EUROPEAN COMMISSION
Environmental Management System

EMAS
VERIFIED ENVIRONMENTAL MANAGEMENT
BE-BXL-000003

Environmental Statement 2024 (data to 2023)

Contents

Chapter 1 Introduction and background information
1.1 What is the European Commission?
1.2 Description of activities at the Commission's EMAS sites
1.3 What's new in 2023
1.4 Environmental Policy
1.5 Governance structure
1.6 EMAS system scope - areas and staff numbers
1.7 Support and leadership by top management : Testimonies by the Director General of Human Resources and site management

Chapter 2 Significant aspects, objectives, indicators and targets
2.1 Significant aspects and objectives
2.2 Assessing the environmental impacts of European Union Policies
2.3 Indicators and targets

Chapter 3 Overview of the Commission's carbon footprint
3.1 3.1 Overall Commission summary
3.2 Detailed carbon footprint, and site specificities
3.3 Commission carbon footprint and greening action plan criteria
3.4 Conversion factors used for calculating emissions

Chapter 4 Using more efficient, sustainable and climate resilient buildings and workspaces
4.1 Introduction
4.2 Overview of buildings' energy consumption at the Commission's EMAS sites
4.3 Main actions to reduce energy consumption and emissions at EMAS sites
4.4 Final energy consumption data (per capita, and per square meter)
4.5 Total renewable energy consumption (MWh)
4.6 Fuel use by site
4.7 Developing site generated renewable energy
4.8 Emissions from buildings
4.9 Nuclear emissions

Chapter 5 Reducing mobility emissions through more sustainable modes of transport
5.1 Reducing emissions from professional travel
5.2 Reducing emissions experts' travel
5.3 Greener commuting options
5.4 Developing a more sustainable Commission vehicle fleet
5.5 The evolution of the overall vehicle fleet

Chapter 6 Monitoring and mitigating emissions from other sources
6.1 Fixed asset (embodied energy) for IT fixed assets
6.2 Emissions from teleworking
6.3 Emissions generated by service contracts

Chapter 7 Supporting a green and circular economy
7.1 'Greening' contracts
7.2 Evolution and recycling of IT inventory
7.3 Improving waste management and sorting
7.4 CO_2e emissions from waste management

Chapter 8	Biodiversity and food supply
8.1	**Preserving and restoring nature and biodiversity**
8.2	**Promoting a fair, healthy sustainable and good food system**
Chapter 9	Staff participation and communication
9.1	**Staff participation as EU Citizens - Setting a good example**
9.2	**Trainings**
9.3	**Communicating on green actions**
Chapter 10	Demonstrating legal compliance and emergency preparedness
10.1	**Legal compliance**
10.2	**Prevention and risk management**
10.3	**Emergency preparedness**
Chapter 11	Water, paper consumption and costs
11.1	**Water use**
11.2	**Drainage and wastewater disposal**
11.3	**Paper consumption**
11.4	**EMAS system costs (staff and contracts)**
11.5	**Resource costs - energy**
Chapter 12	Lessons learned and the way forward
12.1	**Lessons learned**
12.2	**Way forward**

Annexes

Annex 1	Buildings energy consumption and emissions
Annex 2	Waste production and emissions
Annex 3	Fixed assets (IT, buildings)
Annex 4	Emissions from refrigerant losses
Annex 5	Biodiversity and emissions from food, service contracts and paper
Annex 6	GPP data and EMAS costs
Annex 7	Fleet vehicles and professional travel
Annex 8	Telework
Annex 9	Scope by site (buildings list for Brussels and Luxembourg)
Annex 10	Evolution of emissions at the EMAS sites (tonnes CO2e)

Separate annex ES for the EC Representations (DG COMM)

Tables

Table 1.1 Nomenclature of Economic Activities (NACE) codes for the EMAS sites

Table 1.2 Evolution of surface areas

Table 1.3 Evolution of staff and contractor numbers

Table 1.4 Number of buildings registered under EMAS

Table 2.1 Summary of significant environmental aspects at site level

Table 2.2 Corporate performance indicator and targets

Table 3.1 Emissions at the EMAS sites in 2023 (tonnes CO_2e/p)

Table 3.2 Progress against Greening Commission emissions reduction target 2019-2030

Table 4.1 Final energy consumption at EMAS sites (2014 to 2023), MWh

Table 4.2 Buildings' final energy consumption, 2014-23

Table 4.3 Total renewable and non renewable energy consumption (MWh)

