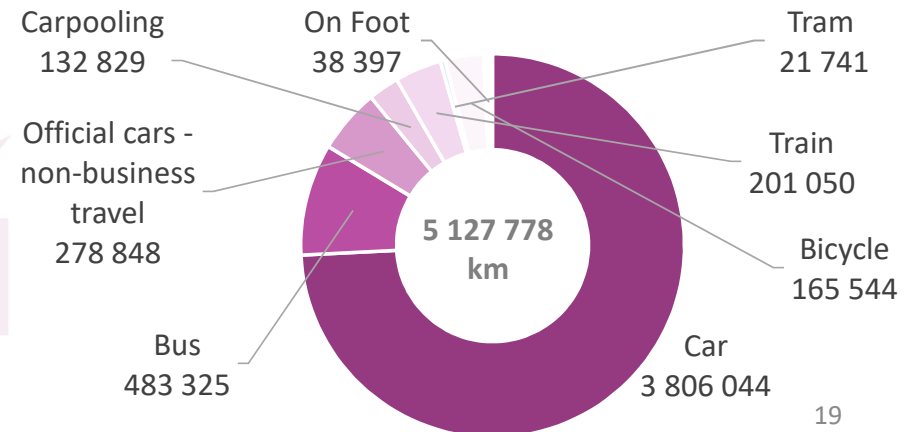
Cars: 85% of the GHG emissions for 74% of the kilometres travelled.

22 km per FTE per day on average.

GHG emissions from commuting



Kilometres⁵ travelled for commuting



5 Result per scope

Passenger transport



Business travel

Data provided

Total kilometres by mode of transport

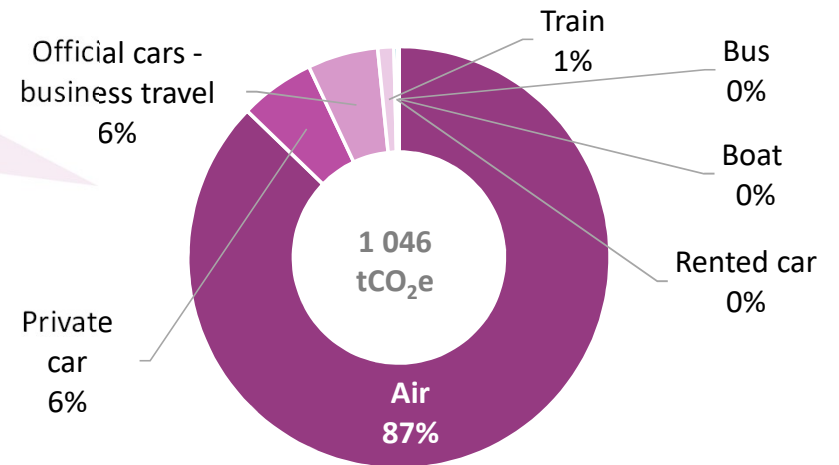
Results

| Employee commuting | tCO ₂ e | km |
|---------------------------------|--------------------|------------------|
| Air | 912 | 3 528 447 |
| Private car | 60 | 228 042 |
| Official cars - business travel | 57 | 228 042 |
| Train | 13 | 325 066 |
| Rented car | 3 | 10 989 |
| Bus | 1 | 5 198 |
| Boat | 0 | 273 |
| Total | 1 046 | 4 326 057 |

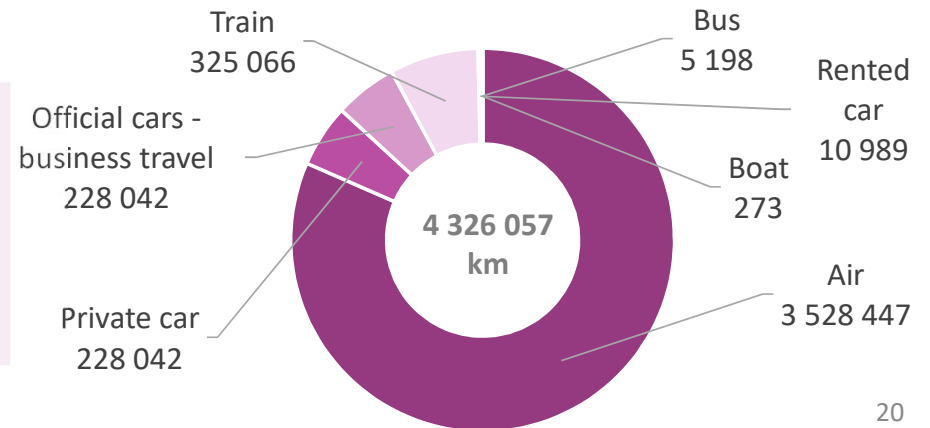
Plane: 87% of the GHG emissions for 82% of the kilometres travelled.

Train: 1% of the GHG emissions for 8% of the kilometres travelled.

GHG emissions from business travel



Kilometres⁵ travelled for business travel



⁵ EcoAct used its internal distance-calculator tool to estimate the distances between the country of origin and Luxembourg, and multiplied it by two to get the round-trip distance.

