



EUROPEAN COURT
OF AUDITORS



Report on the ECA's 2021 Carbon Footprint

Calculation of the ECA's carbon
footprint (Bilan Carbone[®]
methodology)

ECA 2021 Carbon Footprint Report



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

ECA 2021 Carbon Footprint Report



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1

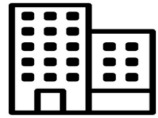
Executive summary



2021



954,5
FTE¹



Three
buildings



28%

“Digital” was the largest
source of emissions



7 578 tCO₂e

Total 2021 GHG
emissions

8 tCO₂e/FTE1 (total
uncertainties 16%)



-29%

Overall decrease in emissions
since 2014

¹ Full-time equivalent.

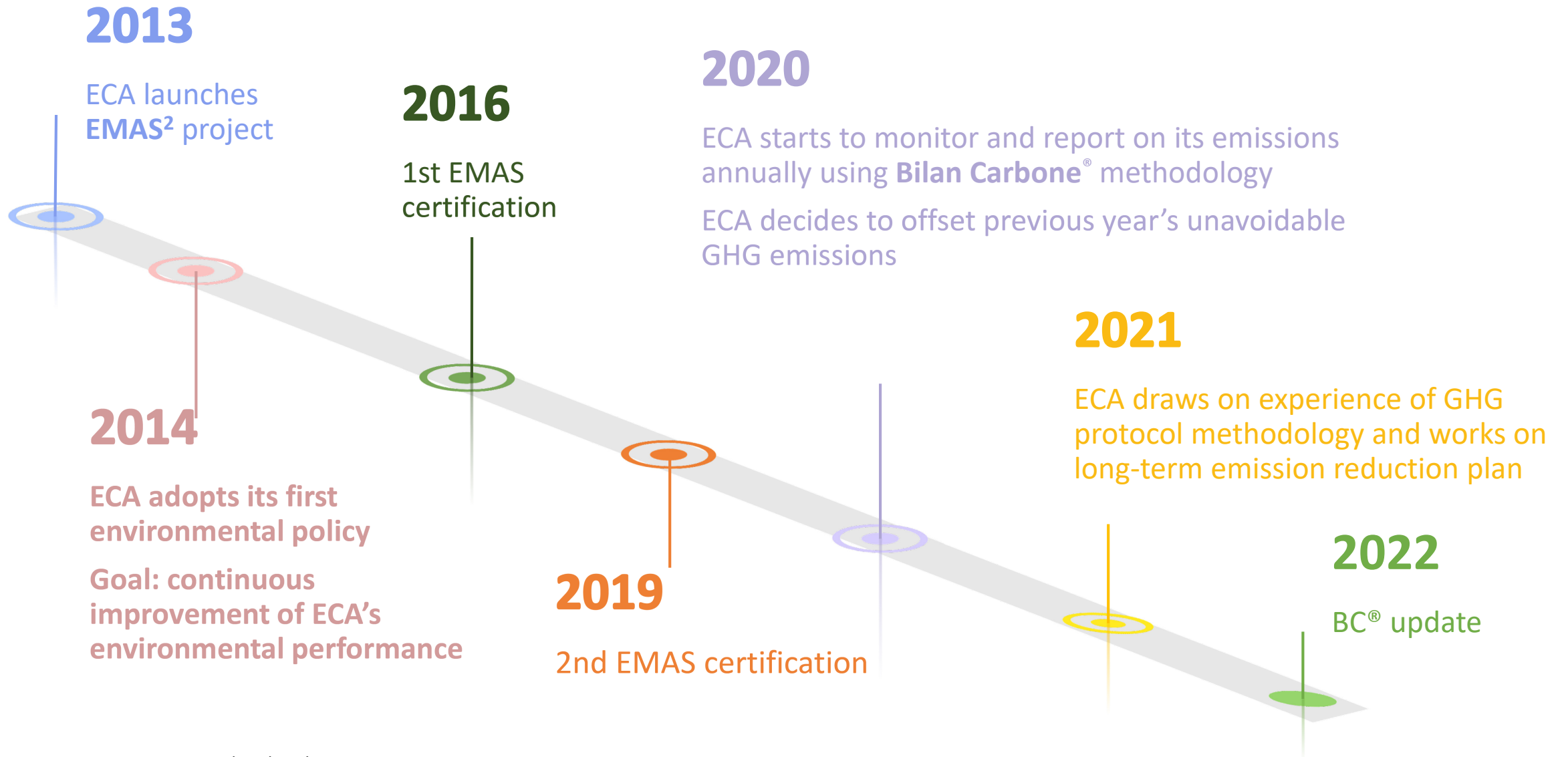
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Context of the study



2

Context of the study

Main changes for 2022 carbon footprint assessment:

The objective of the study was to provide a **high-quality estimate of the greenhouse gas emissions** produced by the European Court of Auditors, **using the Bilan Carbone® methodology.**

To this end, **the ECA conducted a survey on commuting** in order to update its data on staff transport choices and modal share. The teleworking rate and results were calculated using the number of staff on-site days based on access data.

The main changes in relation to the 2021 carbon footprint assessment were as follows:

- the Bilan carbone® included comparisons with 2014 and 2020;
- as in 2020, carbon emissions from teleworking were reported due to the COVID situation; hotel nights and IT carbon emissions were included to analyse the impact of digitalisation;
- all IT emissions were reported in the “digital” category, including purchase of IT supplies and services;
- the 2021 renovation work on the K2 building was included in “capital goods” (1 699 m²);
- emission factors were updated.

ECA 2021 Carbon Footprint Report



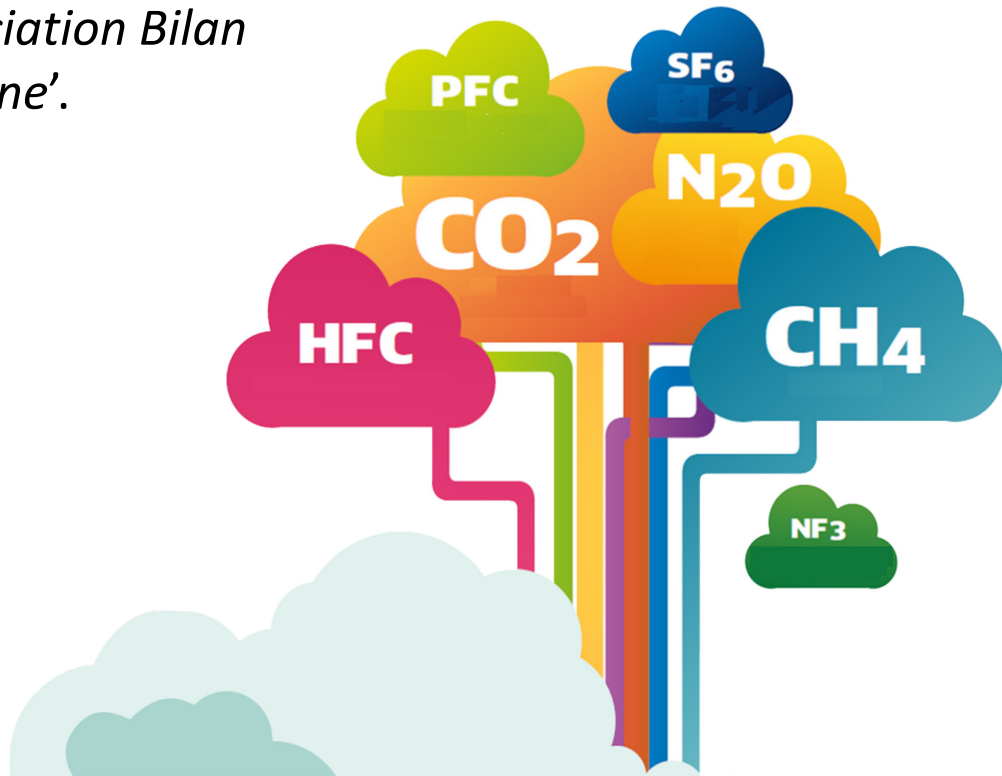
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Overview of the Bilan Carbone[®] method

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

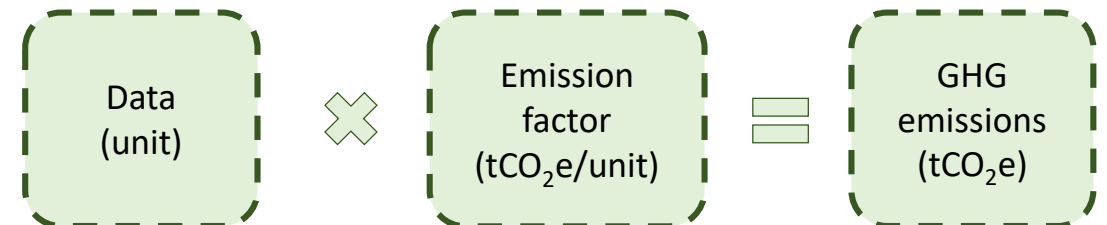
It is promoted by the 'Association Bilan Carbone'.



The method **covers** the following gases:

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

The method multiplies each organisation's activity data by an emission factor (EF), as it is not feasible to measure GHG emissions directly.



3

Overview of carbon footprint methods

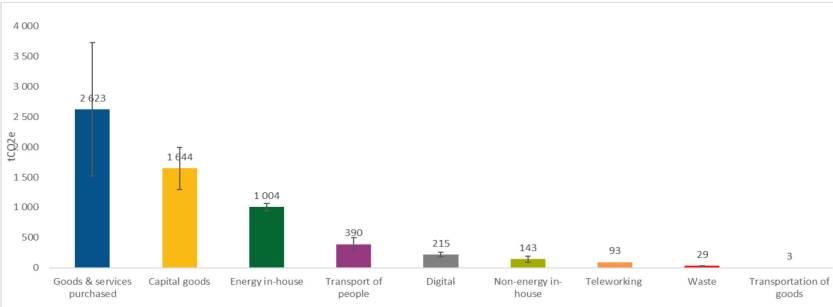
1 – Collect activity data



2- Use the emission factors from the Bilan Carbone® database



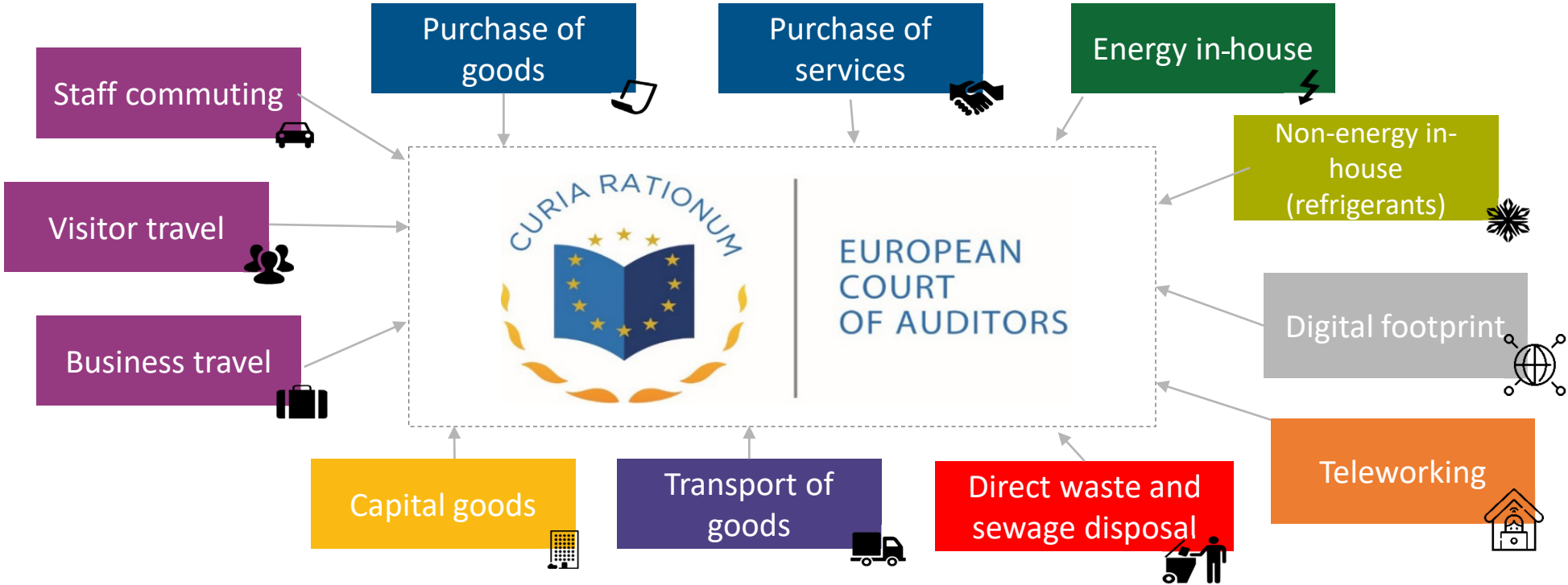
3- Visualize and analyze the results



3

Overview of carbon footprint methods

Operational scope of the Bilan Carbone® method in 2021



The ECA’s carbon footprint includes direct and indirect GHG emissions (scopes 1, 2 and 3).