Table 4.4 Emissions from buildings' energy consumption at Commission EMAS sites (tCO2e), 2014 - 2023

Table 4.5 Emissions from buildings' energy consumption at Commission EMAS sites (tCO2e/p), 2014 - 2023

Table 4.6 Refrigerant emissions at Commission EMAS sites (tCO2e), 2018 - 2023

Table 4.7 Fixed asset (embodied) emission for Commission buildings, (2018-2023)

Table 5.1 Total missions emissions by mode (2019 - 2023), tCO_2e

Table 5.2 Total carbon intensity by site, (2019 - 2023) KgCO2e/km

Table 5.3 Total experts' missions emissions (2019-2023) by mode, tCO2e

Table 5.4 Total commuting emissions by site (tonnes)

Table 5.6 Number of vehicles in site fleets

Table 5.7 Number of hybrid or electric vehicles in site vehicle fleets

Table 5.8 Average tailpipe emissions of vehicle fleet according to manufacturer (gCO_2e/km)

Table 5.9 Emissions from Commission vehicle fleet (tCO_2e, combustion and upstream)

Table 7.1 'Greenness' of procedures, European Court of Auditors approach

Table 7.2 Total green products in the office supply catalogue

Table 7.3 Evolution of reported IT inventory from 2018 to 2023 at Commission sites*

Table 7.4 Number of IT and telephony items collected and recycled in Brussels and Luxembourg

Table 7.5 Total non hazardous waste (tonnes, tonnes/person)

Table 7.6 Total hazardous waste (tonnes, tonnes/person)

Table 7.7 Residual waste as proportion of total waste at EMAS sites (%; tonnes/person)

Table 8.1 Annual consumption of selected food groups in Commission cafeterias (tonnes)

Table 9.1 No. of different trainings on offer by EMAS site coordinators (for local staff with high environmental impact potential)

Table 9.2 No of training beneficiaries (among local staff with high environmental impact potential)

Table 9.3 Staff benefiting from training (%) offered by EMAS site coordinators

Table 11.1 Total water use (m_3/p, and l/m^2)

Table 11.2 Total paper consumption (tonnes)

Table 11.3 Office paper consumption (sheets/person/day)

Table 11.4 EMAS system costs (staff and contracts)

Table 11.5 Resource costs (energy) at EMAS sites (EUR; EUR/person)

Figures

Figure 1.1 Evolution of EMAS registered area (sq. m)
Figure 1.2 Evolution of staff in EMAS registered area
Figure 2.1 Evolution of selected Commission core parameters, 2015 to 2023
Figure 3.1 Evolution of the Commission's carbon footprint (headline categories), (tonnes CO_2e)
Figure 3.2 Main components of the Commission's carbon footprint in 2023 (%)
Figure 4.1 Final energy consumption at EMAS sites (2014 to 2023), MWh
Figure 4.2 Breakdown of refrigerant emissions by site in 2023
Figure 4.3 JRC Geel: Total air emissions buildings (tonnes) as minimum (SO_2, NO_x, PM_{10})
Figure 4.4 NO_x, CO_2 total emissions from Ispra trigeneration plant
Figure 4.5 Estimated NO_x emissions (tonnes) at JRC Petten
Figure 4.6 Atmospheric emissions containing α emitting aerosols at JRC Geel
Figure 4.7 JRC Karlsruhe exhaust air: Aerosols declaration to authorities (Bq/y)
Figure 4.8 Gaseous and liquid effluents at JRC Ispra
Figure 5.1 Selected emissions factors for travel (gCO_2e/passenger.km)
Figure 5.2 Emissions from staff professional travel *, tCO_2e
Figure 5.3 Distribution of service missions emissions reductions, 2019 -2023
Figure 5.4 Emissions intensity per site gCO_2e/passenger.km
Figure 5.5 Evolution of commuting emissions, tCO_2e
Figure 5.6 Evolution of Commission vehicle fleet characteristics
Figure 6.1 Components of teleworking emissions in 2023
Figure 6.2 Teleworking emissions at EMAS sites in 2023 ($kgCO_2e$/person)
Figure 6.3 Evolution of teleworking emissions, tonnes CO_2e
Figure 6.4 Emissions from service contracts (tCO_2e)
Figure 7.1 Contracts with additional 'eco' criteria per site, (% of total)
Figure 7.2 Evolution of 'green' products in office supply catalogue
Figure 7.3 Non-hazardous waste, tonnes
Figure 7.4 Evolution of hazardous waste generation (tonnes)
Figure 7.5 Evolution of residual waste (tonnes/person)
Figure 7.6 Emissions from waste management (tonnes CO_2e)
Figure 8.1 Sealed and natural space at the EMAS sites in 2023 (m2/person)
Figure 8.2 Annual emissions of seven food groups (tonnes CO2e)
Figure 10.1 Audit findings by type for 2020-3
Figure 11.1 Water use at the EMAS sites, 2014-2023 (m^3)
Figure 11.2 Evolution of total paper consumption (tonnes)
Figure 11.3 Evolution of printshop paper consumption (tonnes/person)
Figure 11.4 Emissions from total paper consumption (tonnes CO_2e)