5 Result per scope

Passenger transport



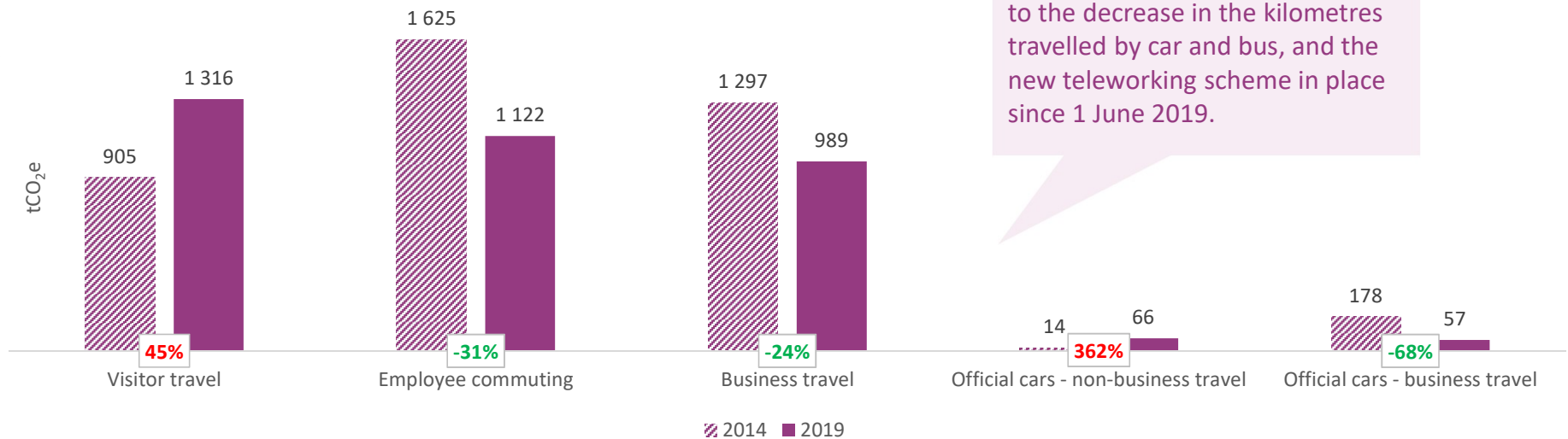
Comparison between 2014 and 2019

| GHG emissions tCO ₂ e | 2014 | 2019 | 2018-2019 variation |
|----------------------------------|-------|-------|---------------------|
| Total transport | 4 020 | 3 550 | -13% ↓ |

+45% in GHG emissions from **visitor travel**, which increased by **almost one million kilometres** over five years, accompanied by **close to a threefold increase in air travel**

-31% in GHG emissions from **business travel**, as the kilometres travelled decreased.

-24% in GHG emissions from **employee commuting**, due mainly to the decrease in the kilometres travelled by car and bus, and the new teleworking scheme in place since 1 June 2019.