3

Overview of carbon footprint methods

Temporal and organisational boundaries

Bilan Carbone[®] approach: operational control approach

Temporal scope: ECA activities in 2021

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

Building	Area (m ²)	FTE
K1	23 766	293
K2	17 587	100
K3	28 240	561

Updated 2021 data



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 staff: 954.5 full-time equivalent employees (FTEs) at end 2021

ECA 2021 Carbon Footprint Report



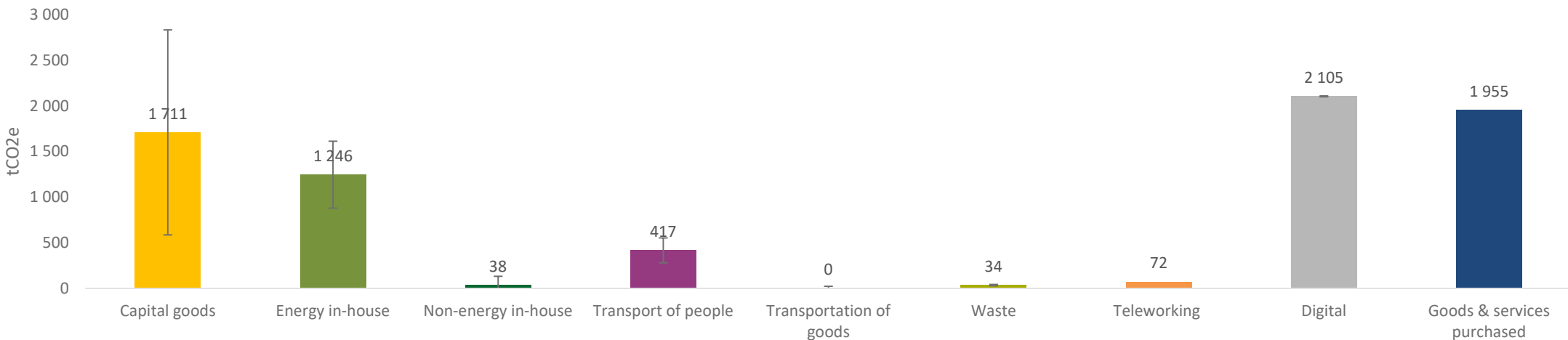
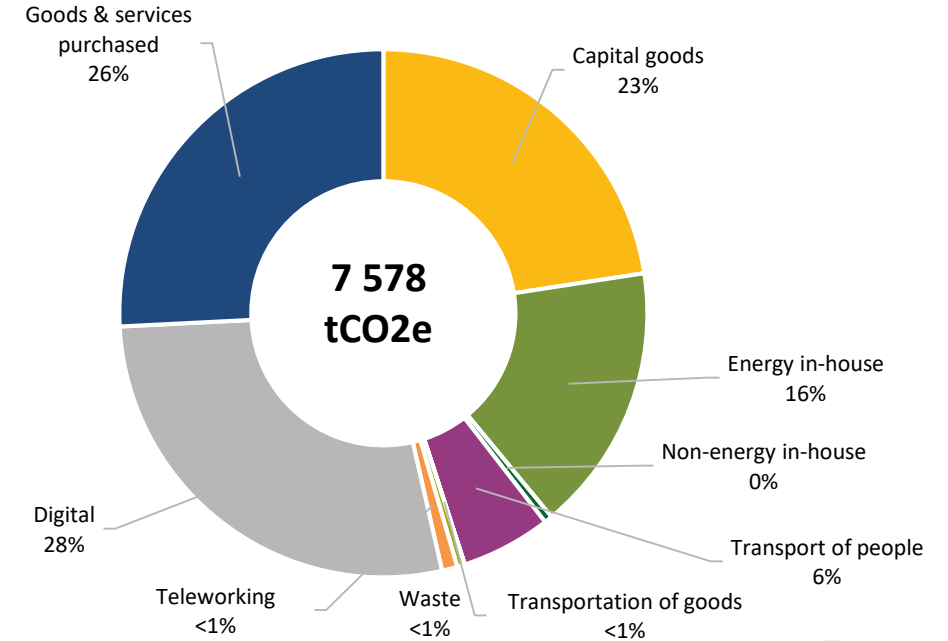
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Overall results

2021 Bilan Carbone® results

- ✓ Total GHG emissions **7 578 tCO₂e**
- ✓ Largest sources of emissions:
 - digital (28%)
 - goods and services purchased (26%)
 - capital goods (23%)
 - energy in-house (16%)
- ✓ Transport of people, non-energy in-house, waste, teleworking and transport of goods made up the remaining 8%



**Total uncertainties
1 212 tCO₂e
(16%)**

4

Overall results

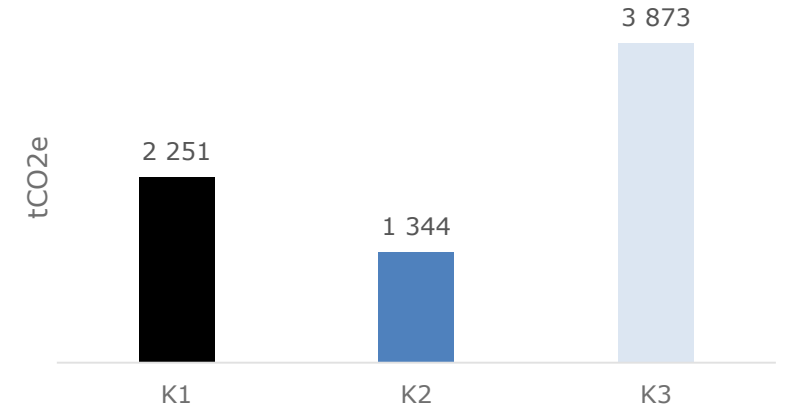
Emissions by building - Bilan Carbone®

Emissions were divided between the buildings according to staff headcount.

Building	FTE	Share (%)
K1	293.5	31%
K2	100.5	10%
K3	560.5	59%
Total	954.5	100%

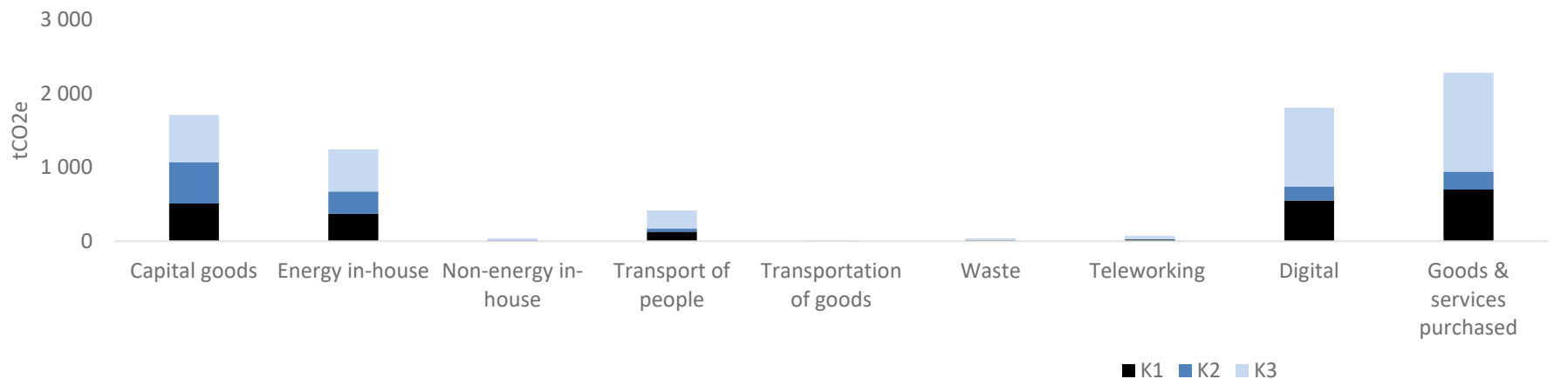
K3 houses the most staff and produces the largest share of emissions

Total GHG emissions by building



Building	tCO ₂ e
K1	2 251
K2	1 344
K3	3 873
TOTAL	7 468

Emissions categories by building



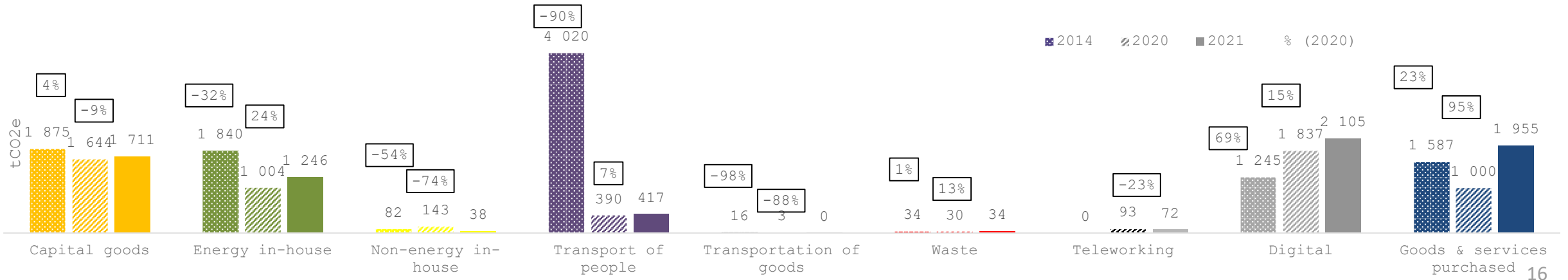
3

Overall results

Bilan Carbone[®] comparison with previous years

Overall, emissions rose **23%** between 2020 and 2021 and dropped **29%** from 2014