Case studies

Case study 4.1 Case Study 4.1: Levelling up JRC buildings' performances
Case study 5.1 Making Commission's conferences and events even greener!
Case study 5.2 Velomai - an example of staff participation
Case study 5.3 EU Mobility week 2023 - an example of a staff campaign
Case study 5.4 Smart EV-Charging stations at the JRC
Case study 5.5 European Research Executive Agency (REA) - reducing physical presence in evaluations
Case study 7.1 Upcycling of old furniture in Brussels
Case study 7.2 JRC Ispra circular economy
Case study 8.1 JRC Geel's biodiversity activities
Case study 8.2 JRC Ispra's biodiversity activities
Case study 10.1 Workflow software for managing audit findings
Case study 11.1 Water use in JRC Ispra

AENOR International has, as in previous years, been responsible for the verification of the Commission's sites although for the verification exercise of 2024 exercise this did not include JRC Karlsruhe which instead was verified by Dr Georg Sulzer. The corresponding declarations are presented here:

AENOR

ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

AENOR CONFÍA, S.A.U., with EMAS environmental verifier registration number ES-V-0001, accredited for the scopes 99.00 "Activities of extraterritorial organisations and bodies", 84.11 "General public administration activities", 71.20 "Control activities and technical analysis", 72.11 "Research and experimental development on biotechnology", 72.19 "Other research and experimental development on natural sciences and engineering", 72.20 "Research and experimental development on social sciences and humanities", 35.11 "Production of electricity", 35.30 "Steam and air conditioning supply", 36.00 "Water collection, treatment and supply", 37.00 Sewerage" (NACE Codes),

declares to have verified whether the site as indicated in the environmental statement of the organisation **EUROPEAN COMMISSION** with registration number BE-BXL-000003 meet all requirements of Regulation (EC) N° 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS), amended by Regulation (EU) 2017/1505 and Regulation (EU) 2018/2026.

By signing this declaration, I declare that:

- the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) N° 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information of the environmental statement of the site reflect a reliable, credible and correct image of all sites activities, within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) N° 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Done at Madrid, 24/10/2024

Signature of the Verifier

AENOR CONFÍA, S.A.U.

DR. SULZER
UMWELTGUTACHTERBÜRO

ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

Dr. Georg Sulzer, with EMAS environmental verifier registration number DE-V-0041, accredited or licensed for the scopes 71.2 (Testing and technical analysis); 72.1 (Research and experimental development in natural sciences and engineering); 99 (Activities of extraterritorial organisations and bodies), (NACE Code) declares to have verified whether the site as indicated in the environmental statement of the organisation

EUROPEAN COMMISSION

1049 Bruxelles (Belgium))

Site: **Joint Research Center (JRC) Karlsruhe**
Herrmann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen

with registration number: BE-BXL-000003

meet all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) amended by Regulation (EU) 2017/1505 and Regulation (EU) 2018/2026.

By signing this declaration, I declare that:

— the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009, amended by Regulation (EU) 2017/1505 and Regulation (EU) 2018/2026

— the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,

— the data and information of the updated environmental statement of the site reflect a reliable, credible and correct image of all the sites activities, within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No. 1221/2009, amended by Regulation (EU) 2017/1505 and Regulation (EU) 2018/2026. This document shall not be used as a stand-alone piece of public communication.

Done at Altfraunhofen on 30/10/2024

Dr. Georg Sulzer
Hangleite 2, D-84169 Altfraunhofen

1 Introduction and background

1.1 What is the European Commission?

The European Commission is the executive arm of the European Union. Alongside the European Parliament and the Council of the European Union, it is one of three main institutions that govern the Union, and by far the largest. The Commission's activities are steered by 27 Commissioners, assisted by over 30 000 civil servants and other staff working in 34 Directorates-General (DGs), 16 services/offices and departments all over the world. Each Commissioner takes responsibility for a particular area of policy and heads one or more entities that are generally known as DGs.