5 Result per scope

Goods & services purchased



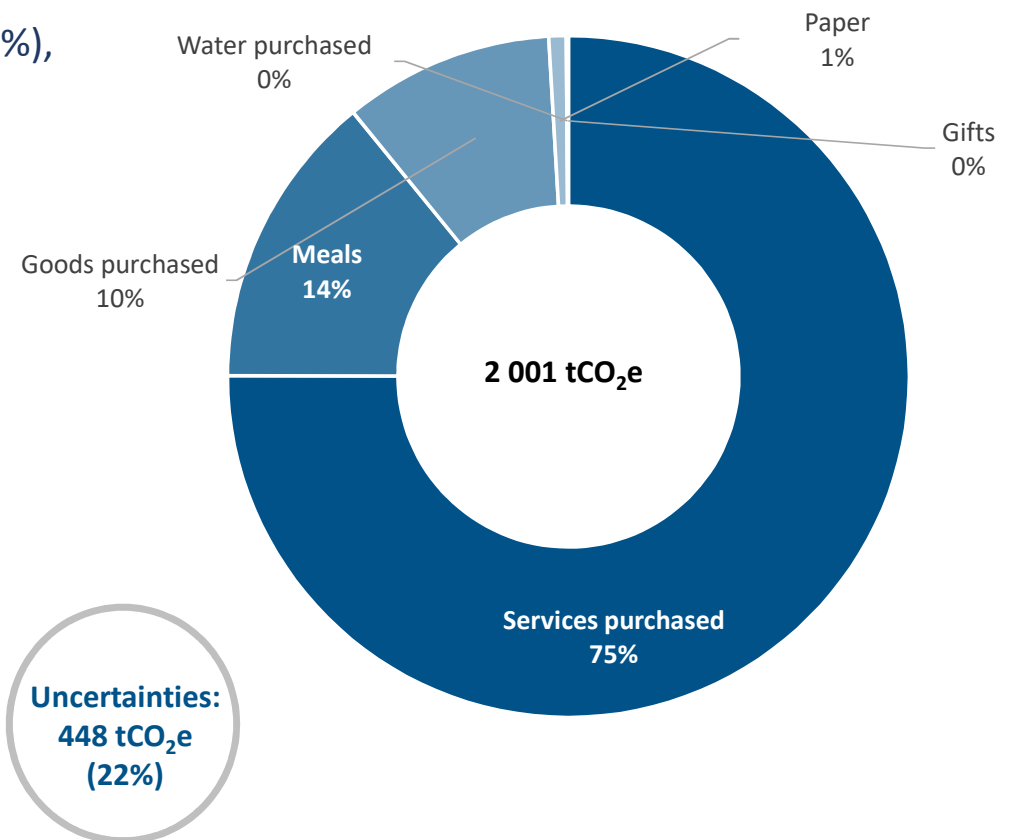
Data and assumptions

- ✓ **Goods & services** (see page 23)
- ✓ **Paper Assumption:** A4 80gr (95%), and A3 80gr and others (5%), converted into weight (5g/page)
- ✓ **Water purchased** total water consumed in 2019
- ✓ **Food (meals)**
- ✓ **Gifts Methodology:** number and type of gifts converted into weight and types of material
- ✓ **Meals** (see page 24)
- ✓ **Goods and services purchased** (see page 23)

Results

| Type of good or service | tCO ₂ e |
|-------------------------|--------------------|
| Services purchased | 1 502,0 |
| Meals | 281,7 |
| Goods purchased | 199,2 |
| Paper | 16,6 |
| Water purchased | 1,6 |
| Gifts | 0,3 |
| Total | 2 001,4 |

Total GHG emissions from goods and services purchased



5 Result per scope

Goods & services purchased



Services

Data and assumptions

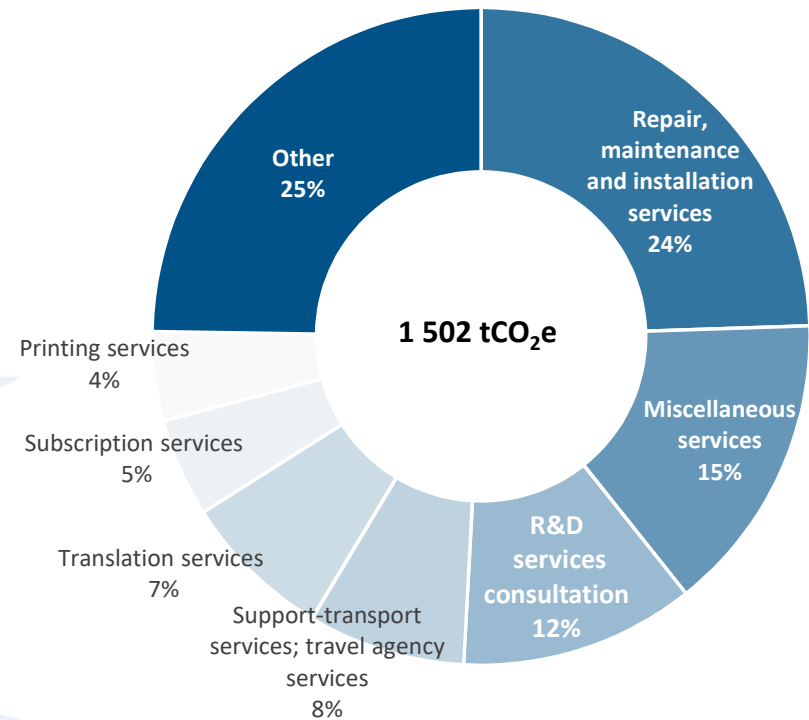
Data provided: goods and services purchased by category type and amount in euros

GHG emissions from repair, maintenance and installation services increased due to new framework contracts and works in the buildings

Results

| Type of service | tCO ₂ e |
|--|--------------------|
| Repair, maintenance and installation services | 368 |
| Miscellaneous services- | 222 |
| R&D services/consultation | 174 |
| Support-transport services; travel agency services | 116 |
| Translation services | 111 |
| Subscription services- | 73 |
| Printing services | 66 |
| Other | 372 |
| Total | 1 502 |

GHG emissions from services purchased



Miscellaneous services were assigned an average services emission factor extrapolated from the Bilan Carbone-® database. These services ranged from renting equipment, to training (language classes, etc.), painting, document destruction, etc.

5 Result per scope

Goods & services purchased



Meals

Data and assumptions

- ✓ Number of meals, and quantities of organic and non-organic meat (pork, beef, chicken) and fish purchased
- ✓ Assumptions: 1% vegetarian meals
- ✓ Other meals broken down according to the quantities of meat and fish purchased (29% chicken, 21% beef, 20% pork, 29% fish)