Emission sources tCO ₂ e*	2014	2020	2021	Change 2014-2021	Change 2020-2021
Capital goods	1 875	1 644	1 711	-9% ↓	4% ↑
Energy in-house	1 840	1 004	1 246	-32% ↓	24% ↑
Non-energy in-house	82	143	38	-54% ↓	-74% ↓
Transport of people	4 020	390	417	-90% ↓	7% ↑
Transportation of goods	16	3	0	-98% ↓	-88% ↓
Waste	34	30	34	1% ↑	13% ↑
Teleworking	0	93	72		-23% ↓
Digital	1 245	1 837	2 105	69% ↑	15% ↑
Goods & services purchased	1 587	1 000	1 955	23% ↑	95% ↑
TOTAL	10 699	6 144	7 578	-29% ↓	23% ↑



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Results by scope

Digital



Bilan Carbone® (28%)

Data and assumptions

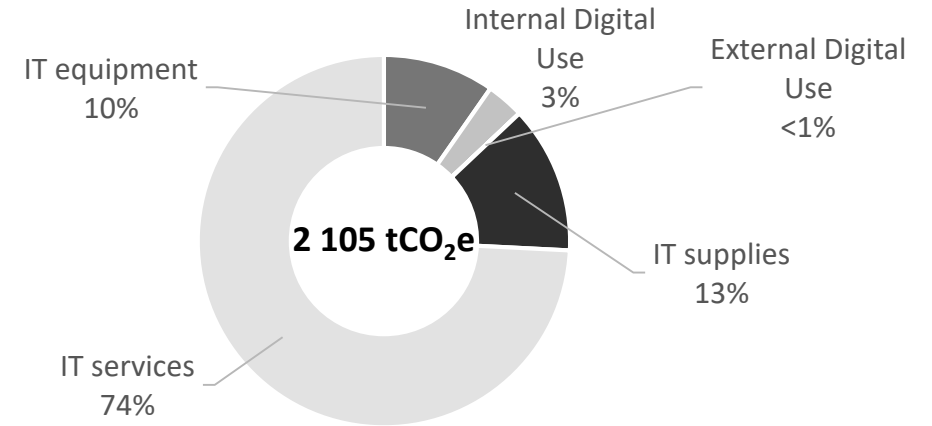
- ✓ **Internal digital use**
Energy emissions related to data centers K3, CETREL and Bersdorf
- ✓ **External digital use**
Emissions related to customer use of the ECA's website, Facebook, LinkedIn, Twitter, emails, reports and online videos
- ✓ **IT equipment**
IT inventory by goods type

Results

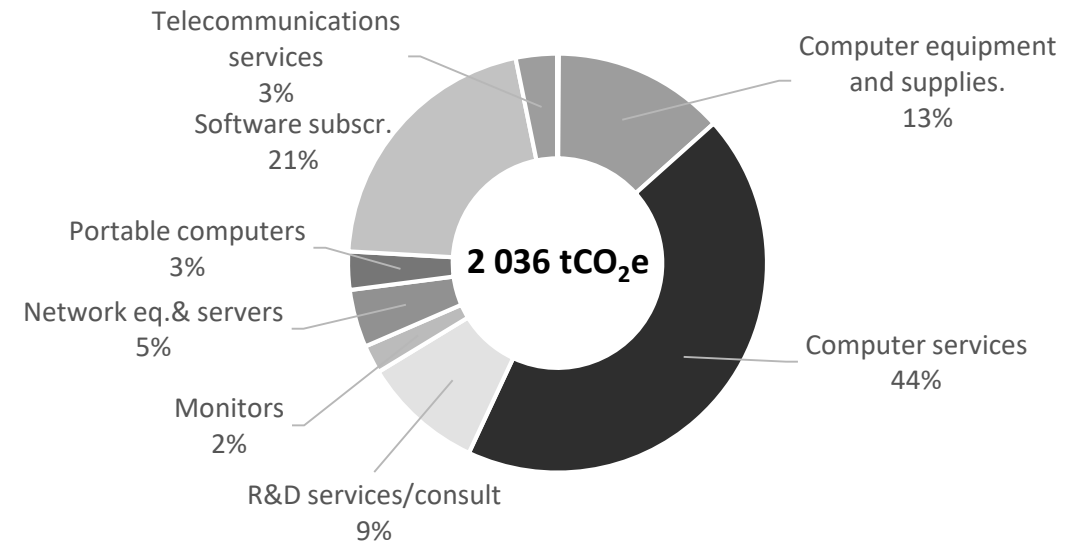
Type of emissions	tCO ₂ e
IT services	1 562
IT supplies	270
IT equipment	204
Internal digital use	69
External digital use	0
Total	2 105

} **2 036**

Total GHG digital emissions



Focus on IT services, supplies and equipment



5

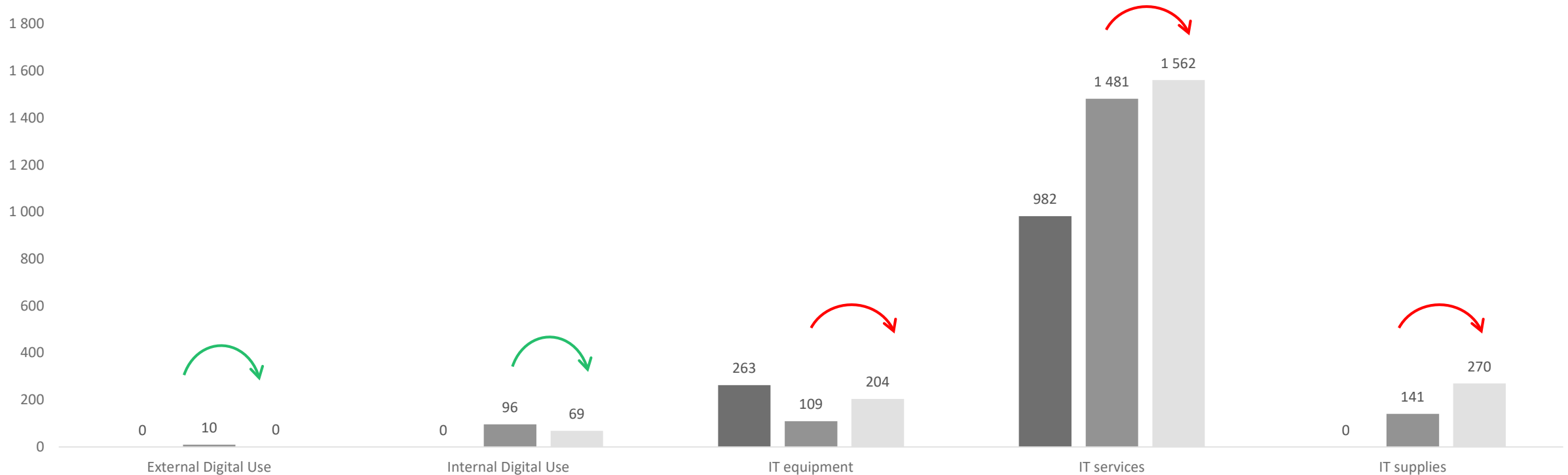
Results by scope

Digital



Comparison between 2020 and 2021

GHG emissions tCO ₂ e	2014	2020	2021	Change 2014-2021	Change 2020-2021
Total digital	1 245	1 837	2 105	+92%	+23%



5 Results by scope

Goods & services purchased



Bilan Carbone® (26%)

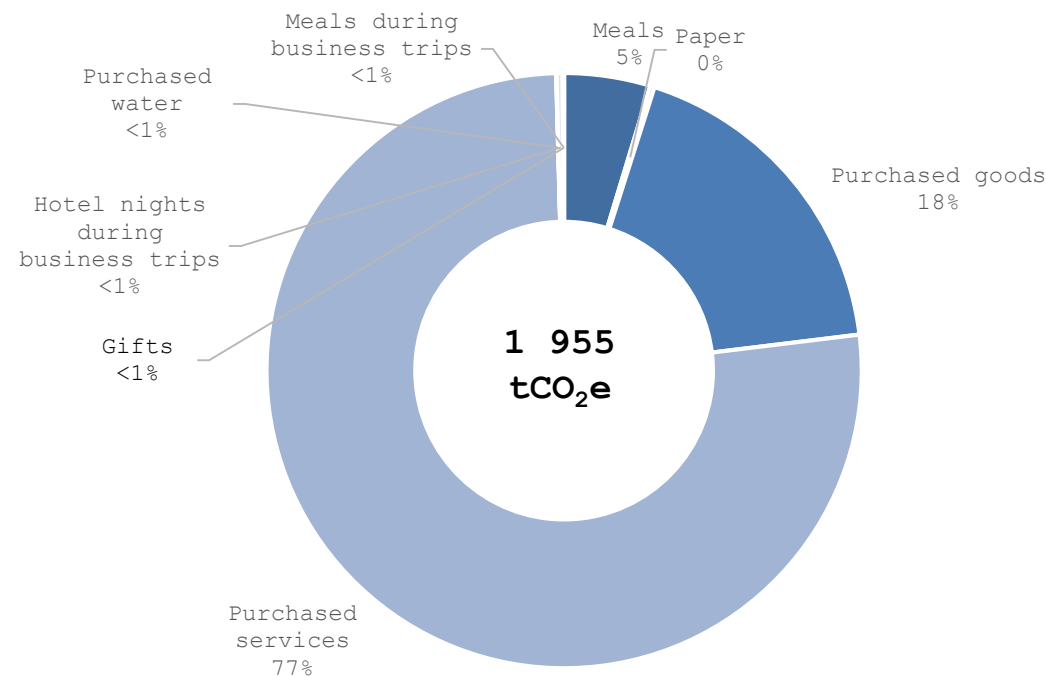
Data and assumptions

- ✓ **Services:** (see page 18)
- ✓ **Meals:** (see page 19)
- ✓ **Paper:** A4 80gr (95%) and A3 80gr/others (5%), converted into weight (5g/page)
- ✓ **Water purchased:** total water consumed in 2021
- ✓ **Gifts:** number and type of gifts converted into weight by type of material

Results

Type of goods or services	tCO ₂ e
Services purchased	1 496
Goods purchased	355
Paper	5
Meals	91
Hotel nights during business trips	6
Meals during business trips	2
Water purchased	0
Gifts	0
Total	1 955

