21 SOLUTIONS

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Report on the ECA's 2022 Carbon Footprint

Calculation of the ECA's carbon footprint (Bilan Carbone® method)

BC BILAN CARBONE®

ECA 2022 Carbon Footprint Report

ECA 2022 Carbon Footprint Report

1 Executive summary

2022

968.8
Full-time equivalent

Three buildings

BC BILAN CARBONE®

BC BILAN CARBONE®

7 989 tCO_2e

Total 2022 GHG emissions

8 tCO_2e/FTE[1]
(total uncertainties 10 %)

24 %

"Passenger transport" was the largest source of emissions

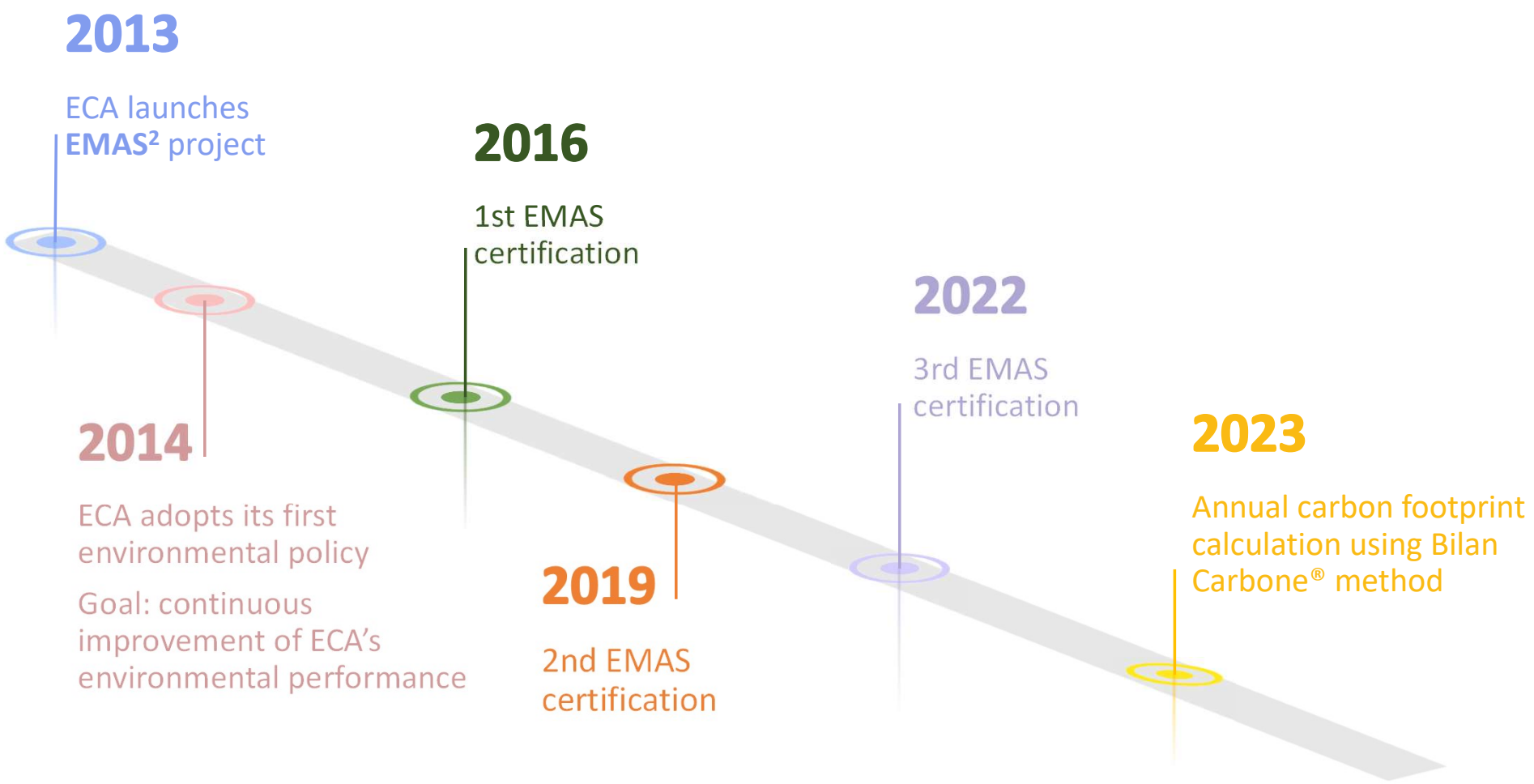
-25 %

Overall decrease in emissions since 2014

[1] Full-time equivalent.

ECA 2022 Carbon Footprint Report

2 Context of the study



2 Eco-Management and Audit Scheme.

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 2022 carbon footprint assessment were as follows:

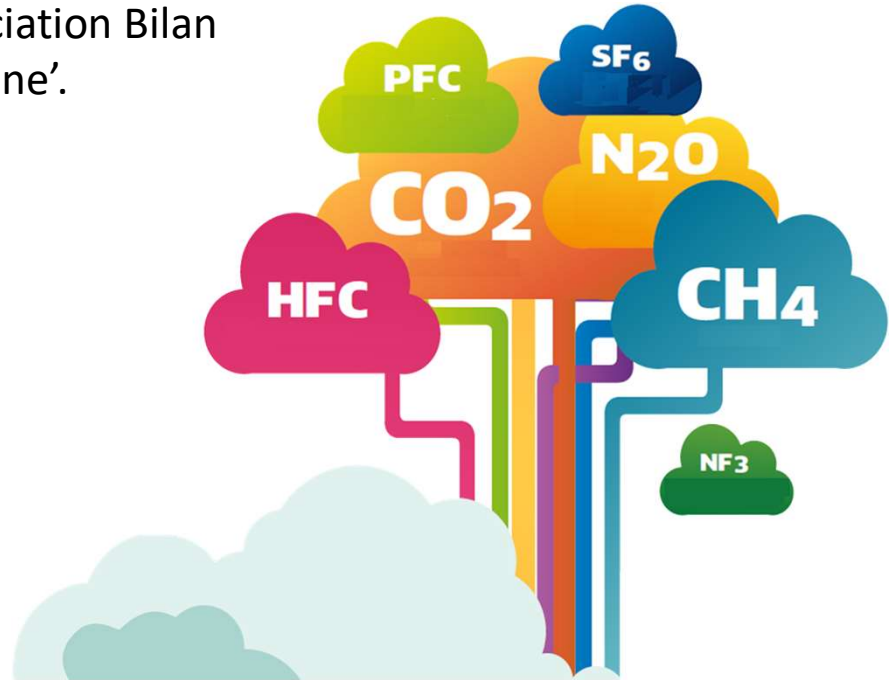
- the Bilan carbone® included comparisons with 2014, 2019 and 2021;
- external IT consultants (60,2 FTE) worked on site in 2022 (they were all teleworking in 2021);
- data for meals with meat was estimated by extrapolation based on the proportion of meat purchased in 2019 and the number of tickets sold for vegetarian meal in 2022;
- all IT emissions were reported in the “digital” category, including purchase of IT supplies and services;
- the 2022 renovation work on the K2 building was included in “capital goods” (5 097 m^2);
- emission factors were updated.

ECA 2022 Carbon Footprint Report

3 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: CO_2, CH_4, N_2O, SF_6, NF_3, 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, as it is not feasible to measure GHG emissions directly.

Data (unit) × Emission factor (tCO_2e/unit) = GHG emissions (tCO_2e)

3 Overview of carbon footprint methods

1 – Collect activity data

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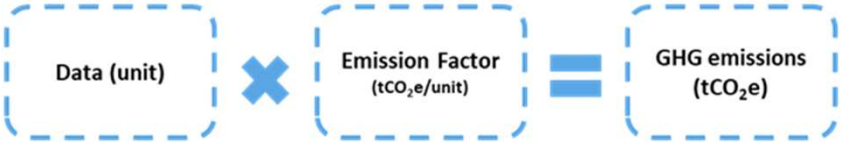
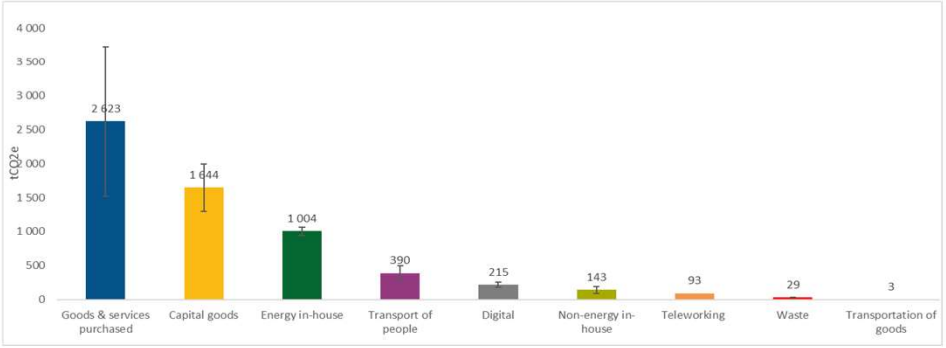
2- Use the emission factors from the Bilan Carbone® database