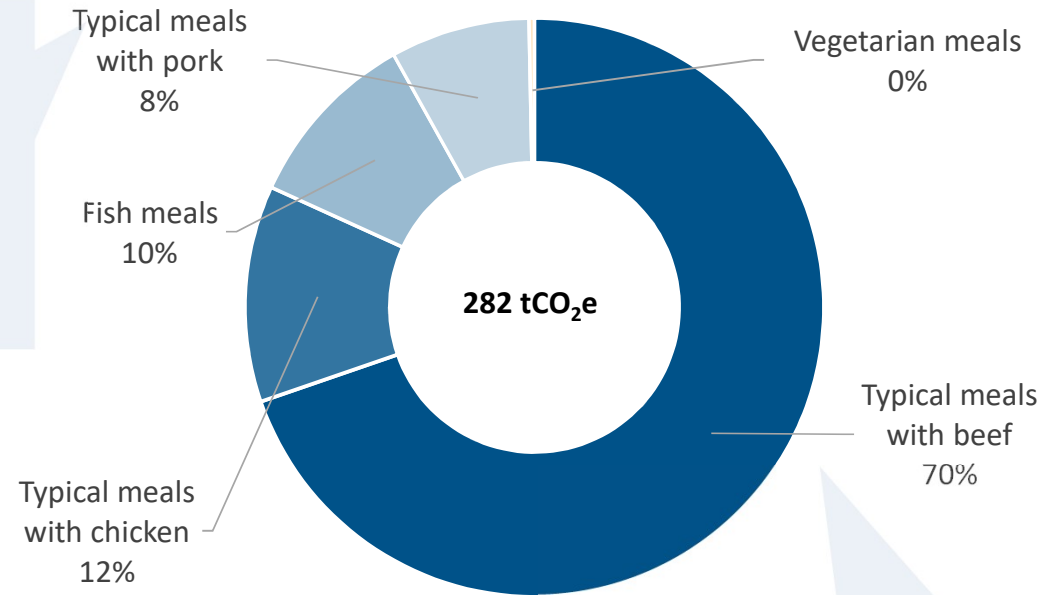
Results

| Type of meal | tCO ₂ e |
|----------------------------|--------------------|
| Typical meals with beef | 196 |
| Typical meals with chicken | 34 |
| Fish meals | 28 |
| Typical meals with pork | 22 |
| Vegetarian meals | 1 |
| Organic meals | 0 |
| Total | 282 |

Replacing a pork dish with a vegetarian dish would reduce the meal's carbon impact by 50%.

Organic meals were assigned the emission factor applicable to an "average meal", as the determinants of a dish's emissions are its ingredients (meat, vegetarian) and whether or not the ingredients were produced locally. There is no conclusive evidence that the average organic meal is less emissive.

GHG emissions from meals



Replacing beef with chicken would reduce a dish's carbon impact by 79%.

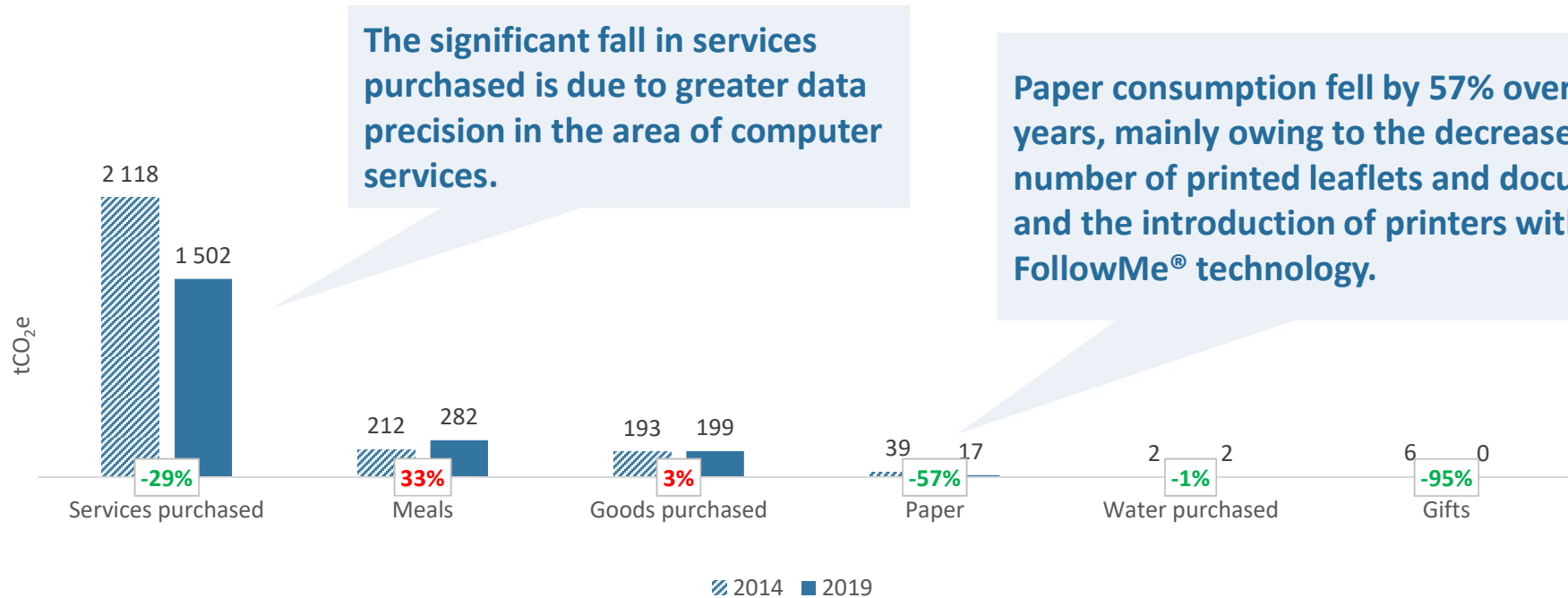
5 Result per scope

Goods & services purchased



Comparison between 2014 and 2019

| GHG emissions tCO ₂ e | 2014 | 2019 | 2014-2019 variation |
|------------------------------------|-------|-------|---------------------|
| Total goods and services purchased | 2 569 | 2 001 | -28 % ↘ |



The significant fall in services purchased is due to greater data precision in the area of computer services.