Total GHG emissions from goods and services purchased



5 Results by scope

Goods & services purchased



Services

Data and assumptions

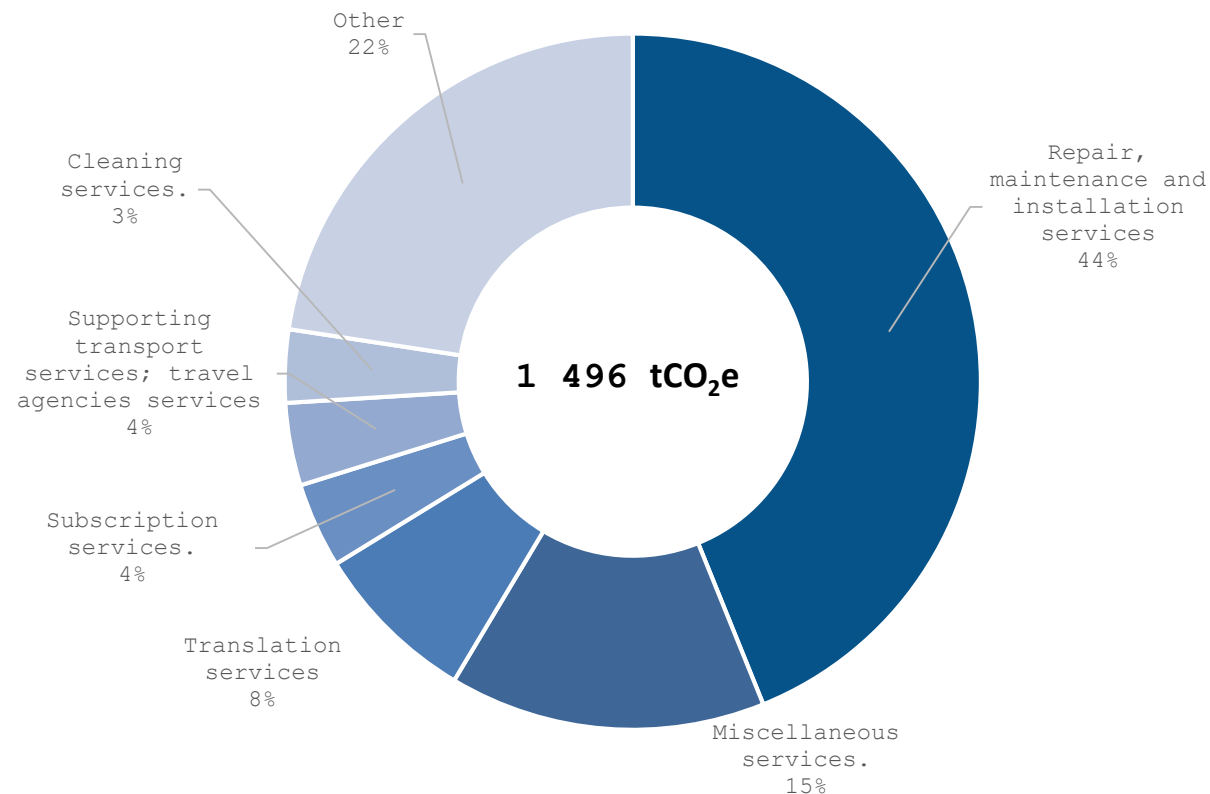
Data provided: goods and services purchased by category type and amount in euros

Results

Type of service	tCO ₂ e
Repair, maintenance and installation services	656
Miscellaneous services	220
Translation services	115
Subscription services	59
Supporting transport services*	57
Cleaning services	51
Other	338
Total	1 496

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

GHG emissions from services purchased



5 Results by scope

Goods & services purchased



Meals

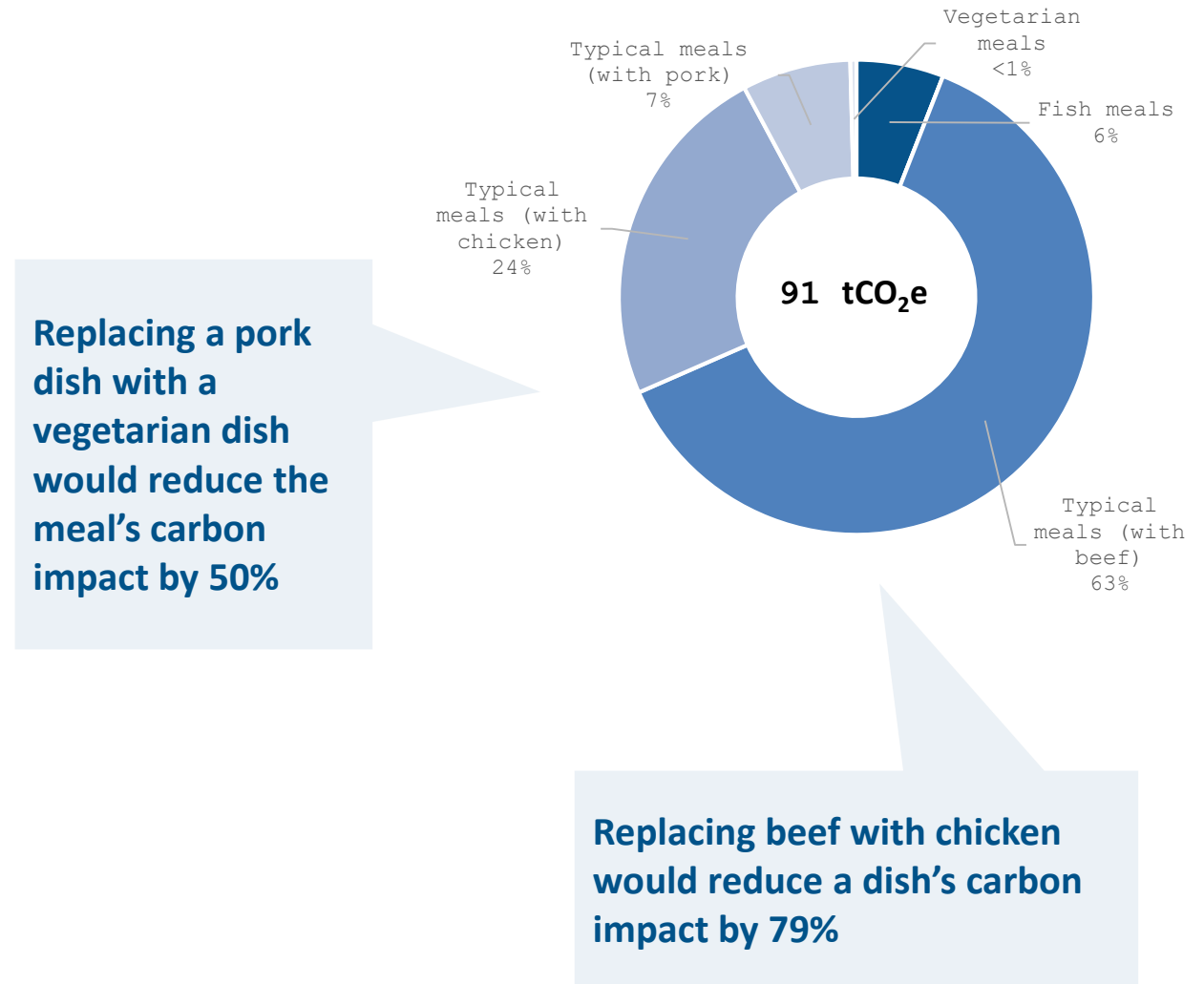
Data and assumptions

- ✓ Number of meals and quantities of organic and non-organic meat (pork, beef, chicken) and fish purchased
- ✓ Calculations used only the proteins provided by the service provider
- ✓ Meals were broken down by quantities purchased (39% chicken, 22% beef, 16% pork, 17% fish)

Results

Type of meal	tCO ₂ e
Typical meals (with beef)	57
Typical meals (with chicken)	22
Typical meals (with pork)	7
Fish meals	5
Vegetarian meals	0
Total	91

GHG emissions from meals



5 Results by scope

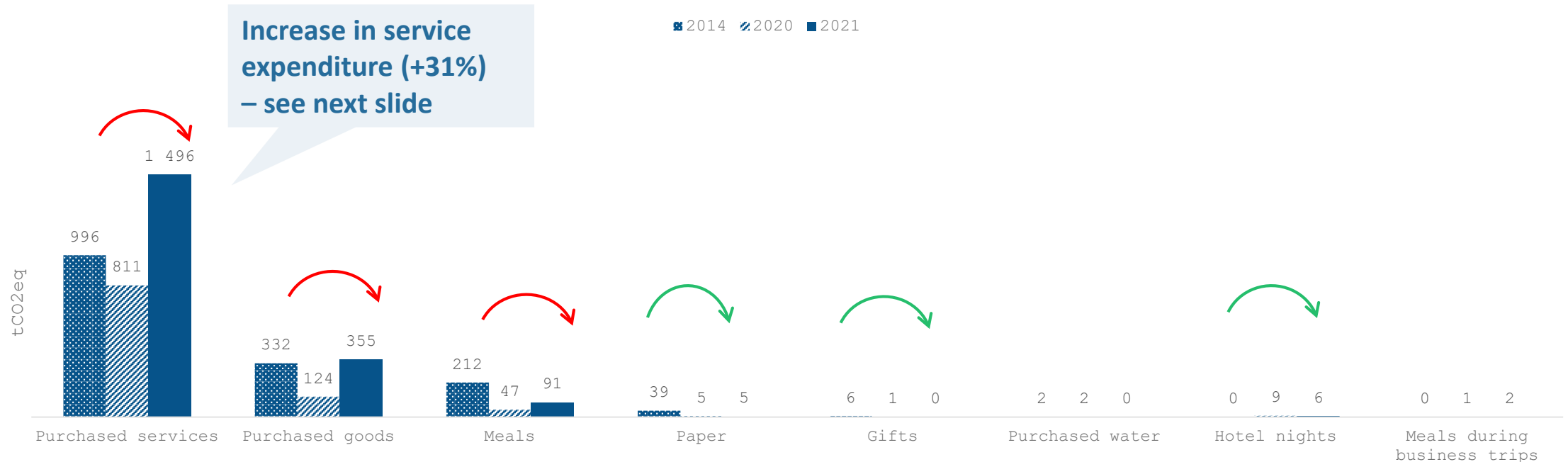
Goods & services purchased



Comparison with previous years

GHG emissions (tCO ₂ e)	2014	2020	2021	Change 2014-2021	Change 2020-2021
Total goods and services purchased	1 587	1 000	1 955	23% ↗	95% ↗

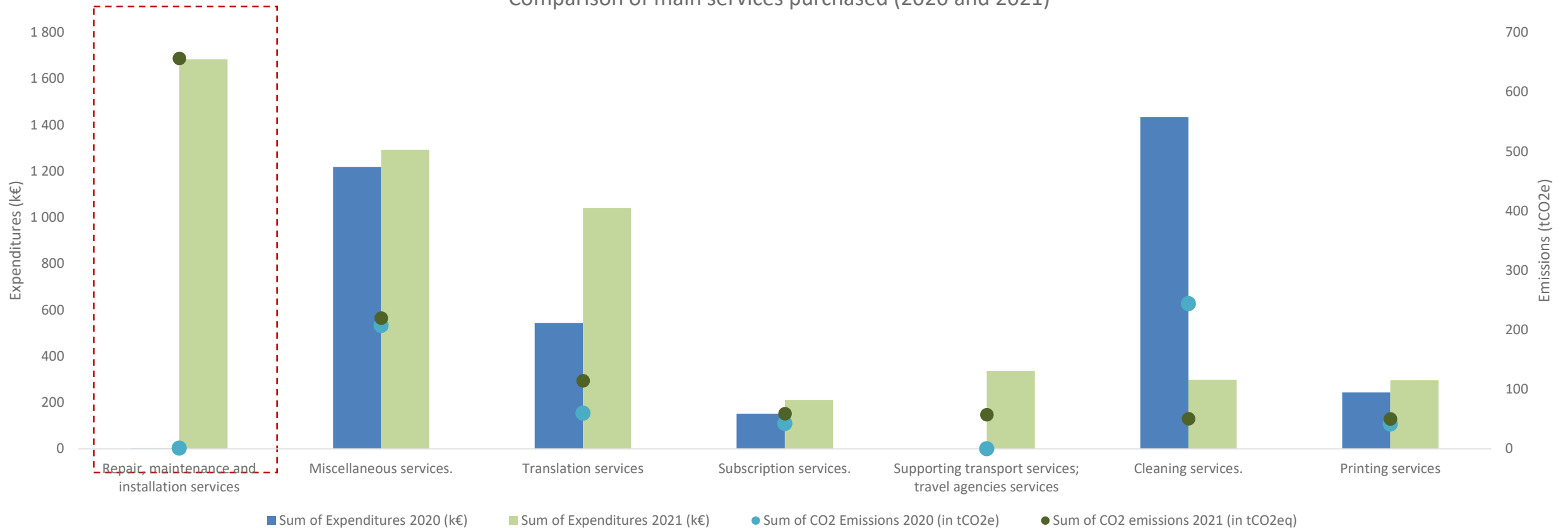
A few categories were transferred from “Purchased Services” (2020) to “IT” (2021)