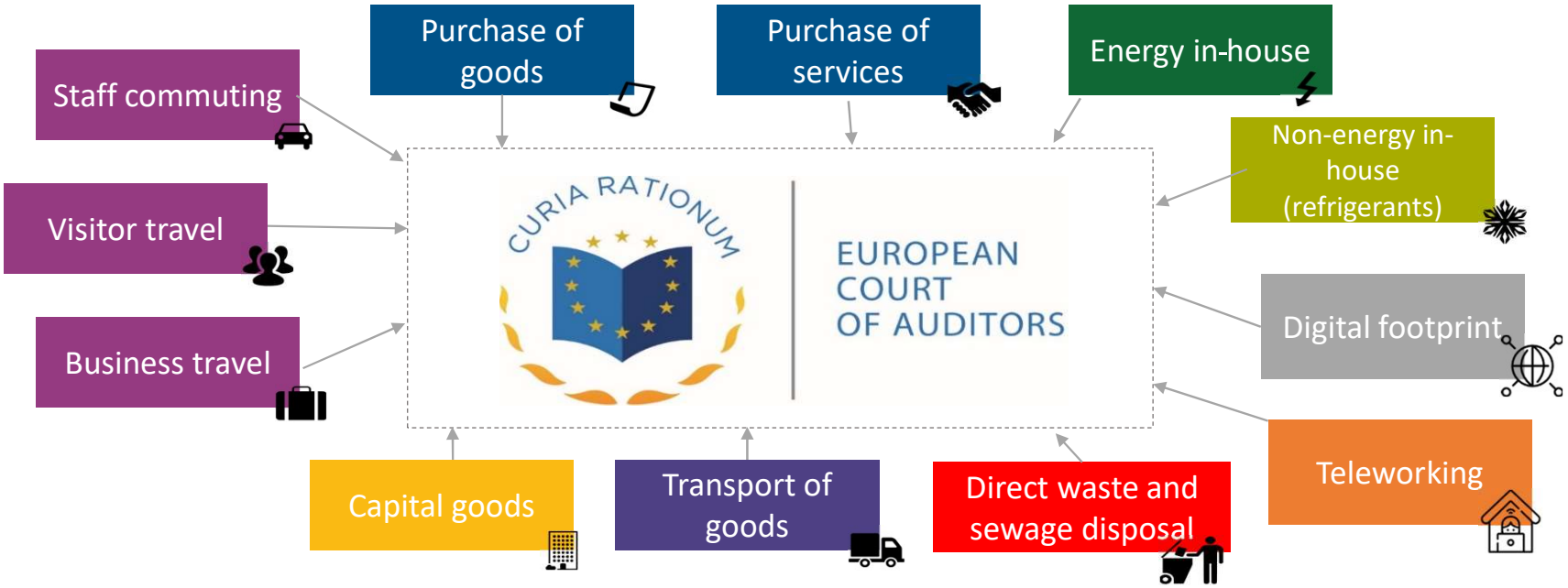


3- Visualize and analyze the results



3 Overview of carbon footprint methods

Operational scope of the Bilan Carbone® method in 2022



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 scope

Bilan Carbone® approach: operational control approach

Temporal scope: ECA activities in 2022

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

Building	Area (m²)	FTE
K1	22 404	286.2
K2	17 979	205.6
K3	28 240	477.0

Updated 2022 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: **968.8** full-time equivalent employees (FTE) as at end of 2022

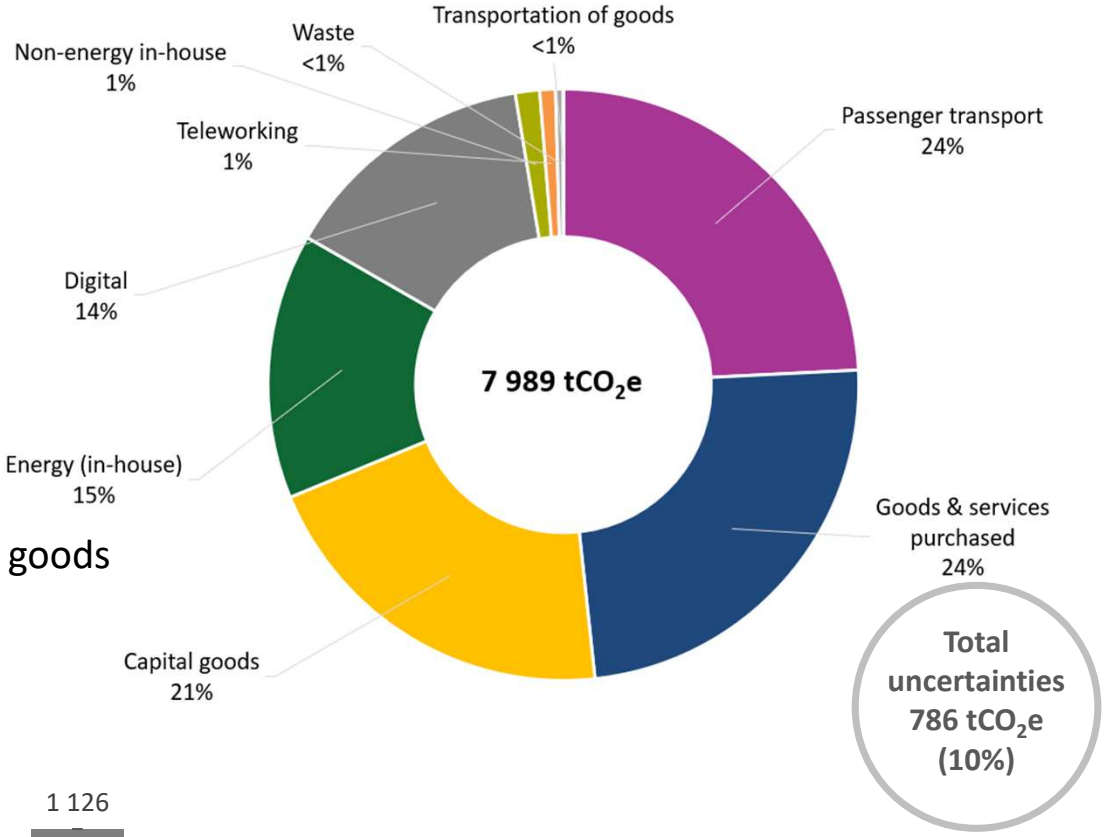
ECA 2022 Carbon Footprint Report

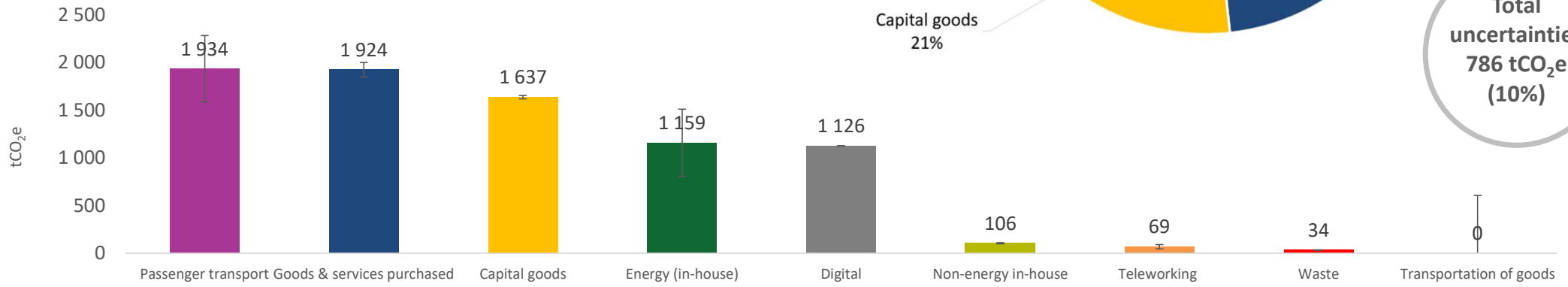
1. **Executive summary**
2. **Context of study**
3. **Overview of Bilan Carbone® method**
4. **Overall results**
5. **Results by scope**

4 Overall results

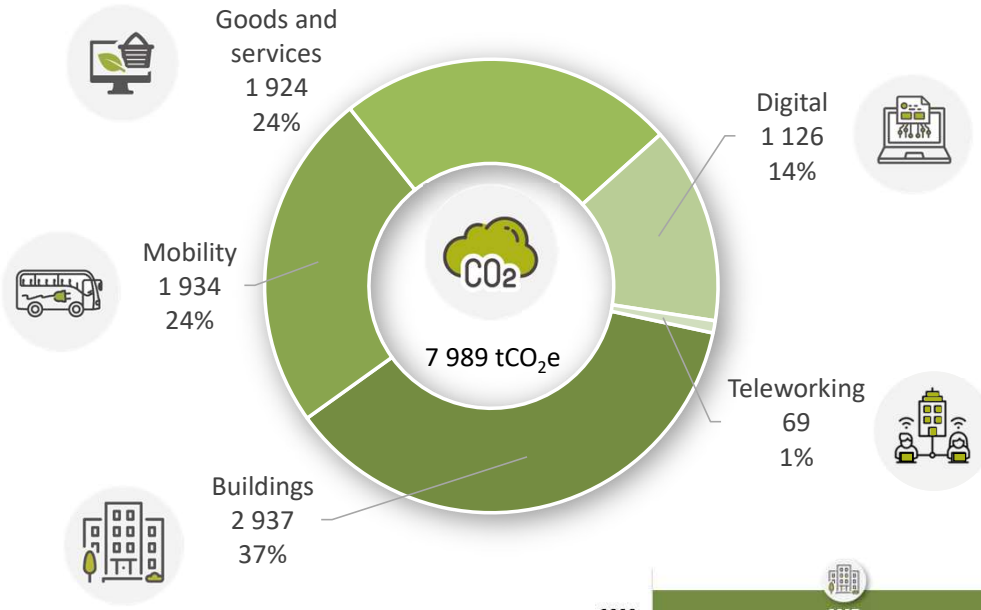
2022 Bilan Carbone® results

- ✓ **Total GHG emissions 7 989 tCO_2e**
- ✓ Largest sources of emissions:
  - **passenger transport (24%)**
  - **goods and services purchased (24%)**
  - **capital goods (21%)**
  - **energy in-house (15%)**
  - **digital (14%)**
- ✓ non-energy in-house, waste, teleworking and transport of goods made up the remaining 2%