Paper consumption fell by 57% over five years, mainly owing to the decrease in the number of printed leaflets and documents, and the introduction of printers with FollowMe® technology.

5 Result per scope

Capital goods



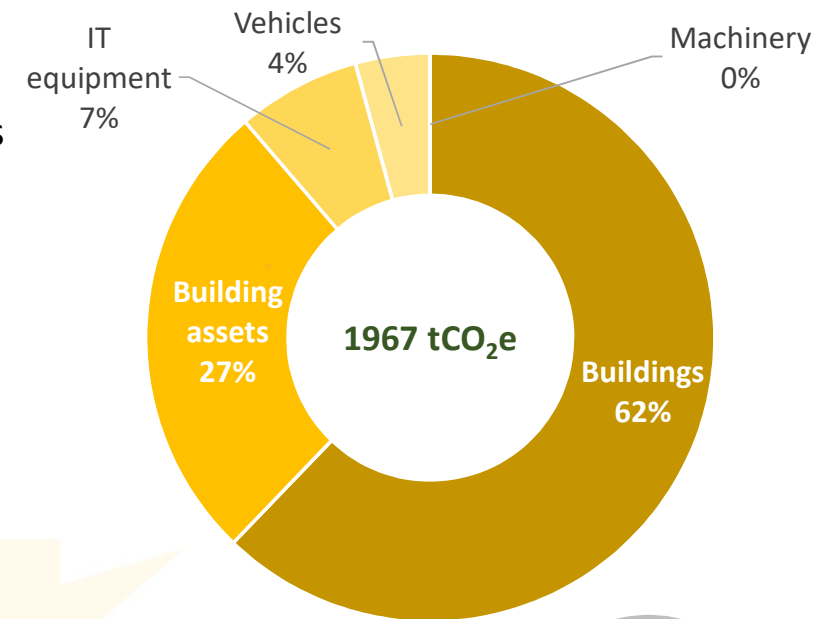
Data and assumptions

- ✓ **Buildings and car parks:** m² of parking and office space
Depreciation: forty years
- ✓ **Building assets:** generators, refrigerators, air conditioning units, machinery etc., in units per building, and furniture, equipment and tools per building in terms of purchase price
Depreciation: eight years
- ✓ **IT equipment:** IT inventory by type of good
Depreciation: four years
- ✓ **Vehicles:** model of leased and owned vehicles across all three buildings
Depreciation: four years

Results

| Type of capital good | tCO ₂ e |
|----------------------|--------------------|
| Buildings | 1 223 |
| Building assets | 522 |
| IT equipment | 138 |
| Vehicles | 83 |
| Machinery | 0.04 |
| Total | 1 967 |

Total GHG emissions from capital goods



Emissions from IT equipment have almost halved since 2018 due to a new internal policy to extend lifespan. 53% of the equipment is over five years old.

Uncertainties
398 tCO₂e
(20%)