Comparison with previous years – focus on main services

Comparison of main services purchased (2020 and 2021)





Bilan Carbone® (23%)

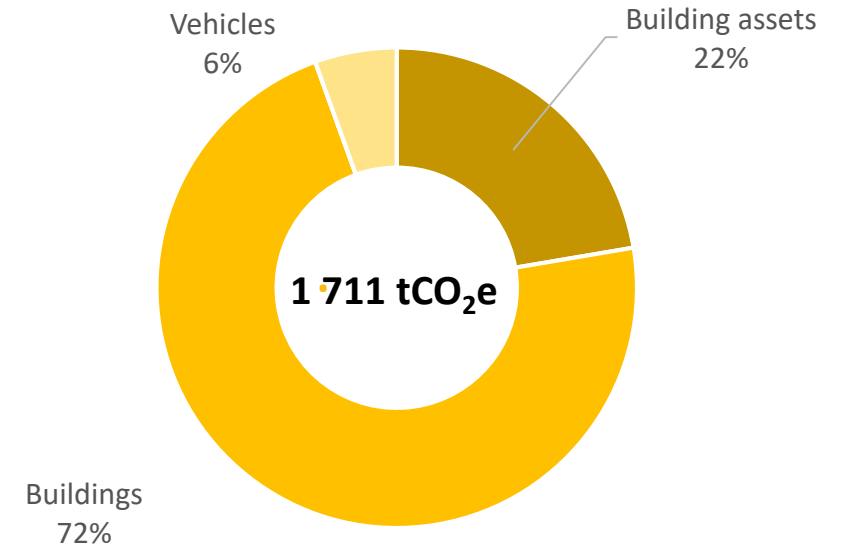
Data and assumptions

- ✓ **Buildings and car parks:** parking and office space (m²)
Renovation work included in building emissions (+1699 m²)
Depreciation: 40 years
- ✓ **Building assets:** generators, refrigerators, air conditioning units, machinery etc. (units per building); furniture, equipment and tools (per building by purchase price)
Depreciation: 8 years
- ✓ **Vehicles:** model of leased and owned vehicles across all three buildings
Depreciation: 4 years

Results

Type of capital goods	tCO ₂ e
Buildings	1 235
Building assets	382
Vehicles	94
Total	1 711

Total GHG emissions from capital goods

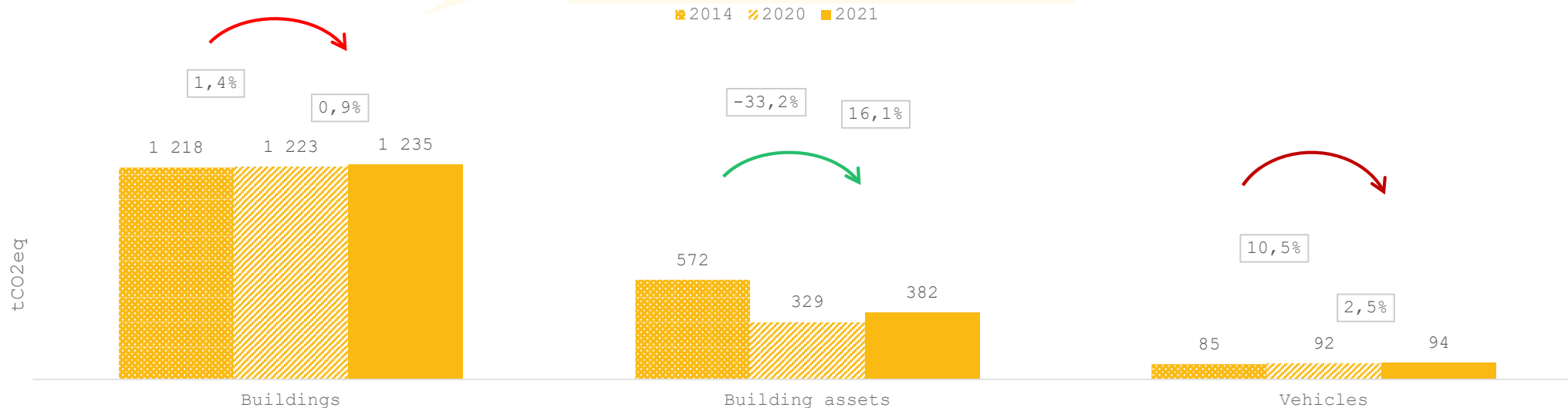




Comparison between 2020 and 2021

GHG emissions tCO ₂ e	2014	2020	2021	Change 2014-2021	Change 2020-2021
Total capital goods	1 875	1 644	1 711	-9 % ↘	+4% ↗

Net office space has changed due to building development and renovation



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Results by scope

Energy (in-house)

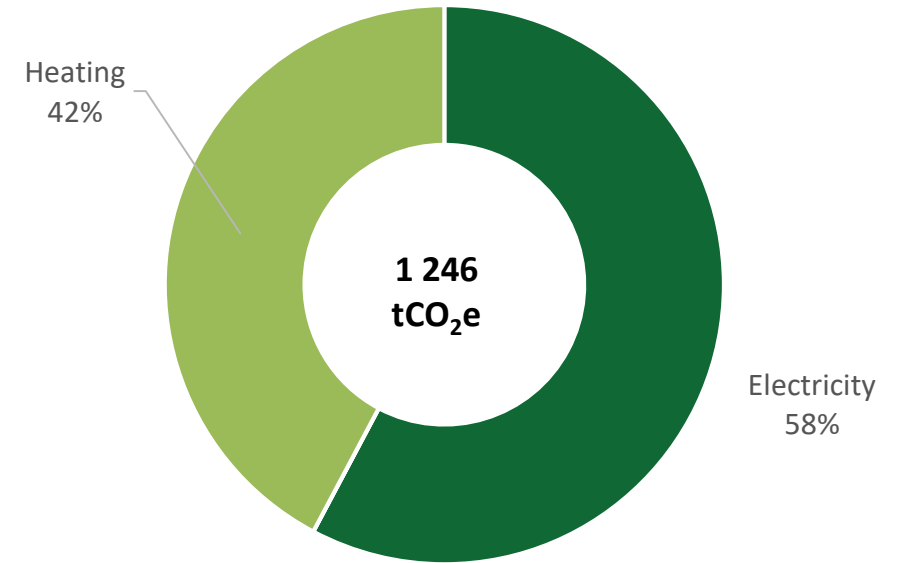


Bilan Carbone® (16%)

Data and assumptions

- ✓ **Electricity consumption:** The ECA purchases guaranteed green electricity, but the Bilan Carbone® calculates actual electricity consumption from the national grid (location-based).
- ✓ **Heat consumption:** 2021 consumption for each building. The emission factor is determined by Luxembourg city authorities.

Total GHG emissions from energy



Results	Type of energy source	tCO ₂ e
	Electricity	720
	Heating	526
	Total	1 246

5

Results by scope

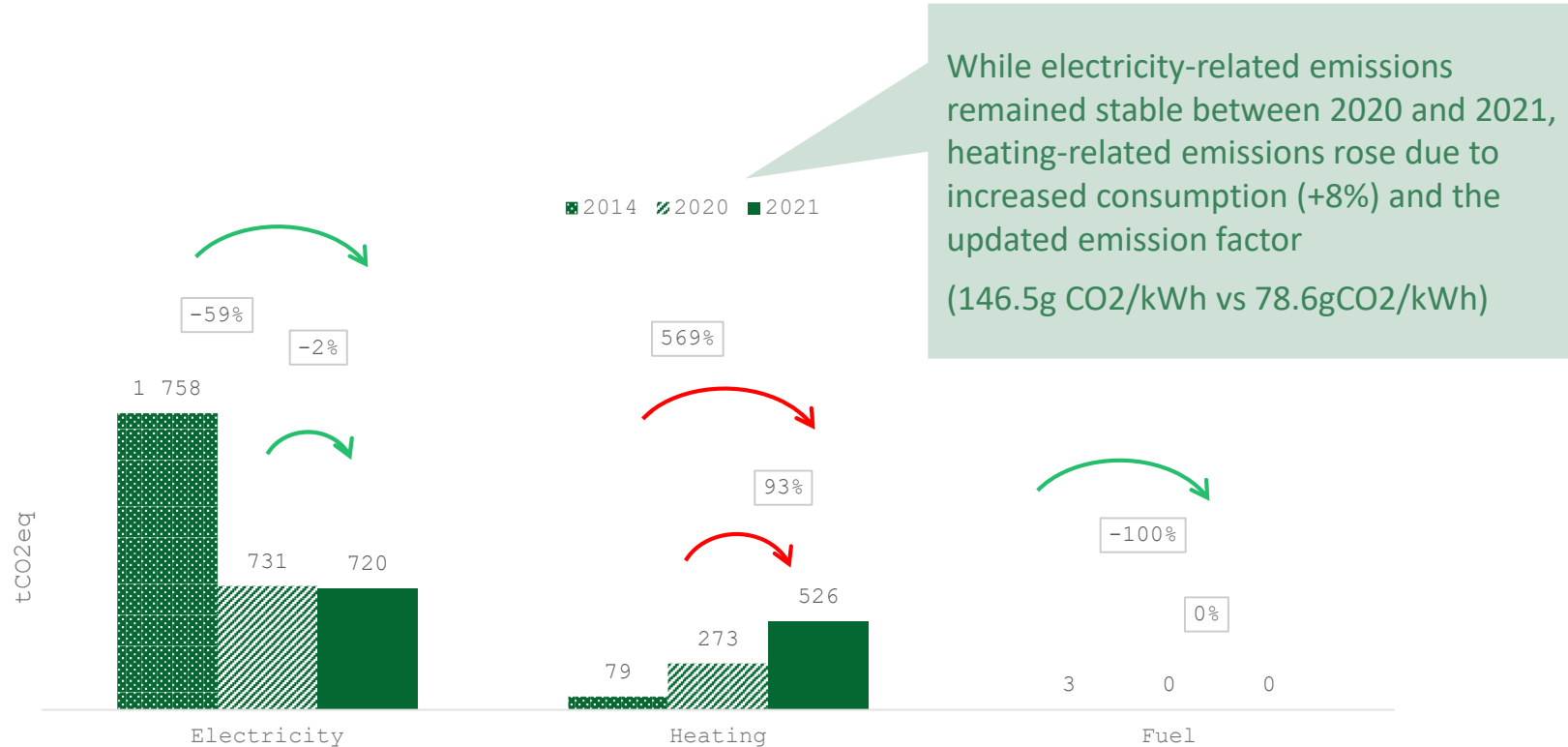
Energy (in-house + EDC)