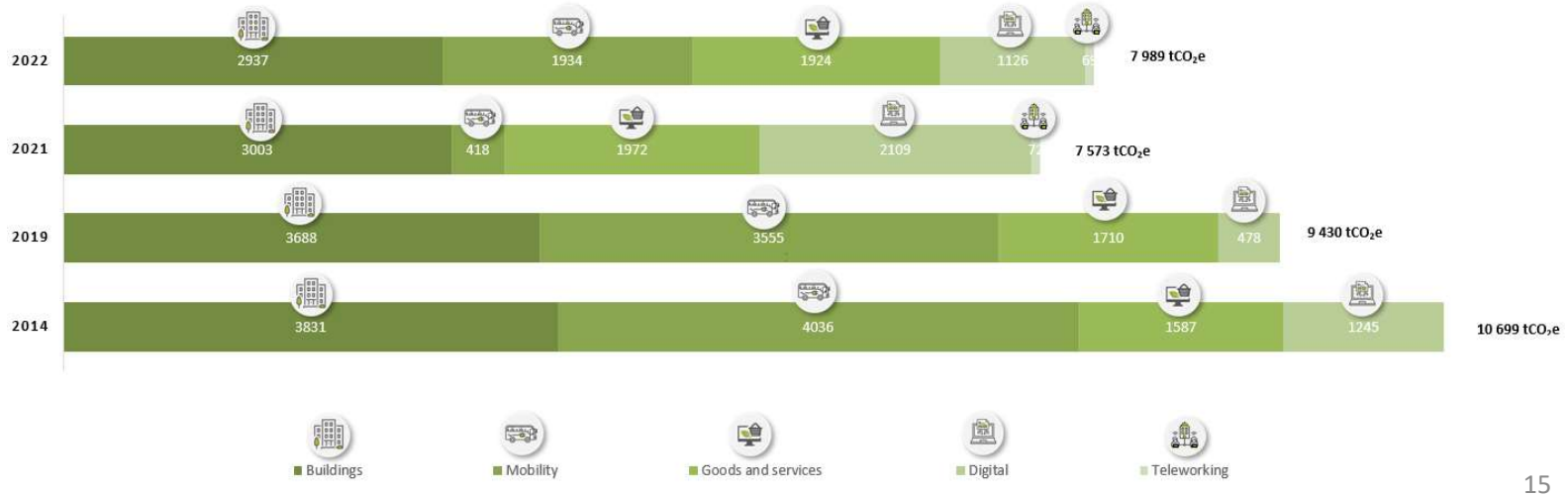




4 Overall results



Emissions related to buildings and mobility have been gradually reduced since 2014



4 Overall results

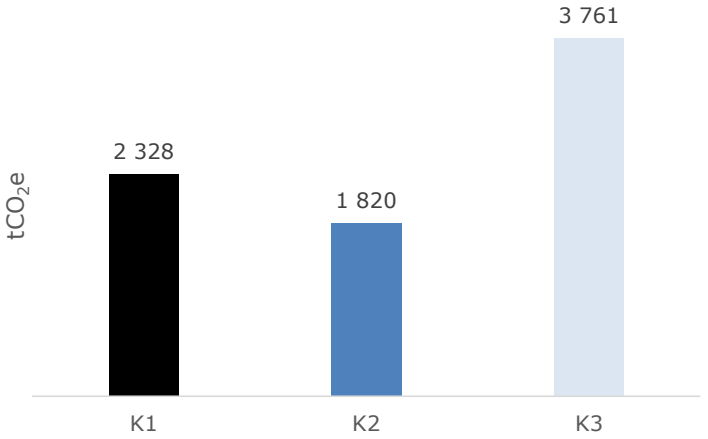
Emissions by building

Emissions were divided between the buildings according to staff headcount.

Building	FTE	Share (%)
K1	286.2	30%
K2	205.6	21%
K3	477.0	49%
Total	**968.8**	**100%**

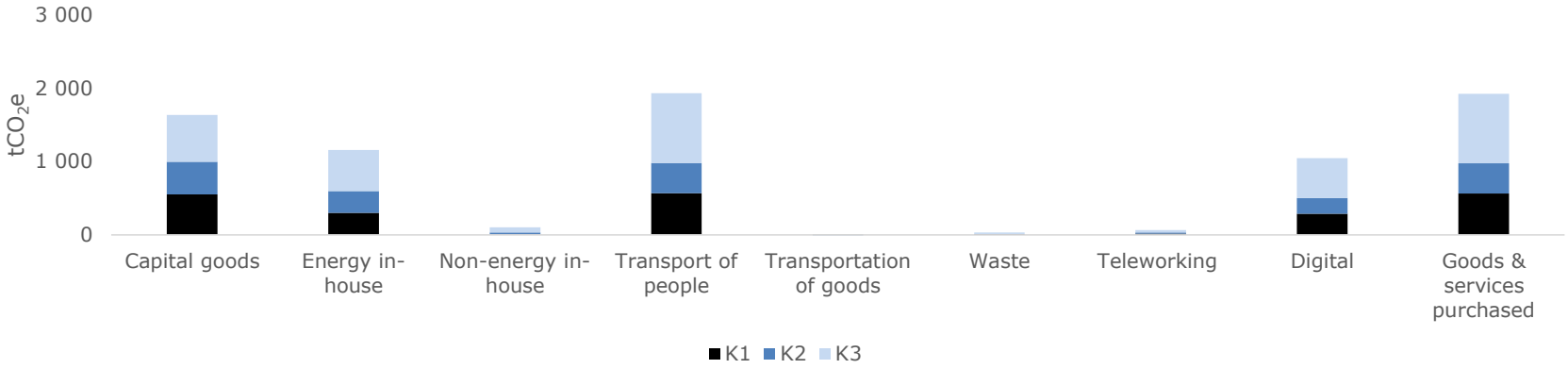
K3 houses the most staff and produces the largest share of emissions

Total GHG emissions by building



Building	tCO_2e
K1	2 328
K2	1 820
K3	3 761
TOTAL	**7 909**[3]

Emissions categories by building



3 Unassigned FTEs were equally distributed between the three buildings. Bersdorf's emissions (80 tCO_2e) are not included in this slide.

3 Overall results

Comparison with previous years

Overall, emissions rose by 6 % between 2021 and 2022 and have fallen by 25 % since 2014

Emission sources tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Capital goods	1 875	1.829	1 683	1.637	-13% ↘	-10% ↘	-3% ↘
Energy in-house	1 840	1.788	1 246	1.159	-37% ↘	-35% ↘	-7% ↘
Non-energy in-house	82	47	38	106	+30% ↗	+128% ↗	+182% ↗
Passenger transport	4 020	3.550	417	1.934	-52% ↘	-46% ↘	+364% ↗
Transportation of goods	16	5	<1	<1	-99% ↘	-95% ↘	-43% ↘
Waste	34	25	36	34	0%	+38% ↗	-6% ↘
Teleworking	/	/	72	69	/	/	-4% ↘
Digital	1 245	478	2 105	1.126	-10% ↘	+136% ↗	-47% ↘
Goods & services purchased	1 587	1.710	1 972	1.924	+21% ↗	+13% ↗	-2% ↘
TOTAL	**10 699**	**9 430**	**7 569**	**7 989**	-25% ↘	-15% ↘	+6% ↗

ECA 2022 Carbon Footprint Report

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Passenger transport (24%)

Data and assumptions

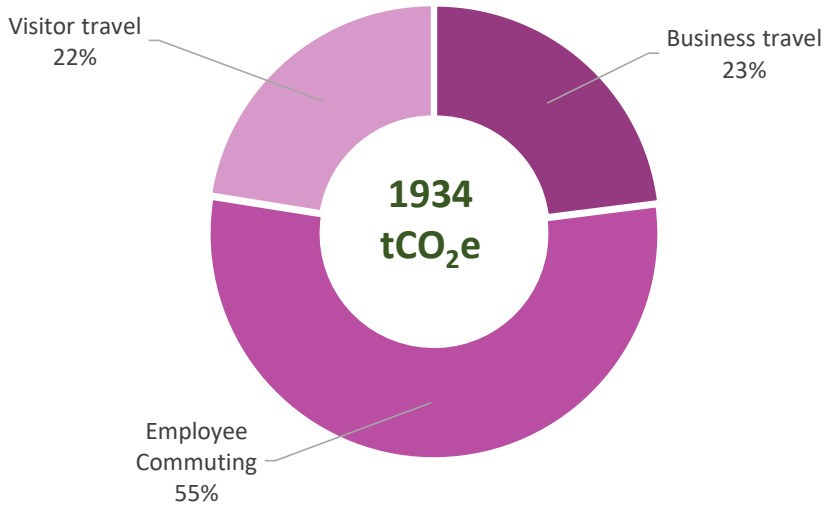
Emission sources

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

Results

Type of transportation	tCO_2e
Staff commuting	1 055
Business travel	445
Visitor travel	434
Total	**1 934**

Emissions from passenger transport by travel category



5 Results by scope

Passenger transport

Staff commuting

Data provided

✓ ECA data: 2022 staff commuting survey

Hypothesis

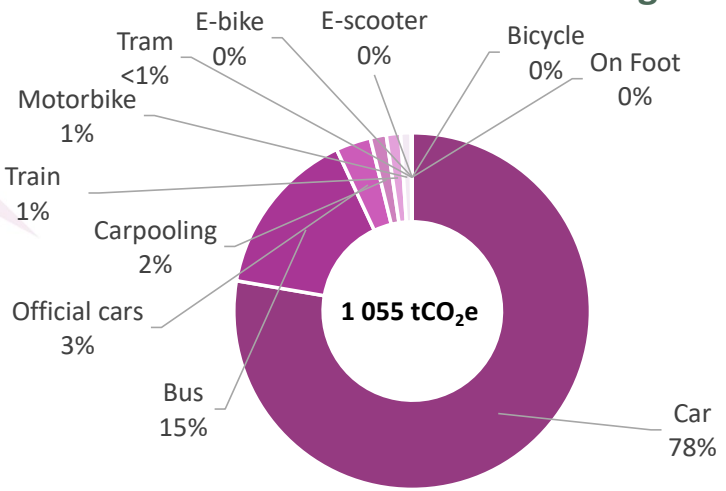
✓ Excluding teleworking days

Cars: 83% of GHG emissions; 71% of kilometres travelled

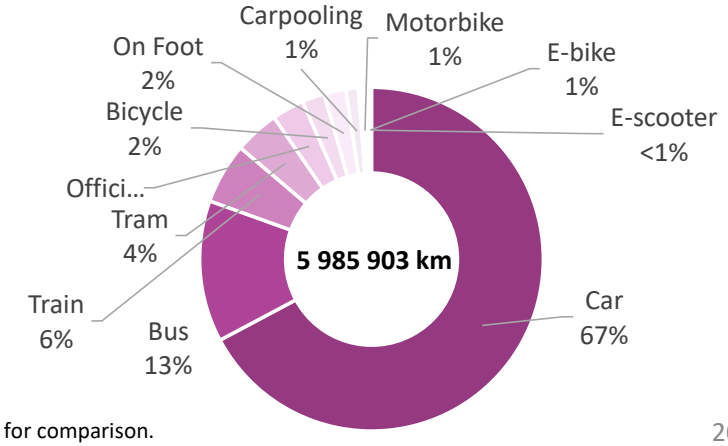
Extrapolated results

Staff commuting	tCO_2e	km
Car	820	4.021.227
Bus	161	796.916
Official cars[4]	34	181.442
Carpooling	15	69.936
Train	14	343.218
Motorbike	10	52.954
Tram	1	250.772
E-bike	<1	19.479
E-scooter	<1	1.177
Bicycle	0	124.833
On Foot	0	123.951
TOTAL	**1.055**	**5.985.903**