5

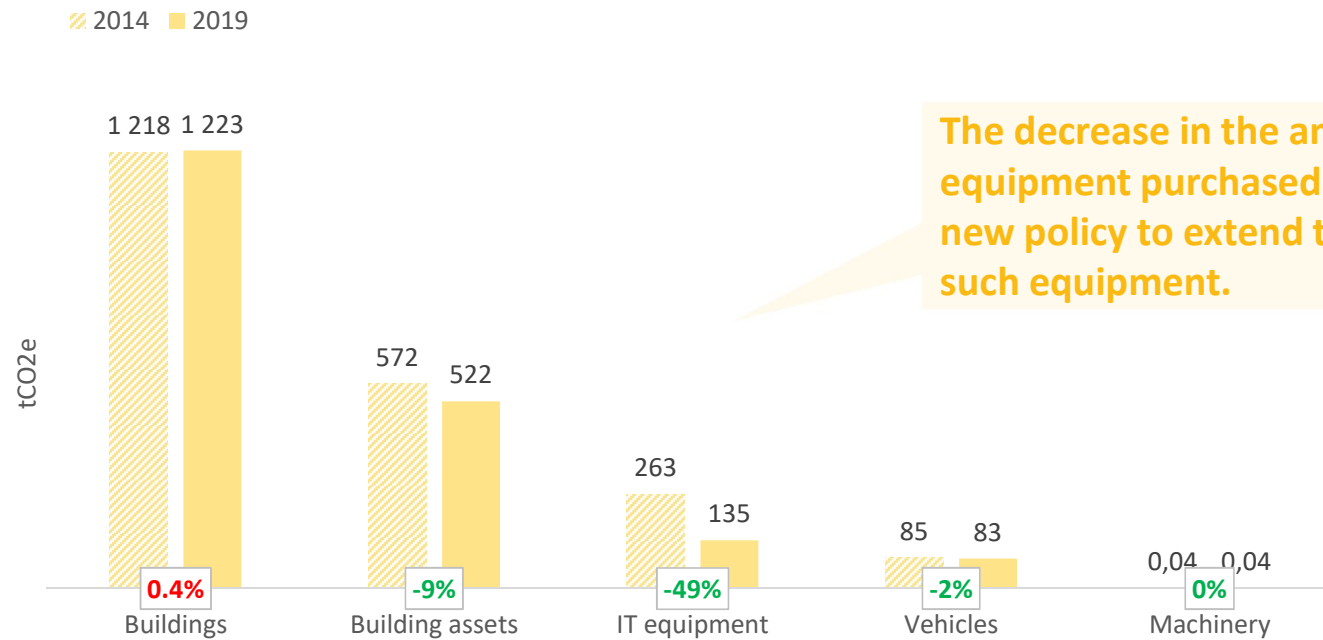
Result per scope

Capital goods



Comparison between 2014 and 2019

| GHG emissions tCO ₂ e | 2014 | 2019 | 2014-2019 variation |
|----------------------------------|-------|-------|---------------------|
| Total capital goods | 2 138 | 1 963 | -9 % ↓ |



The decrease in the amount of equipment purchased is due to a new policy to extend the lifespan of such equipment.

5

Result per scope

Energy (in-house + EDC)



Data and assumptions

✓ **Electricity consumption and losses**

Electricity losses: 2.44%

The ECA purchases green electricity with “guarantees of origin”. However, the Bilan Carbone-® method takes account of the real electricity consumed from the national grid.

✓ **Fuel consumption** (by generator): litres purchased.

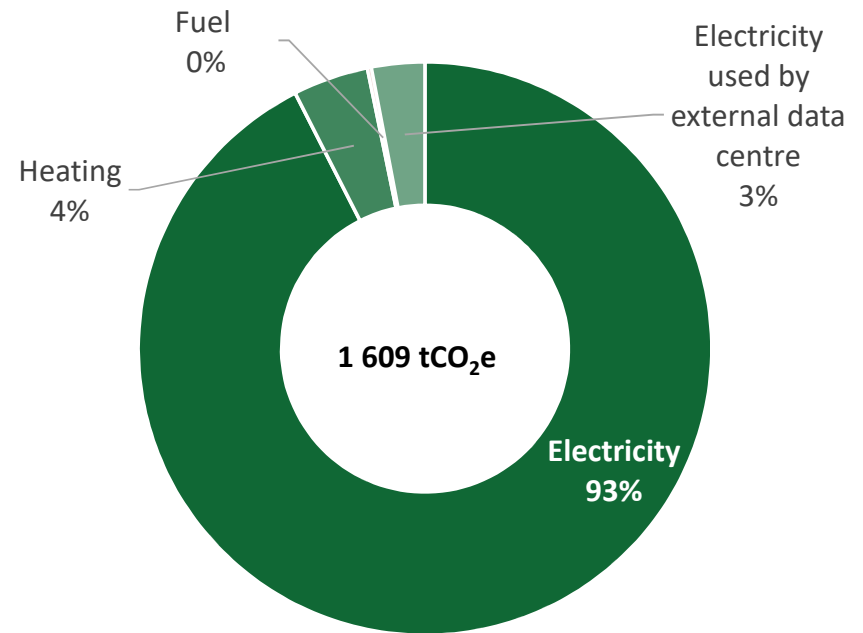
✓ **Heat consumption**:- 2019 consumption for each building. The emission factor is based on the provider energy mix.

Results

| Type of energy source | tCO ₂ e |
|--|--------------------|
| Electricity | 1 489 |
| Heating | 68 |
| Fuel | 4 |
| Electricity used by external data centre | 48 |
| Total | 1 609 |

Uncertainties
78 tCO₂e
(5%)

Total GHG emissions from energy



2.44% of emissions attributable to electricity lost, -23.4% compared to 2018 due to more precise data concerning the network.

5

Result per scope

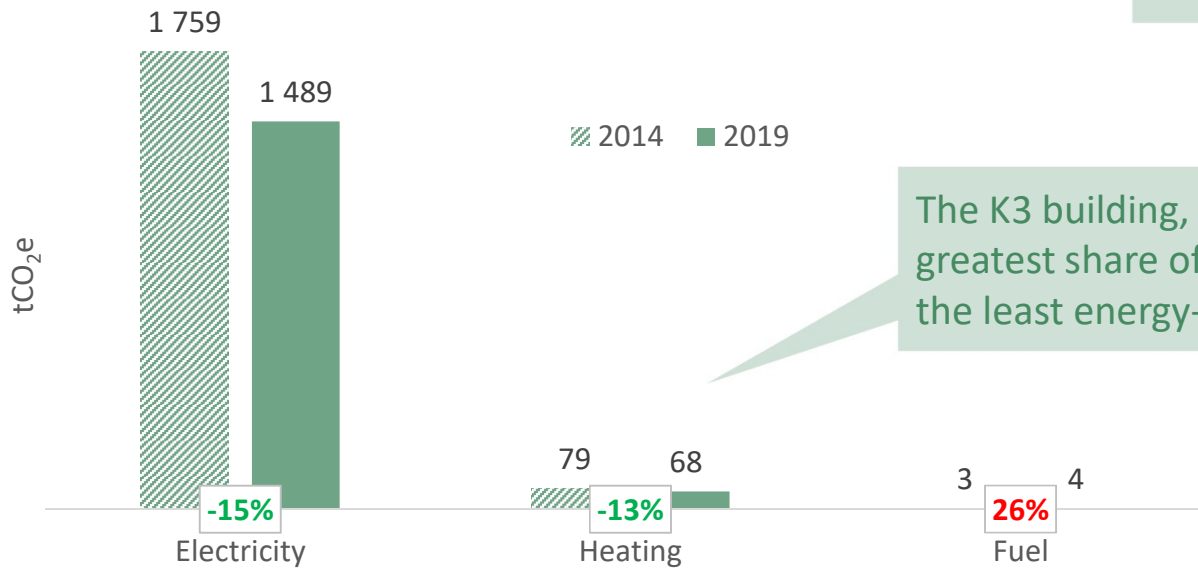
Energy (in-house + EDC)