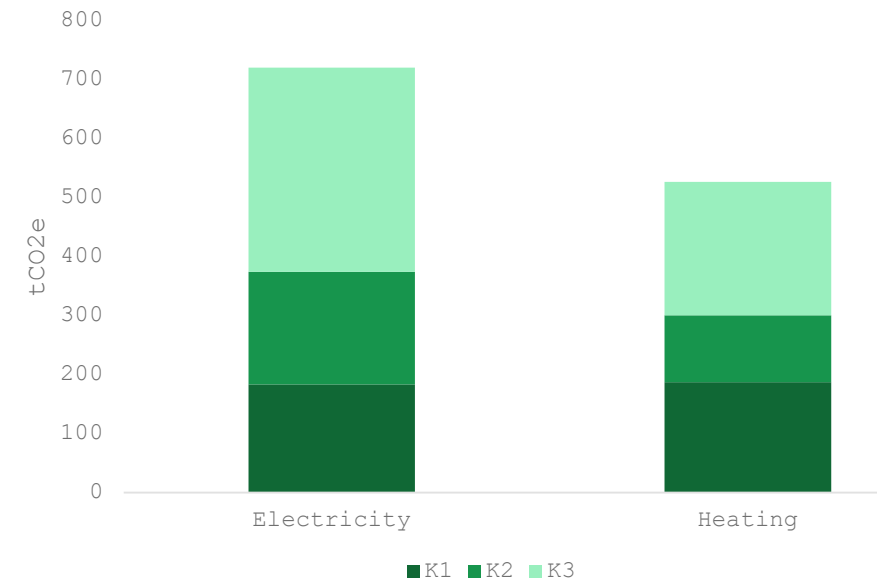
Comparison with previous years

GHG emissions tCO ₂ e	2014	2020	2021	Change 2014-2021	Change 2020-2021
Total energy	1 840	1 004	1 246	-32% ↘	+24% ↗

The K3 building logically accounts for the greatest share of energy emissions



2021 Emissions by building



5 Results by scope

Passenger transport



Bilan Carbone® (6%)

Data and assumptions

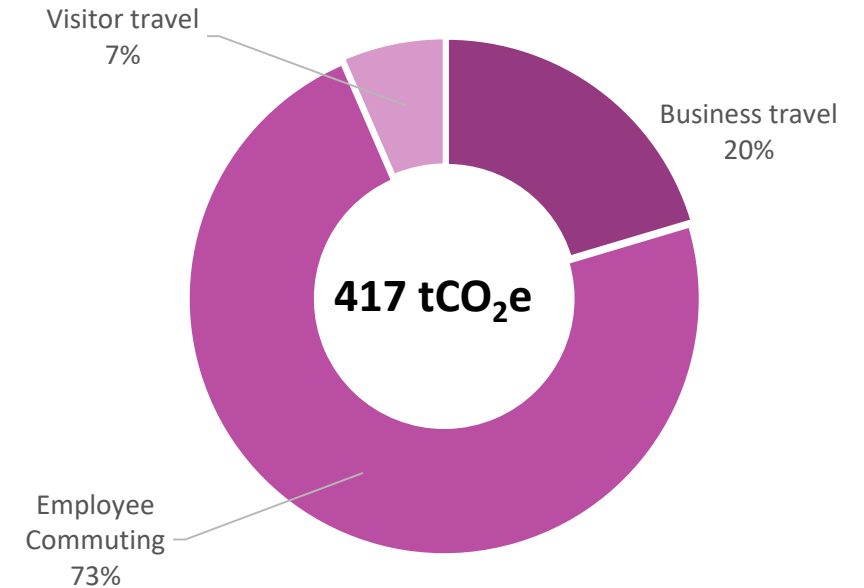
Emission sources

- ✓ Staff commuting and use of official cars for non-business travel (2022 survey on 2021 habits)
- ✓ Business travel (under “use of official cars”)
- ✓ Visitor travel

Results

Type of transportation	tCO ₂ e
Staff commuting	305
Business travel	85
Visitor travel	27
Total	417

Emissions from the transport of people by travel category



5 Results by scope

Passenger transport



Staff commuting

Data provided

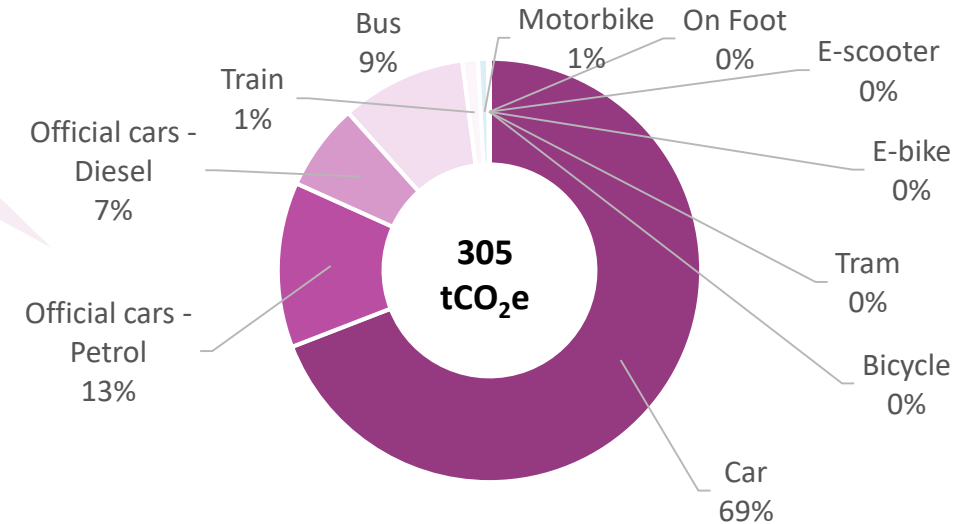
- ✓ ECA data: 2022 staff commuting survey

Hypothesis

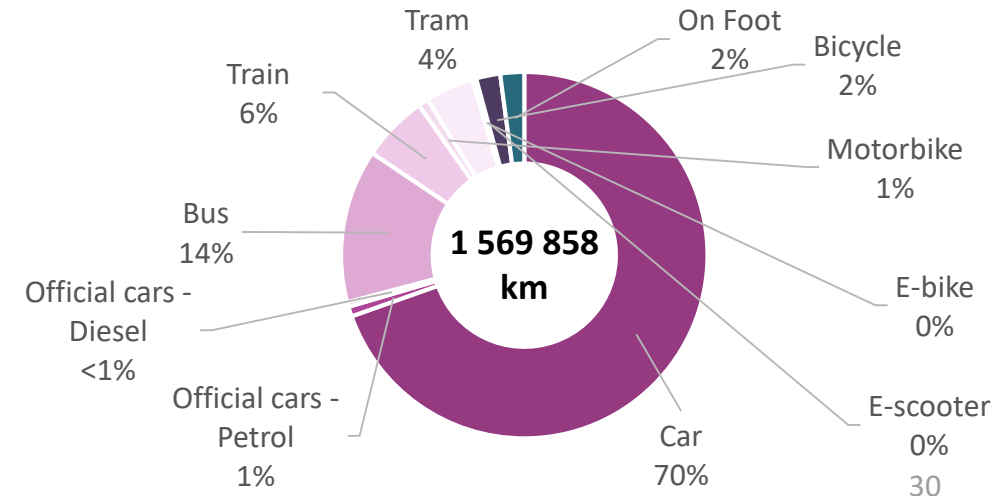
- ✓ Excluding teleworking days

Cars: 89% of GHG emissions; 71% of kilometres travelled

GHG emissions from commuting



Kilometres⁵ travelled for commuting



Staff commuting	tCO ₂ e	km
Car	211	1 092 304
Official car – petrol	39	13 709
Official car – diesel	20	6 410
Bus	29	212 769
Train	4	91 636
Motorbike	2	14 138
Tram	0	66 954
E-bike	0	5 201
E-scooter	0	314
Bicycle	0	33 329
On foot	0	33 094
Total	305	1 569 858

Extrapolated results

⁵ Carbon footprint calculation for official cars in litres.
Number of litres transposed to km with average consumption for comparison.

5 Results by scope

Passenger transport



Business travel

Data provided

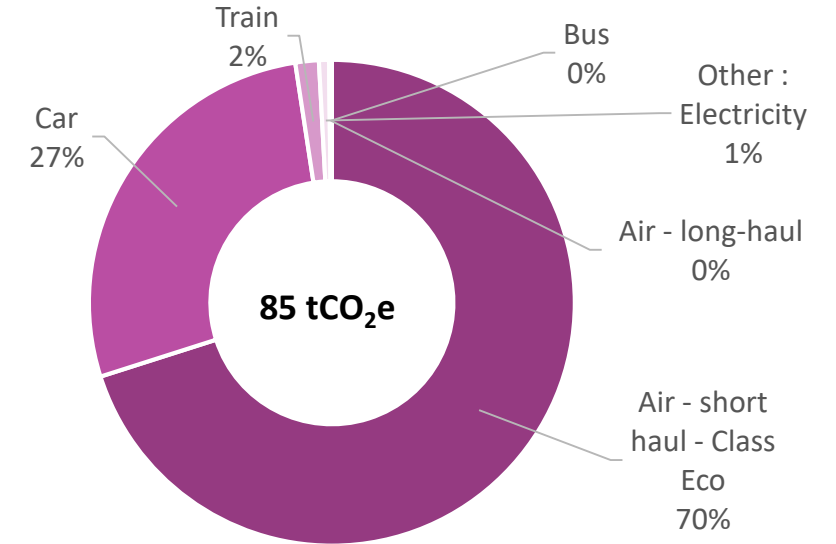
Total kilometres by mode of transport
 Car: Private, official and rented cars

Results

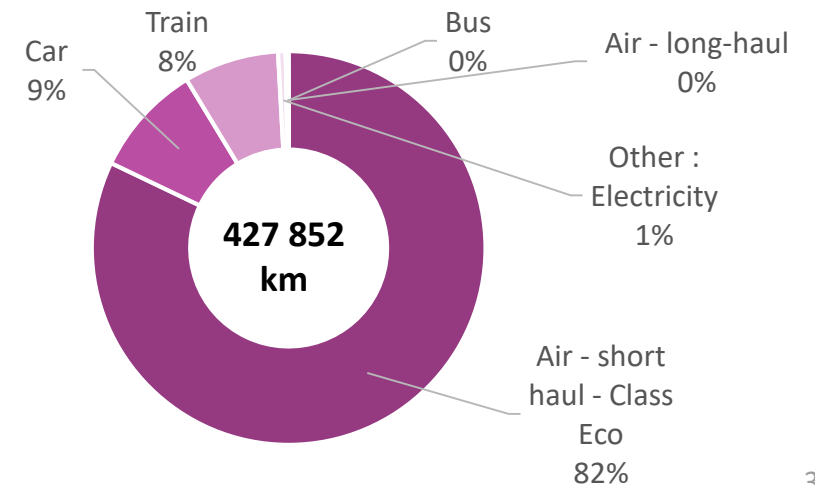
Business travel	tCO ₂ e	km
Air – short-haul – economy	60	351 270
Car	23	39 479
Train	1	33 409
Other: electricity	1	2 664
Air – long-haul	0	774
Bus	0	256
Total	85	427 852

The travel agency reported a total of **33 tCO₂e** for short-haul air travel. This difference could be due to the fact that aircraft can affect climate through other emissions and atmospheric processes (H₂O, NO_x, sulfate, contrails, etc.). There are still significant scientific uncertainties about their estimation. The French Ministry (ADEME) recommends including contrails.

GHG emissions from business travel



Kilometres⁵ travelled for business travel

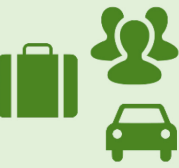


Train: 2% of GHG emissions; 8% of kilometres travelled

⁵ Carbon footprint calculation for official cars in litres.
 Number of litres transposed to km with average consumption for comparison.