GHG emissions from commuting



Kilometres travelled for commuting



4 Carbon footprint calculation for official cars in litres or kWh. Number of litres and kWh consumption 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

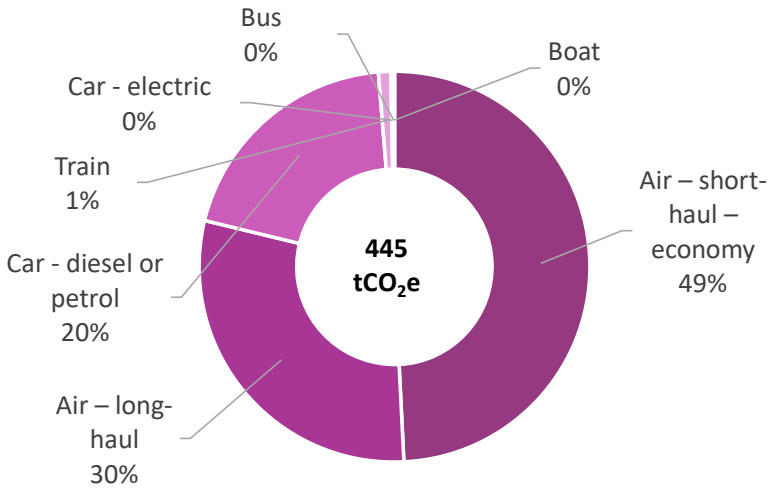
Results

Business travel	tCO_2e	km
Air – short-haul – economy	219	1 290 363
Air – long-haul	132	811 316
Car – diesel or petrol	88	200 473
Train	5	115 125
Bus	<1	3 552
Car – electric	<1	3 364
Boat	<1	1863
TOTAL	**445**	**2 426 056**

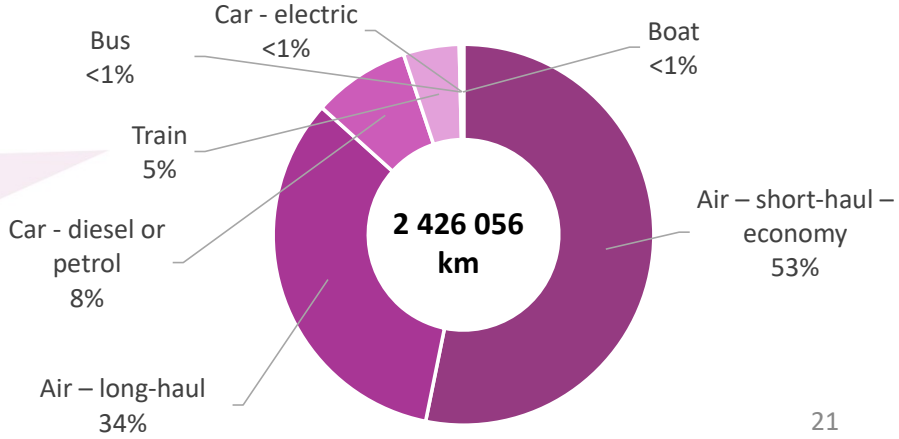
The travel agency reported a total of 33 tCO_2e for short-haul air travel. This difference could be due to the fact that aircraft can affect climate through other emissions and atmospheric processes (H20, NOx, sulfate, contrails, etc.).
There are still significant scientific uncertainties about their estimation. The French Ministry (ADEME) recommends including contrails.

Train: 1 % of GHG emissions; 5 % of kilometres travelled

GHG emissions from business travel



Kilometres travelled for business travel



5 Results by scope

Passenger transport

Visitor travel

Data provided

Number of visitors in 2022:

- ✓ 79 visits
- ✓ 1 464 visitors

Assumptions regarding mode of transport

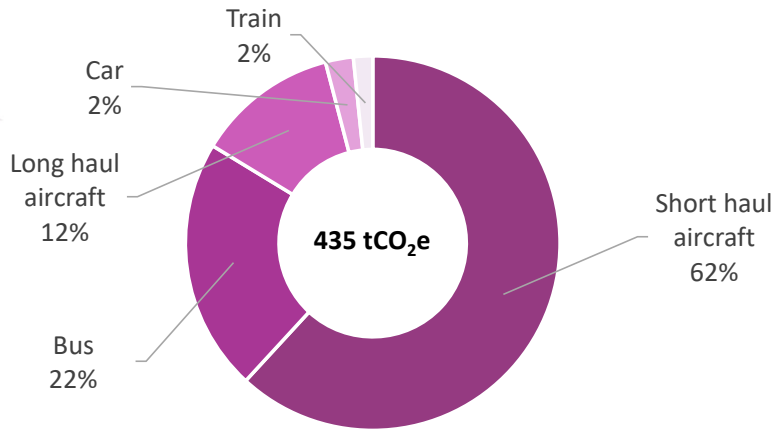
- ✓ Short-haul aircraft: EU
- ✓ Car: BE-LU
- ✓ Bus: DE
- ✓ Train: FR

Results

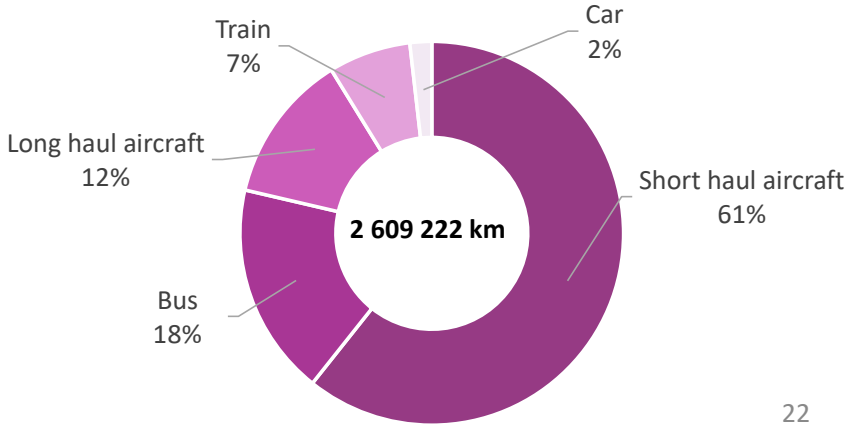
Visitor travel	tCO_2e	km
Short haul aircraft	269	1 583 941
Bus	95	467 985
Long haul aircraft	53	328 396
Car	11	48 132
Train	7	180 768
TOTAL	**435**	**2 609 222**

Plane: 74% of GHG emissions; 73% of kilometres travelled

Sources of 2022 GHG emissions from visitor transport



Kilometres travelled by visitors



5 Results by scope

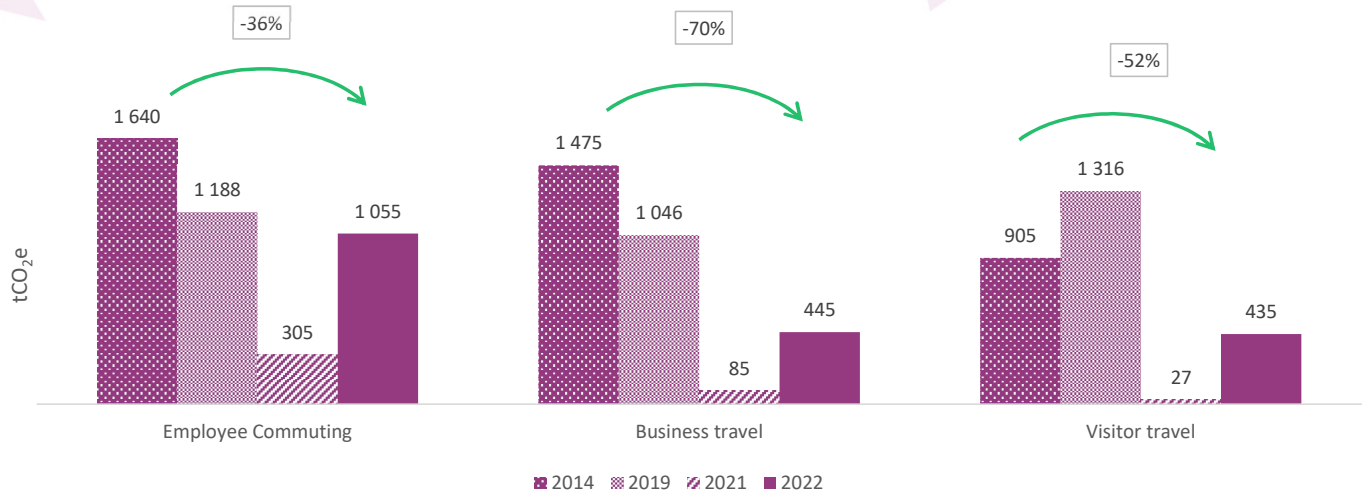
Passenger transport

Comparison with previous years

GHG emissions tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Total transport	4 020	3 550	417	1 934	-52% ↘	-46% ↘	+364% ↗

36% reduction in GHG emissions from **staff commuting** in 2022 compared to 2014, mainly due to the decrease in kilometres travelled by car