Comparison between 2014 and 2019

| GHG emissions tCO ₂ e | 2014 | 2019 | 2014-2019 variation |
|----------------------------------|------|------|---------------------|
| Total energy | 1840 | 1609 | -14% ↘ |

The decrease in GHG emissions reflects the the downward trend in the ECA's energy consumption between 2014 and 2019: the same emission factors for heating and electricity have been applied to both years.



The K3 building, logically, accounts for the greatest share of the energy emissions, but K2 is the least energy-efficient building per m² per FTE.

5

Result per scope

Non-energy in house

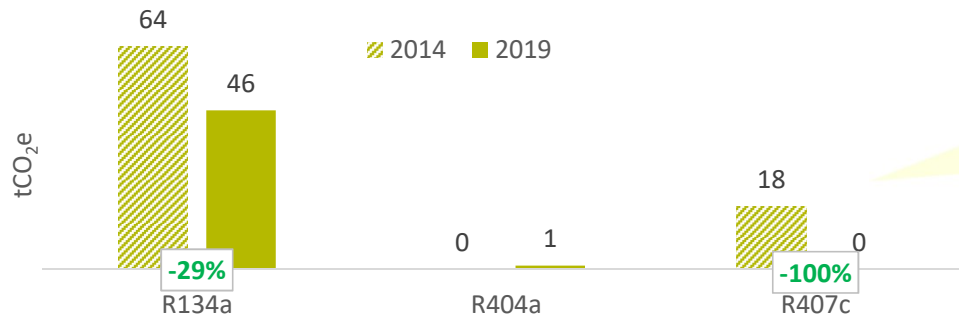


Data and assumptions

Refrigerant gases: cooling installations refilled with refrigerant gases (R134a and R404a) throughout 2018. Refills were viewed as leaks.

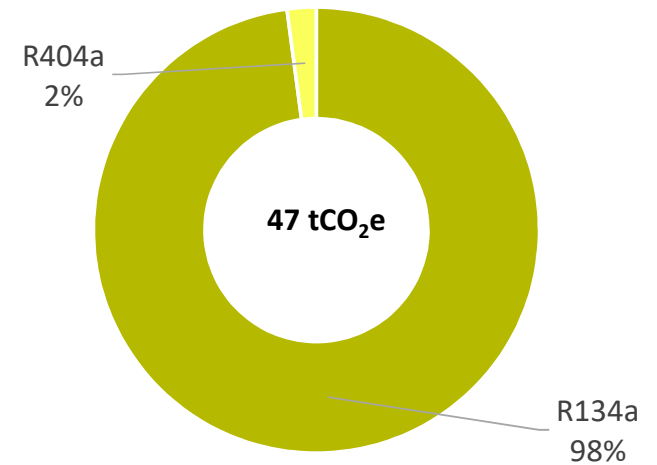
Results in and comparison between 2014 and 2019

| GHG emissions tCO ₂ e | 2014 | 2019 | 2014-2019 variation |
|----------------------------------|-----------|-----------|---------------------|
| R134A | 64 | 46 | |
| R404A | 0 | 1 | |
| R407C | 18 | 0 | |
| Total | 82 | 47 | -43% |



Uncertainties
13 tCO₂e
(28%)

Total non-energy GHG emissions



Refrigerant gases have a huge impact:

- ✓ 1 tonne of R134a is equivalent to 1 300 tCO₂
- ✓ 1 tonne of R407A is equivalent to 3 940 tCO₂

5

Result per scope

Waste



Data and assumptions

✓ **Waste**

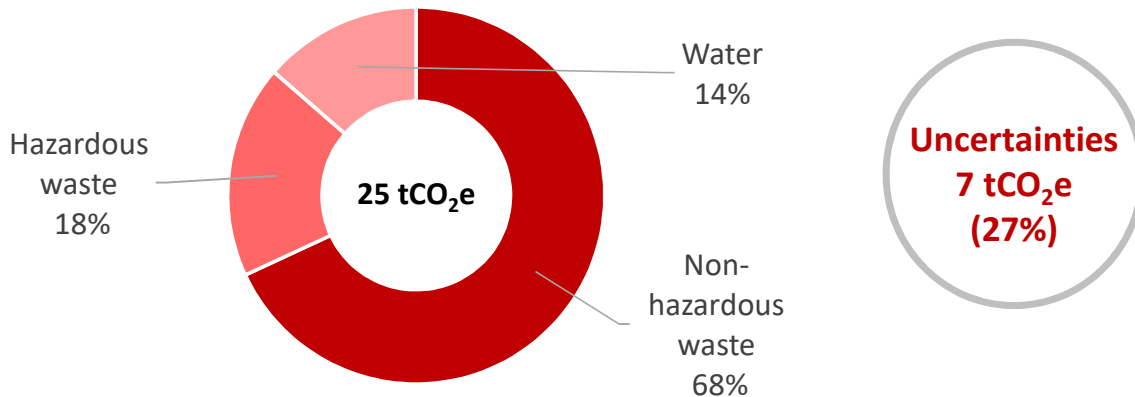
Non-hazardous: food and household waste, plastics, paper, cardboard, and glass packaging