5 Results by scope

Passenger transport



Visitor travel

Data provided

Number of visitors in 2021 by country of origin:

- ✓ 25 visits
- ✓ 89 visitors

Assumptions regarding mode of transport

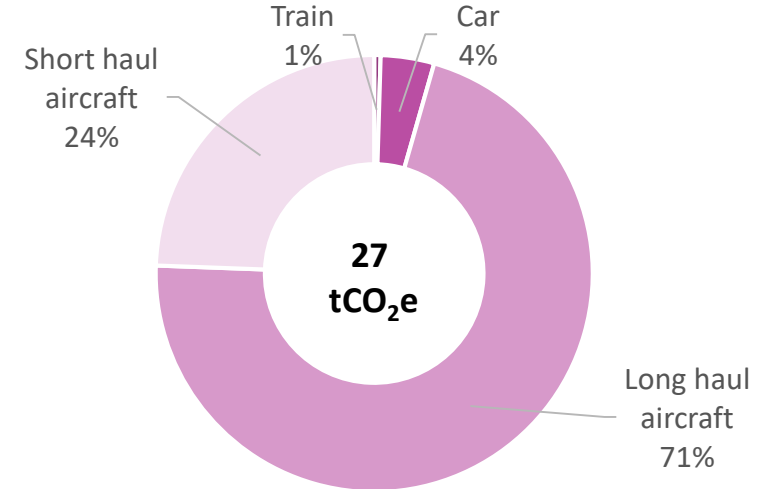
- ✓ Short-haul aircraft: EU-ES
- ✓ Car: BE-LU
- ✓ Bus: DE
- ✓ Train: FR

Results

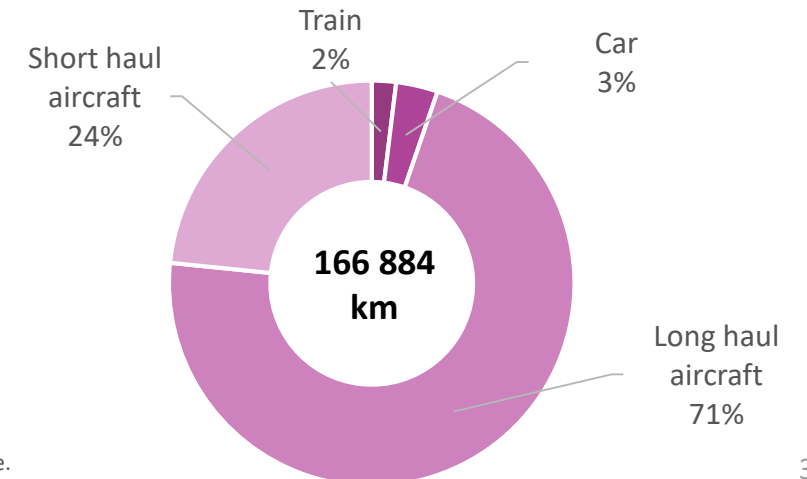
Visitor travel	tCO ₂ e	km
Long-haul aircraft	19	119 064
Short-haul aircraft	7	39 026
Car	1	5 566
Train	0	3 228
Total	27	166 884

Plane: 95% of GHG emissions; 95% of kilometres travelled

Sources of 2021 GHG emissions from visitor transport



Kilometres⁵ travelled by visitors



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

5 Results by scope

Passenger transport

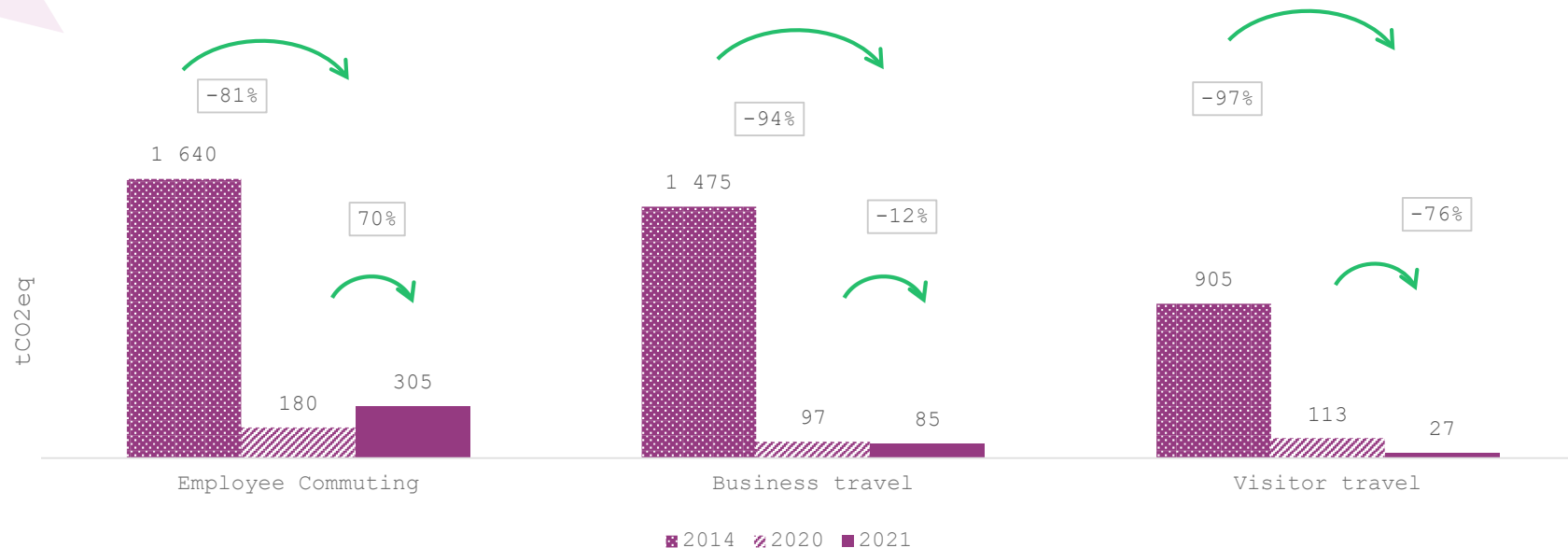


Comparison with previous years

GHG emissions tCO ₂ e	2014	2020	2021	Change 2014-2021	Change 2020-2021
Total transport	4 020	390	417	-90% ↘	+7% ↗

+70% in GHG emissions from **staff commuting**, mainly due to the increase in kilometres travelled (more staff and less teleworking) and car use (see next slide)

Business and visitor travel still low due to the COVID-19 crisis



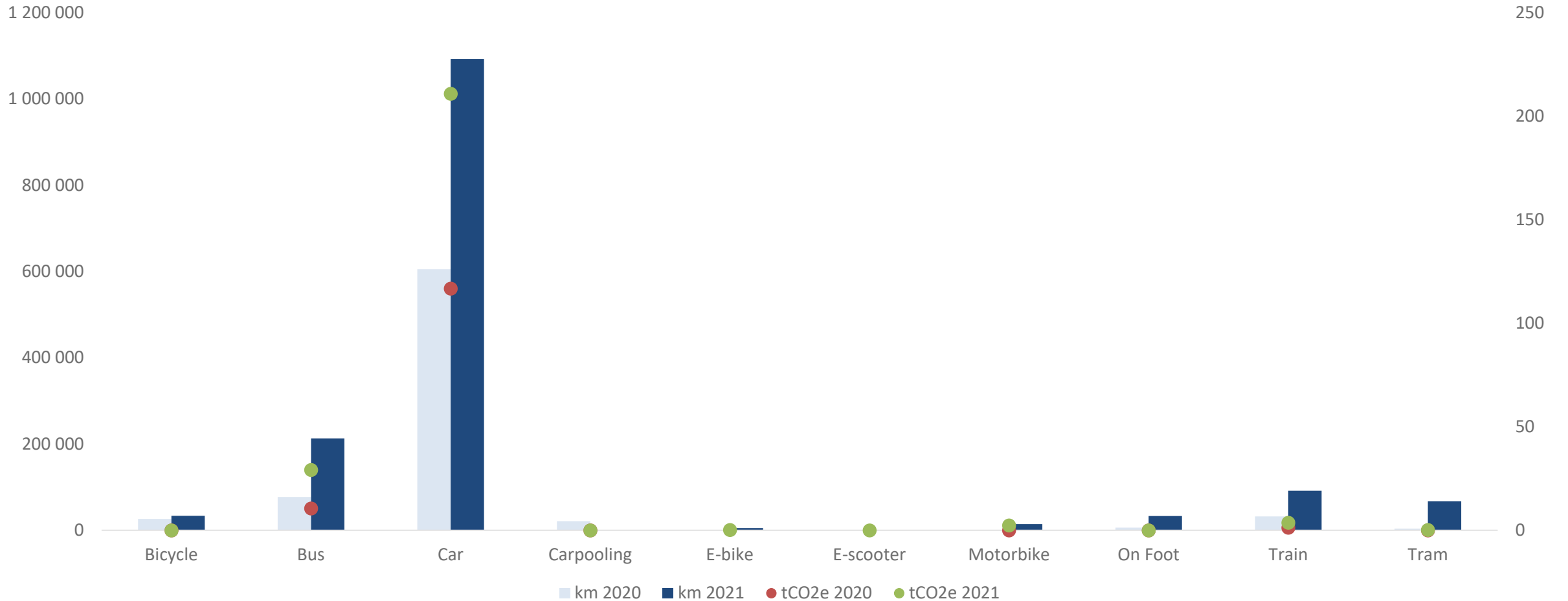
5

Results by scope

Passenger transport



Comparison with previous years – focus on staff commuting





Bilan Carbone® (1%)

Data and assumptions

✓ Heating

Emissions related to home heating: natural gas, fuel oil, heat pump, electricity and green electricity for GHG protocol, district heating and wood

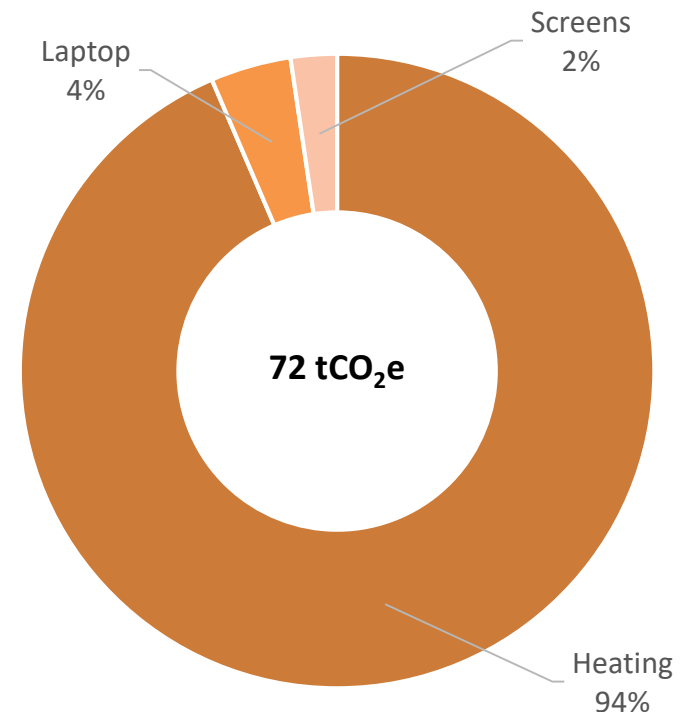
✓ Laptops and screens

Emissions related to the energy consumption of IT equipment (electricity and green electricity for GHG protocol)

Results

Bilan Carbone® (tCO ₂ e)	2021	2020
Heating	67	78
Laptop	3	10
Screens	2	5
Total	72	93

Bilan® Carbone emissions from teleworking





Bilan Carbone® (1%)

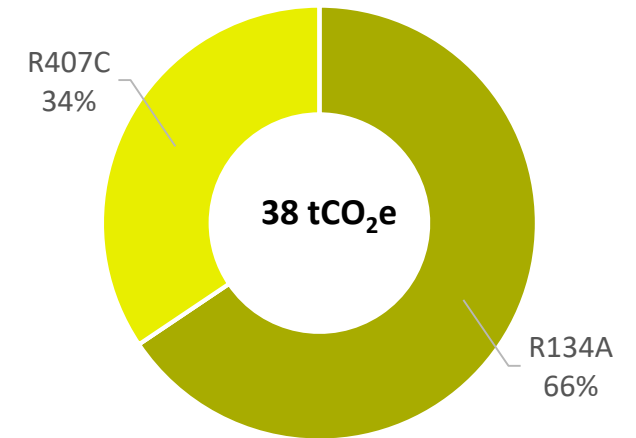
Data and assumptions

Refrigerant gases: cooling equipment refilled with refrigerant gases in 2021 (R134a, R404a, R407a and R452a). Refills were viewed as leaks.