Business and visitor travel has increased after the COVID-19 crisis



Goods & services purchased (24 %)

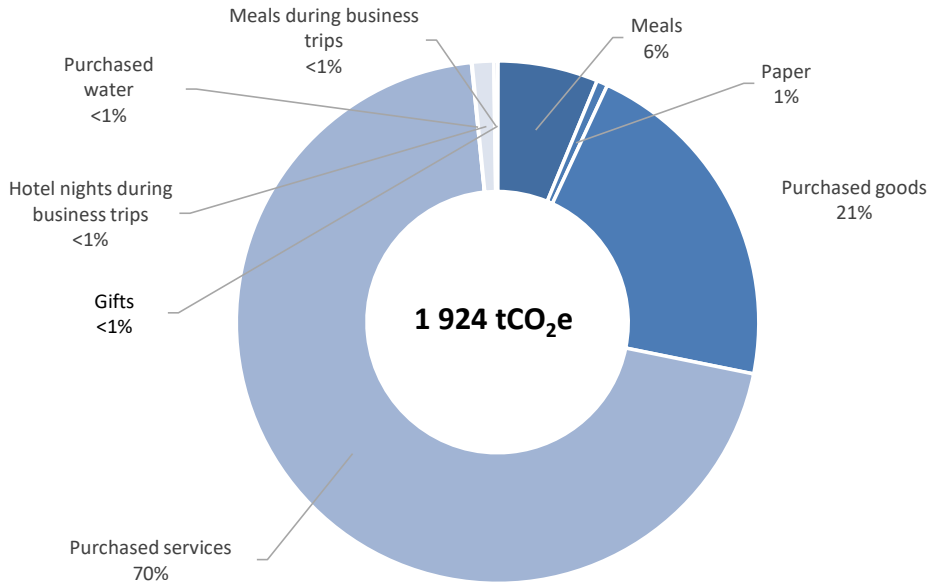
Data and assumptions

- ✓ **Services:** (click here to go to the slide)
- ✓ **Meals:** (click here to go to the slide)
- ✓ **Paper:** A4 75gr (95 %) and A3 75 gr/others (5 %), converted into weight (5 g/page)
- ✓ **Water purchased:** total water consumed in 2022
- ✓ **Gifts:** number and type of gifts converted into weight by type of material

Results

Type of goods or services	tCO_2e
Services purchased	1 351
Goods purchased	409
Meals	119
Hotel nights during business trips	25
Paper	13
Meals during business trips	5
Water purchased	<1
Gifts	<1
Total	**1 924**

Total GHG emissions from goods and services purchased



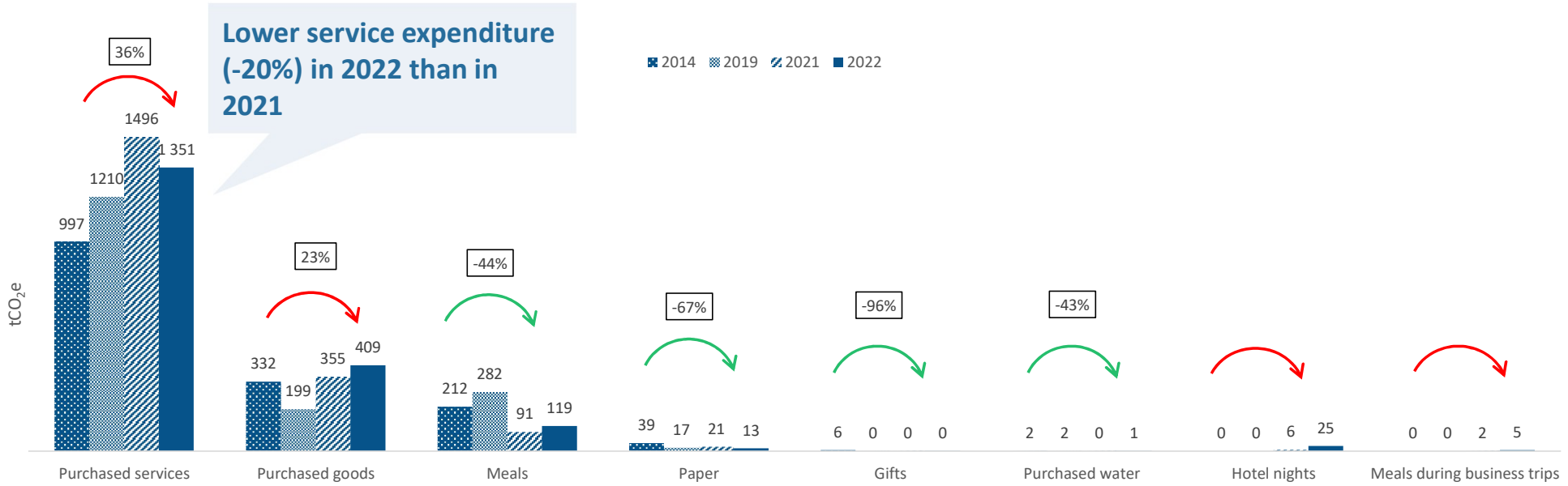
5 Results by scope

Goods & services purchased

Comparison with previous years

GHG emissions (tCO_2e)	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Total goods and services purchased	1 587	1 710	1 972	1 924	+21% ↗	+13% ↗	-2% ↘

A few categories have been transferred from "Purchased services" to "Digital" since 2020.



Services

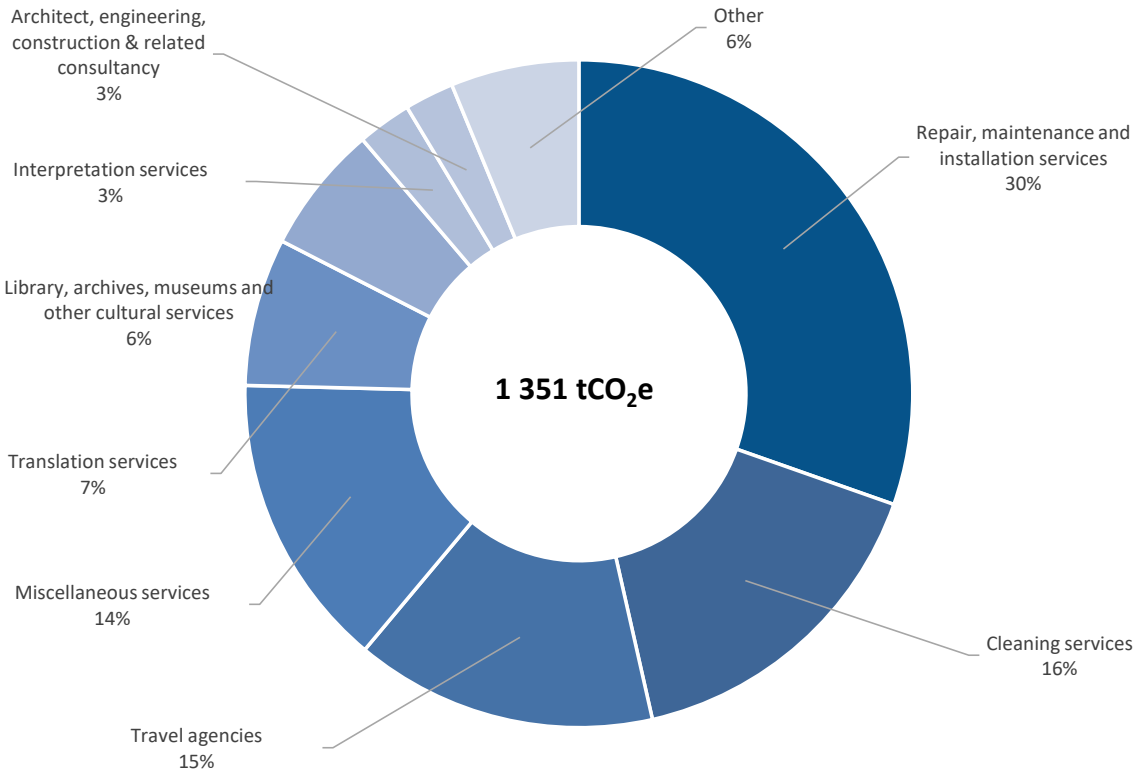
Data and assumptions

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

Results

Type of service	tCO_2e
Repair, maintenance and installation services	401
Cleaning services	212
Travel agencies	193
Miscellaneous services	189
Translation services	94
Library, archives, museums and other cultural services	82
Interpretation services	35
Labour recruitment and provision of personnel services	33
Architect, engineering, construction & related consultancy	31
Other	82
Total	**1 351**

GHG emissions from services purchased



Miscellaneous services were assigned an average services emission factor extrapolated from the Bilan Carbone® database.
These services ranged from equipment rentals for training (language classes, etc.), painting, document destruction, etc.
The 'Other' category includes advertising and marketing services, health and social work services, insurance & pension services, postal and courier services, sewage/disposal, real estate services.