Hazardous: wastewater and sewage, light bulbs and fluorescent tubes, packaging waste containing harmful products, scrap metal, batteries, accumulators, and electronic waste

✓ **Water use (sewage)**

Data: based on water consumption, allocated to buildings on the basis of occupancy

Total GHG emissions from waste



Results

| Type of waste | tCO ₂ e |
|---------------------|--------------------|
| Non-hazardous waste | 16.69 |
| Hazardous waste | 4.49 |
| Water | 3.34 |
| Total | 24.52 |

GHG emissions from waste by category

| Category of waste | kg | tCO ₂ e |
|--|----------|--------------------|
| Household and similar waste | 37 580.0 | 13.59 |
| Food fats and oils | 50 531.0 | 3.55 |
| Paper, cardboard and wooden packaging | 45 553.0 | 1.96 |
| Wastewater containing hydrocarbons, and sewage | 12 220.0 | 0.86 |
| Food waste | 23 590.0 | 0.85 |
| Various types of packaging waste | 4 355.9 | 0.14 |
| Glass packaging | 3 200.0 | 0.12 |
| Waste electrical and electronic equipment | 615.5 | 0.04 |
| Plastic waste (including packaging) | 779.3 | 0.03 |
| Scrap metal | 184.0 | 0.01 |
| Light bulbs and fluorescent tubes | 106.5 | 0.01 |
| Packaging waste containing harmful products | 100.0 | 0.01 |
| Batteries and accumulators | 76.0 | 0.01 |
| Other waste from demolition (uncontaminated) | 122.5 | 0.00 |

5

Result per scope

Waste



Comparison between 2014 and 2019

| GHG emissions tCO ₂ e | 2014 | 2019 | 2014-2019 variation |
|----------------------------------|------|------|---------------------|
| Total waste | 34 | 25 | -38% ↓ |

-33% cardboard and paper- in non-hazardous waste

The treatment of food fats and oils improved between 2014 and 2019, i.e. from incineration to 61% recycling/biological treatment



5

Result per scope

Transport of goods



Data and assumptions

Transport by suppliers: 2018 data; no 2019 data available because of the Covid pandemic

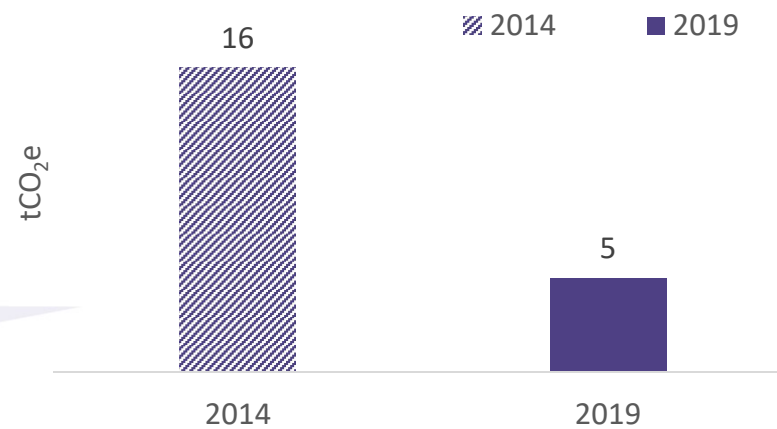
Results

| Emission source | Total kilometres | tCO ₂ e |
|--------------------------|------------------|--------------------|
| Total transport of goods | 52 767 | 5 |

Uncertainties
1 tCO₂e
(25%)

Average distance driven by each supplier per year: 2 513 km
This is equivalent to driving from Luxembourg to Rome and back

This result cannot be compared, as the methodology used for the calculation was different.



ECA 2019 Carbon Footprint Report



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- 2 **Context of the study**
- 3 **Overview of the Bilan Carbone[®] method**
- 4 **Overall results**
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6

Offsetting



The ECA purchases “guarantees of origin” electricity. However, the Bilan Carbone® method does not take this into consideration (see page 28).



| | Item | Quantity tCO ₂ e |
|------------|----------------------------------|-----------------------------|
| A | TOTAL 2019 EMISSIONS | 9 203.30 |
| B | INCLUDING ELECTRCITY EMISSIONS | 1 488.60 |
| C | TOTAL GREEN ELECTRCITY EMISSIONS | 30.92 |
| | D = B - C DIFFERENCE | 1 457.68 |
| A-D | 2019 TOTAL TO BE OFFSET | 7 745.62 |

The green electricity purchased is deducted from the total emissions to be offset for 2019.

This report was prepared for the European Court of Auditors (ECA) by Argest S.A. and EcoAct France, data provided by the ECA.



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