Results and comparison with previous years

GHG emissions tCO ₂ e	2014	2020	2021	Change 2014-2021	Change 2020-2021
R134A	64	98	25	-61% ↓	-75% ↓
R452A	0	33	0		
R407C	18	6	13	-28% ↓	100% ↑
R404A	0	6	0		
Total	82	143	38	-54% ↓	-74% ↓

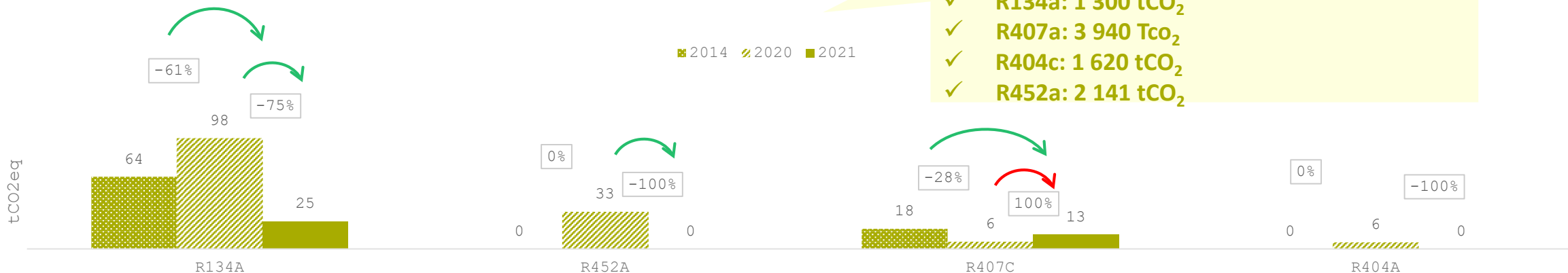
Total non-energy GHG emissions



Refilling refrigerants in refrigerators and freezers after COVID shutdown impacted 2020 emissions (2021 level remains low)

Refrigerant gases have a huge impact, with one tonne equivalent to:

- ✓ R134a: 1 300 tCO₂
- ✓ R407a: 3 940 Tco₂
- ✓ R404c: 1 620 tCO₂
- ✓ R452a: 2 141 tCO₂





Bilan Carbone® (<1%)

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

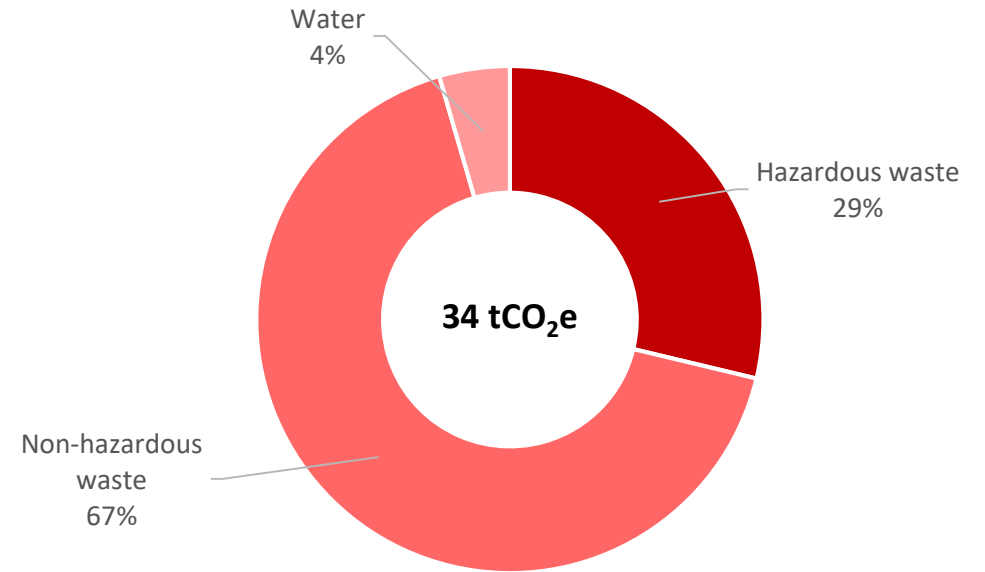
✓ **Water use (sewage)**

Data: based on water consumption, allocated to buildings based on occupancy

Results

Type of waste	tCO ₂ e
Non-hazardous waste	23
Water	1
Hazardous waste	10
Total	34

Total GHG emissions from waste



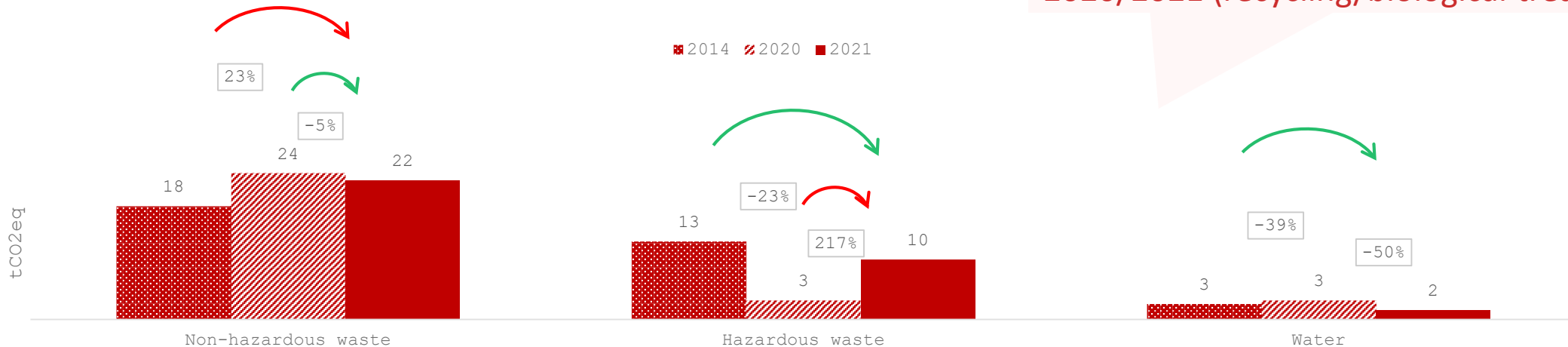


Comparison with previous years

GHG emissions tCO ₂ e	2014	2020	2021	Change 2014-2021	Change 2020-2021
Total waste	34	30	34	+1% ↗	+13% ↗

The scope changed between 2014 and 2020/2021: waste from third parties (service providers and subcontractors) is now included.

Accuracy of data on end life of waste has improved.
 Processing of food fats and oils improved from 2014 (worst case scenario incineration) to 2020/2021 (recycling/biological treatment).



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Results by scope

Transport of goods



Bilan Carbone® (<1%)

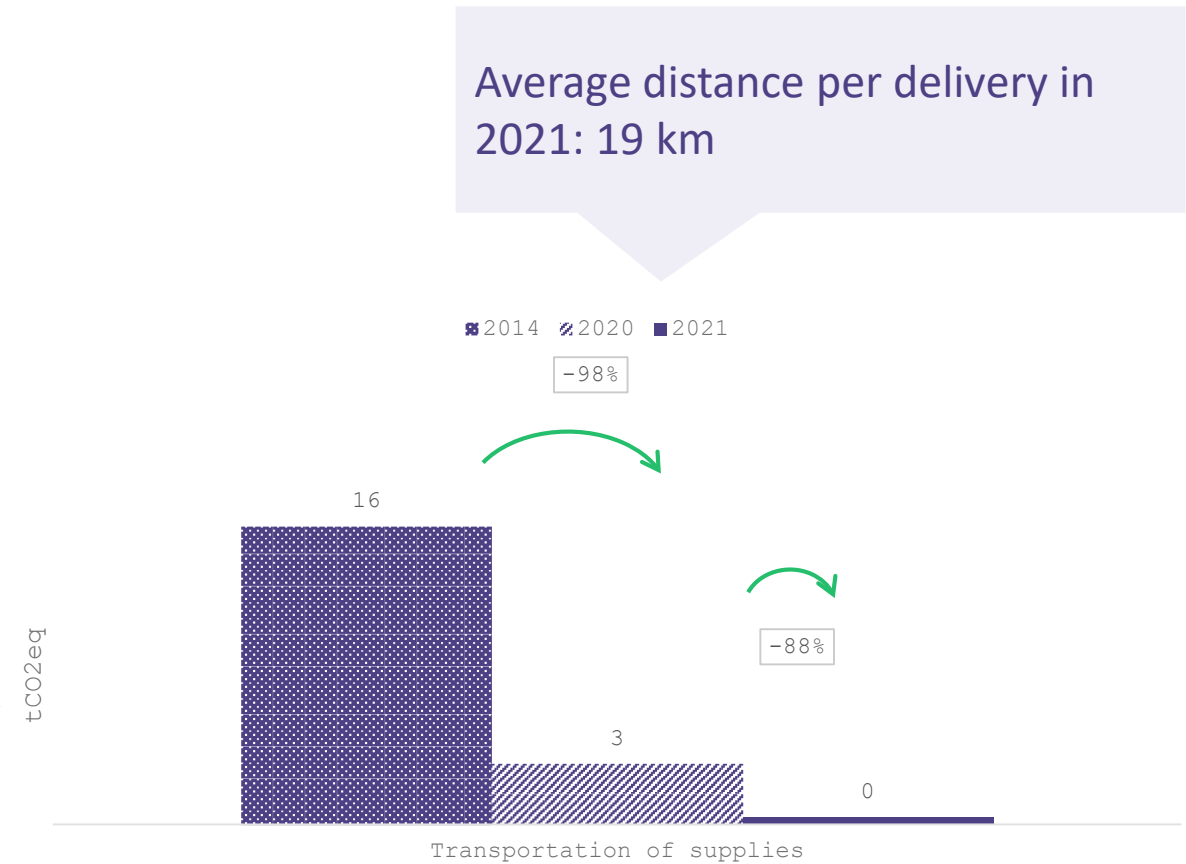
Data and assumptions

Transport by suppliers: Real data was available for 2021.

Results

Emission source	tkm	tCO ₂ e
Total transport of goods	1 341	0.4

92% decrease in total tonnes per kilometre for 2021 compared to 2020



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



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