Meals

Data and assumptions

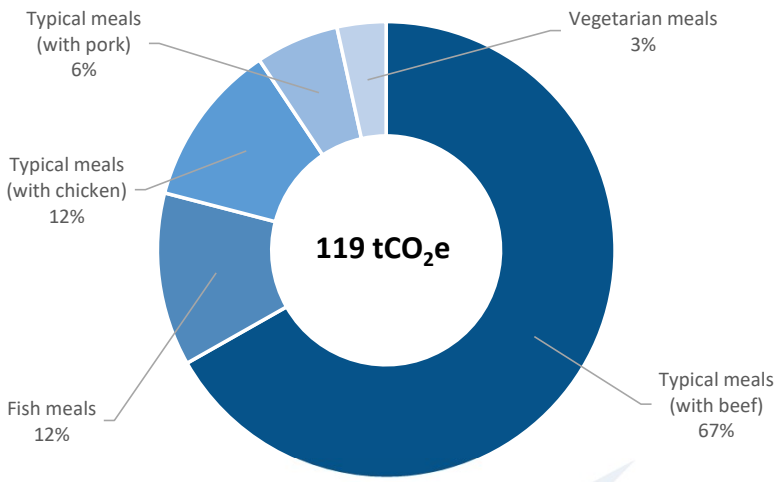
- ✓ Number of meals
- ✓ Data for meat dishes is estimated by extrapolation based on the breakdown of meat dishes in 2019 and the breakdown of meat vs vegetarian dishes sold in 2022
- ✓ Meat meals were broken down by quantities purchased in 2019 (27 % fish, 23 % beef, 19 % chicken, 16 % pork)

Results

Type of meal	tCO_2e
Typical meals (with beef)	80
Fish meals	14
Typical meals (with chicken)	14
Typical meals (with pork)	7
Vegetarian meals	4
Total	**119**

Replacing beef with chicken would reduce carbon impact by 50 %

GHG emissions from meals



Replacing beef with vegetarian option would reduce carbon impact by 144 %

Capital goods (20%)

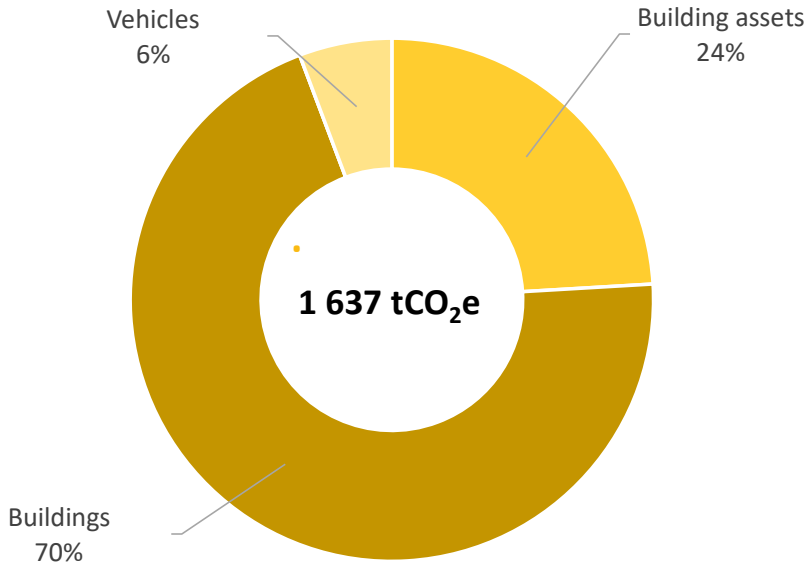
Data and assumptions

- ✓ **Buildings and car parks**: parking and office space (m^2)
  Renovation work included in building emissions (+5 097 m^2)
  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_2e
Buildings	1 150
Building assets	393
Vehicles	94
Total	**1 637**

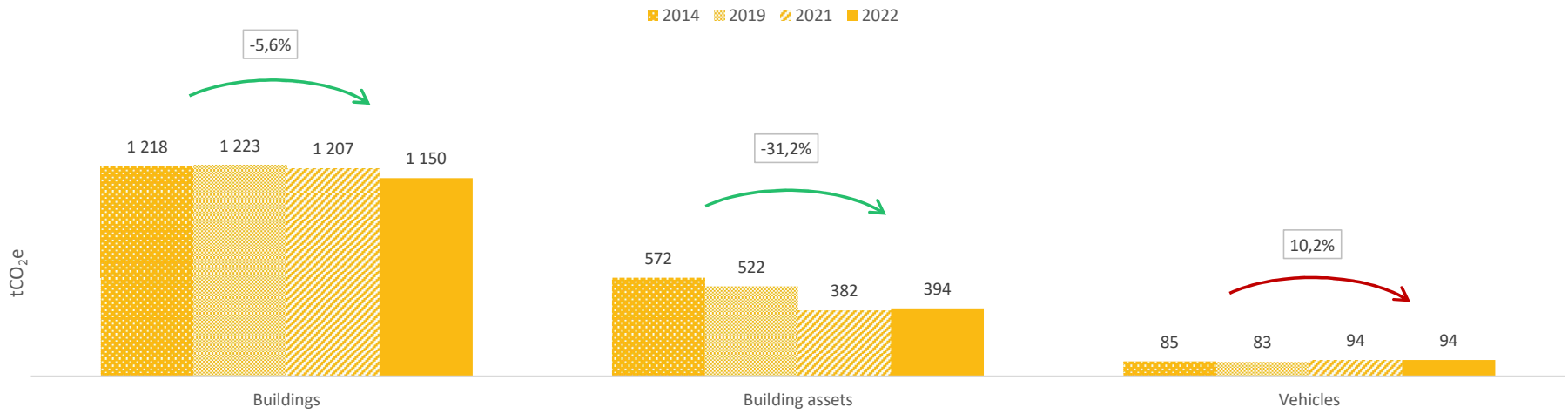
Total GHG emissions from capital goods



Comparison with previous years

GHG emissions tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Total capital goods	1 875	1 829	1 683	1 637	-13 % ↘	-11% ↘	-3% ↘

Net office space area has changed due to building renovation work in K2

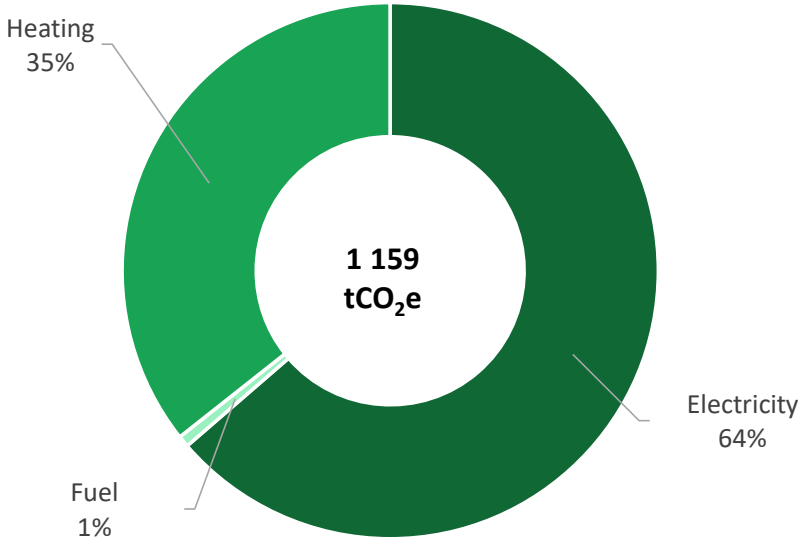


Energy (in-house) (15%)

Data and assumptions

- ✓ **Electricity consumption:**
  The ECA purchases guaranteed green electricity, but the Bilan Carbone® method calculates actual electricity consumption from the national grid (location-based).
- ✓ **Heat consumption:** 2022 consumption for each building. Energy mix communicated by the heating plant manager.

Total GHG emissions from energy



Results

Type of energy source	tCO_2e
Electricity	738
Heating	413
Fuel	8
Total	**1 159**

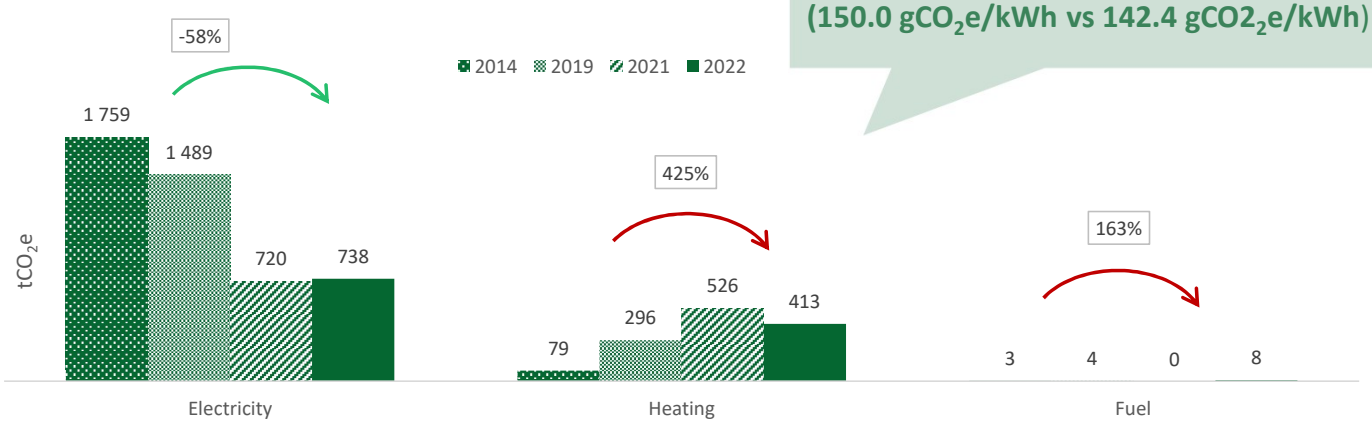
5 Results by scope — Energy (in-house + EDC)

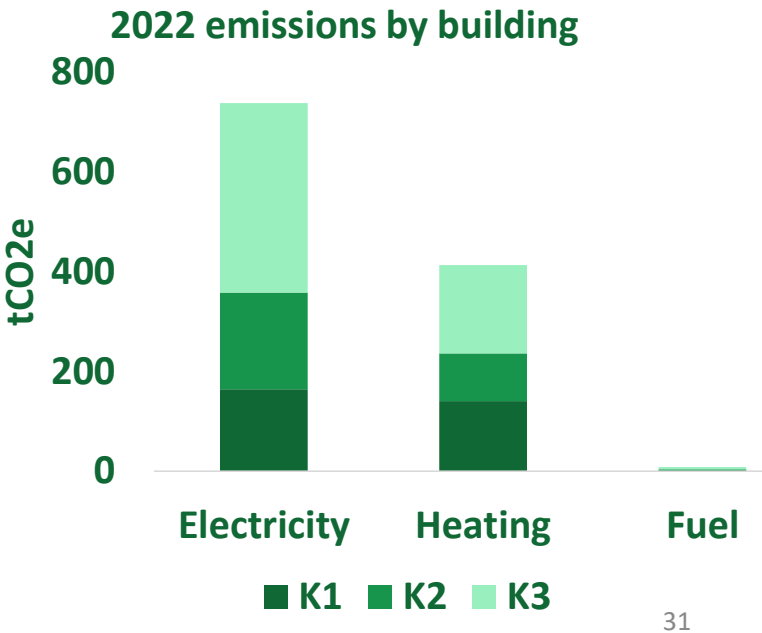
Comparison with previous years

GHG emissions tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Total energy	**1 840**	**1 788**	**1 246**	**1 159**	**-37%** ↘	**-35%** ↘	**-7%** ↘

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

Heating-related emissions have decreased in 2022 compared to 2021 (-21 %), due to lower consumption and the larger proportion of biomass in the energy mix **(150.0 gCO_2e/kWh vs 142.4 $gCO2_2e$/kWh)**





5 Results by scope

Digital

Digital (14%)

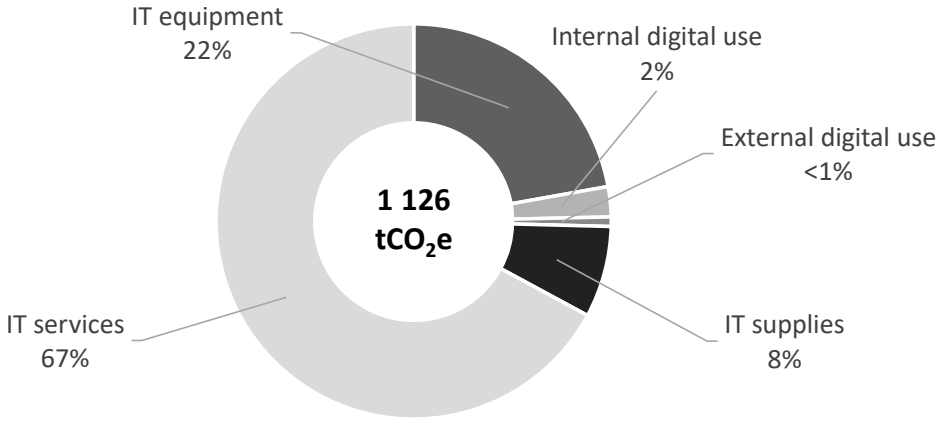
Data and assumptions

- ✓ **Internal digital use**
  Energy emissions related to K3 and Bersdorf data centres
- ✓ **External digital use**
  Emissions related to customers' to the ECA's website (including viewing of reports and online videos), Facebook, LinkedIn and Twitter pages, and email communication with the ECA
- ✓ **IT equipment**
  IT inventory by goods type

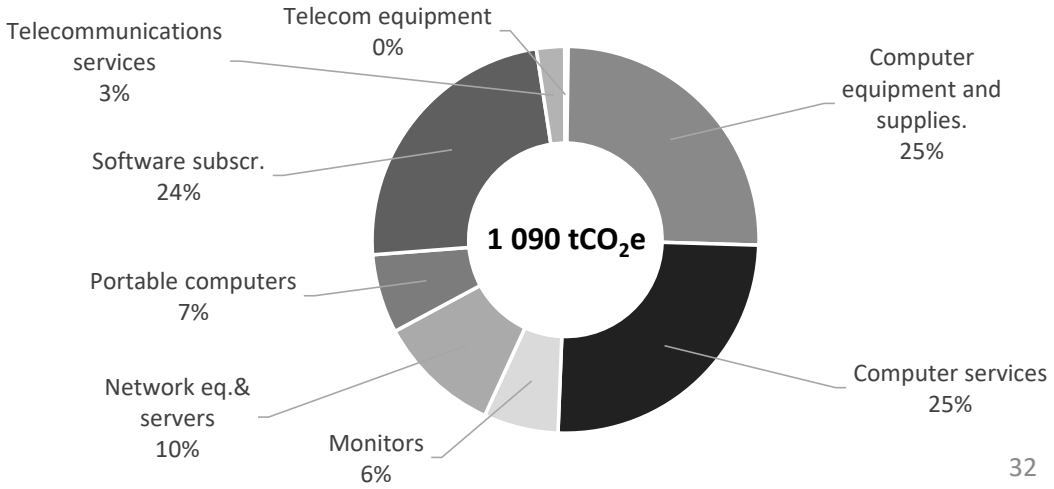
Results

Type of emissions	tCO_2e	
IT services	756	1 090
IT equipment	250	
IT supplies	84	
Internal digital use	28	
External digital use	8	
Total	**1 126**	

Total GHG digital emissions



Focus on IT services, supplies and equipment

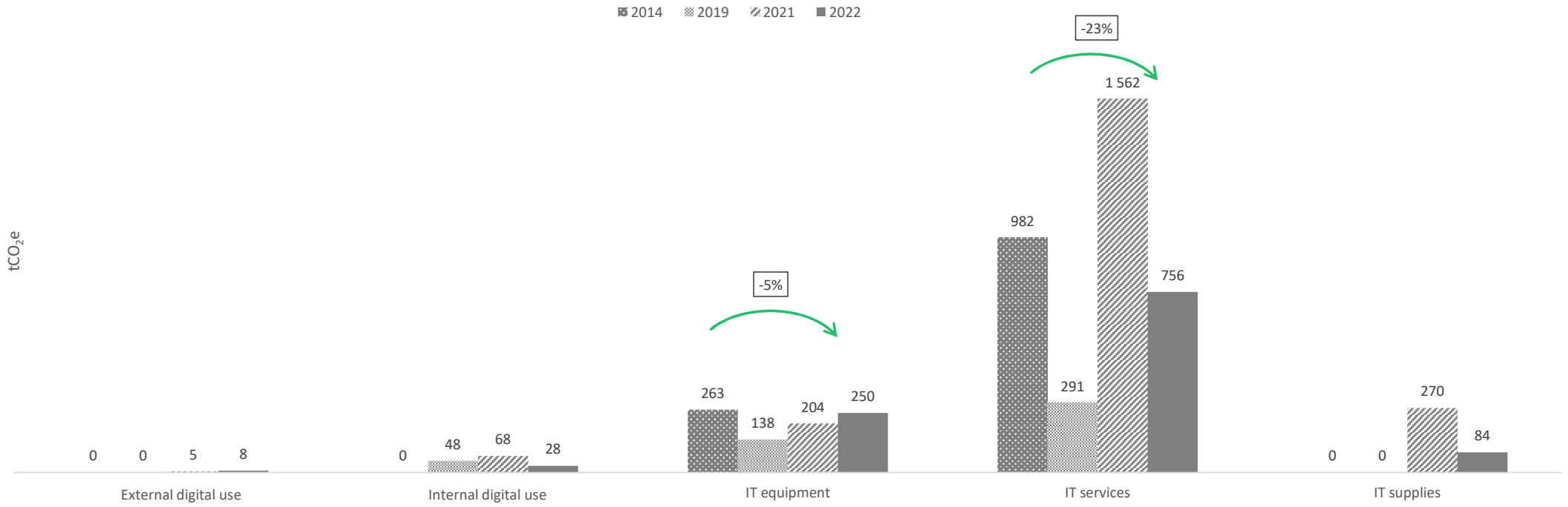


5 Results by scope

Digital

Comparison with previous years

GHG emissions tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Total digital	1 245	478	2 105	1 126	-10% ↘	+136% ↗	-47% ↘



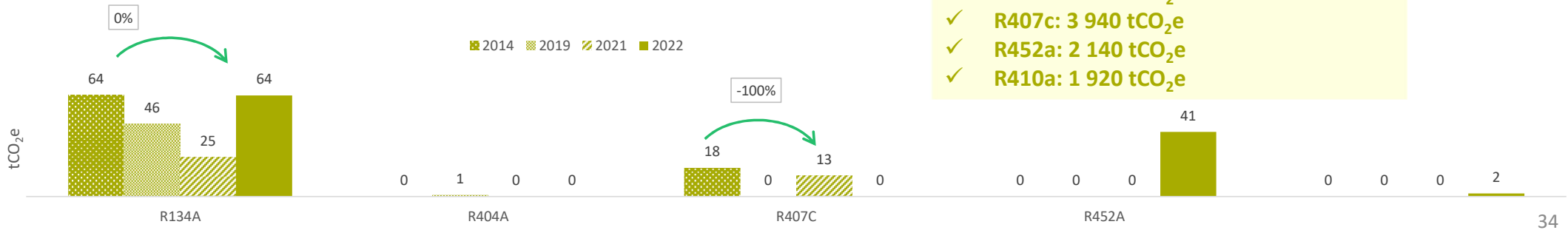
Non-energy in-house (1%)

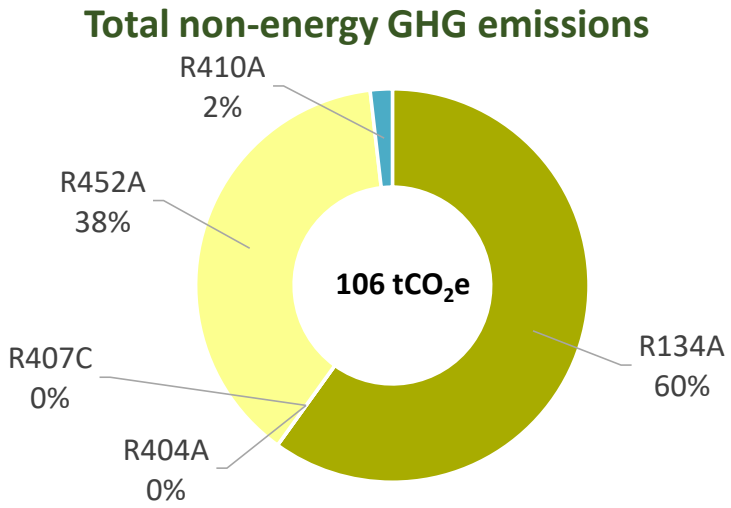
Data and assumptions

Refrigerant gases: cooling equipment refilled with refrigerant gases in 2022 (R134a, R407c and R452a). Refills were treated as leaks.

Results and comparison with previous years

GHG emissions tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2020-2022
R134A	64	46	25	64	**0%**	**+40%** ↗	**+158%** ↗
R404A	0	1	0	0	/	**-100%** ↘	/
R407C	18	0	13	0	**-100%** ↘	/	**-100%** ↘
R452A	0	0	0	41	/	/	/
R410A	0	0	0	2	/	/	/
Total	**82**	**47**	**38**	**106**	**+30%** ↗	**+128%** ↗	**+182%** ↗





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

- ✓ **R134a: 1 300 tCO_2e**
- ✓ **R404a: 1 620 tCO_2e**
- ✓ **R407c: 3 940 tCO_2e**
- ✓ **R452a: 2 140 tCO_2e**
- ✓ **R410a: 1 920 tCO_2e**

Teleworking (1%)

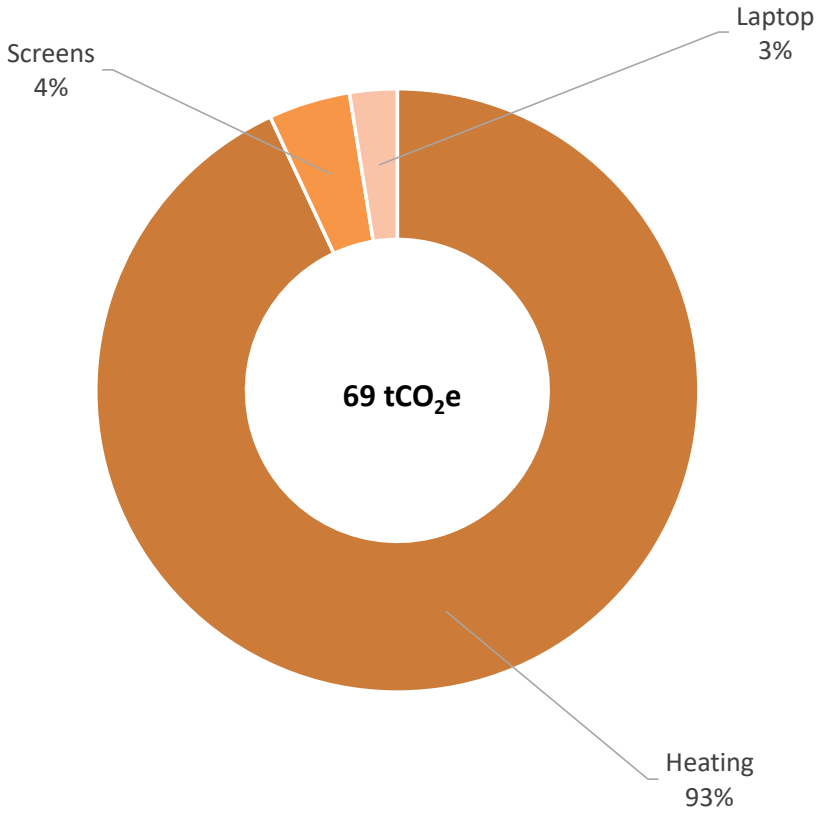
Data and assumptions

- ✓ **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

Teleworking	2021 tCO_2e	2022 tCO_2e
Heating	67	64
Screens	2	3
Laptop	3	2
Total	**72**	**69**

Bilan® Carbone emissions from teleworking



5 Results by scope

Waste

Waste <1%

Data and assumptions

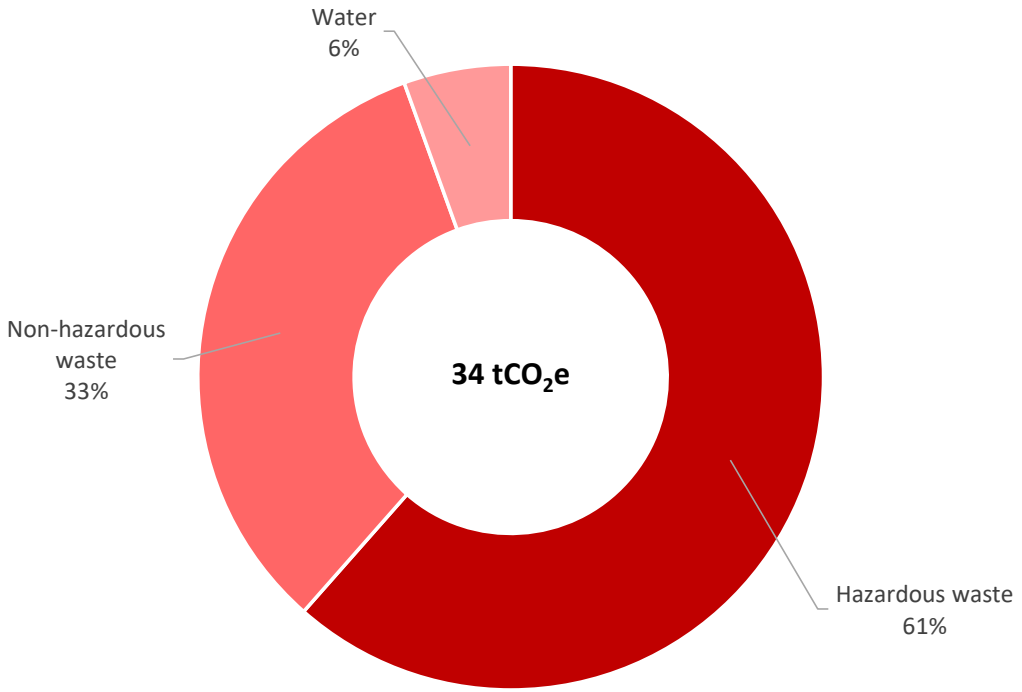
- ✓ **Waste**
  Non-hazardous: food and household waste, plastics, paper, cardboard and glass packaging

  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_2e
Hazardous waste	21
Non-hazardous waste	11
Water	2
Total	**34**

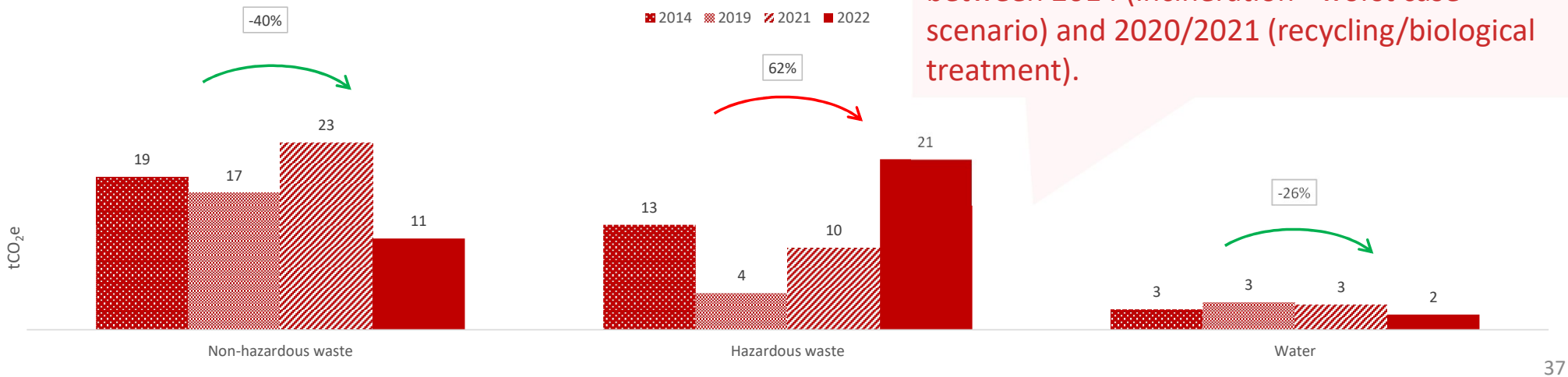
Total GHG emissions from waste



Comparison with previous years

GHG emissions tCO_2e	2014	2019	2021	2022	Change 2014-2022	Change 2019-2022	Change 2021-2022
Total waste	34	25	36	34	**0%**	**+38%** ↗	**-6%** ↘

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



Accuracy of data on end-of-life waste has improved.

Processing of food fats and oils improved between 2014 (incineration - worst case scenario) and 2020/2021 (recycling/biological treatment).

Transport of goods <1 %

Data and assumptions

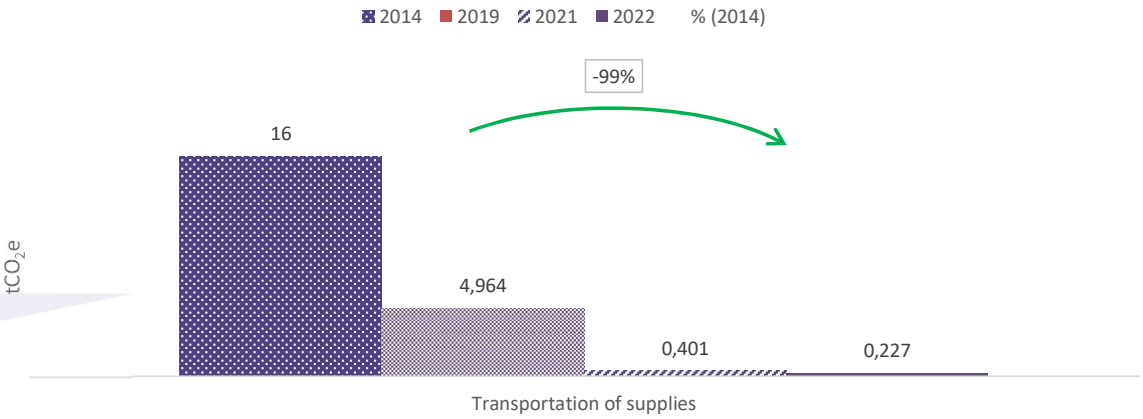
Transport by suppliers: Real data was available for 2022.

Average distance per delivery in 2022: 24 km

Results

Emission source	tkm	tCO_2e
Total transport of goods	1 399	**0.227**

93 % decrease in total tonnes per kilometre in 2022 compared to 2014



This report was created for the European Court of Auditors (ECA) by 21 Solutions & COMASE, using ECA data.

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