The Commission's primary role is to propose and enact legislation, and to act as 'Guardian of the Treaties', which involves responsibility for initiating infringement proceedings at the European Court of Justice against Member States and others whom it considers to be in breach of the EU Treaties and other Community law. The Commission also negotiates international agreements on behalf of the EU in close cooperation with the Council of the European Union.

The Commission's headquarters are in Brussels (Belgium), but it also has offices in Luxembourg, Grange (Ireland), Geel (Belgium), Ispra (Italy), Karlsruhe (Germany), Petten (The Netherlands), Seville (Spain) and many other places, agencies in several Member States and representations in all EU countries (http://ec.europa.eu/about/ds_en.htm). On 1st December 2009, the Treaty of Lisbon entered into force giving the Commission the institutional tools needed for the various enlargements and for meeting the challenges of an EU of 27 Member States.

1.2 Description of activities at the Commission's EMAS registered sites

The Commission's main sites are registered under its Eco-Management and Audit Scheme (EMAS). **Brussels** is the main site, the Commission's administrative centre, with a range of buildings dominated by offices but including conference centres, catering facilities, storage depots, print shops, childcare, medical and sports facilities. The **Luxembourg** site is of a similar nature, though smaller but also hosts the main data centres of the Commission and a small radiation protection laboratory operated by the DG for Energy.

The five **Joint Research Centre (JRC) sites** outside Brussels are all incorporated under EMAS. In contrast to Brussels and Luxembourg, these scientific sites mainly comprise unique research and technical infrastructures. More details on the different JRC sites can be found here and a summary is presented as follows.

- ***JRC Geel (Belgium)*** is recognised worldwide, both for being a major certified reference material (CRM) producer as well as for its nuclear activities with its two nuclear accelerators Gelina and Monnet. The site is also known for its expertise in metrology and standardisation in several fields (nuclear, health and food, transport and border security).

- ***JRC Ispra (Italy)*** is considered one of Europe's leading research campuses with many laboratories and research infrastructures, including a power plant, a fire station and a water treatment facility as well as over 100 heated buildings. There are also several nuclear installations on the site as described below.
    - Nuclear activities in long term shutdown, i.e. interrupted and included in the decommissioning programme (ESSOR – ESSais ORgel , Cyclotron, LCSR - Laboratorio Caldo Studi e Ricerche, STRR - Stazione Trattamento Rifiuti Radioattivi Liquidi). The ECO-FARO Esperienza Critica ORGEL Fuel Assemblies melting Oven installation was dismantled in 2014.
    - Installations where activities functional to the decommissioning programme are performed, e.g. radioactive waste management (Stazione Gestione Rifiuti Radioattivi, Stazione Trattamento Effluenti Liquidi, Tank farm, Interim Storage Facility, Dry Wells) and nuclear fuel dismantling (Atelier Démantèlement Eléments Combustible),
    - Laboratories where research activities connected to nuclear safety and safeguards are performed (PERLA: PERformance LAboratory, PUNITA: PUlsed Neutron Interrogation Test Assembly).

- ***JRC Karlsruhe (Germany)*** is a self-contained site located in a research campus (KIT Campus Nord) on the outskirts of Karlsruhe, and the core of the JRC research for Nuclear Safety and Security. Research activities are conducted only in the nuclear field within the framework of the EURATOM treaty. They cover the following: fundamental properties and applications, safety of nuclear fuels and fuel cycle, nuclear waste management and decommissioning, monitoring of radioactivity in the environment, nuclear safeguards, nuclear non-proliferation and security (including trainings e.g. EUSECTRA).

- ***JRC Petten (The Netherlands)*** executes and manages institutional and competitive research activities to support European policy-making for energy, mobility and climate. In particular, for energy - ensuring sustainable, safe, secure and efficient energy production, distribution and use); for mobility - fostering sustainable and efficient mobility in Europe; and for climate - providing scientific and technical analysis to support to integrated air quality, climate and related policies.

- ***JRC Seville (Spain)*** provides socio-economic and techno-economic support for the conception, development, implementation and monitoring of EU policies. It has advanced computing infrastructure. As an administrative building, it is similar in nature to the EMAS sites of Brussels and Luxembourg, with the added complexity of occupying rented premises.

DG SANTE's site at Grange, near Dublin Ireland is a purpose built low level wooden clad structure dating from 2002 and set in countryside 45km north west of Dublin. It accommodates Directorate F, Health and Food Audits and Analysis, but was previously known as the Food and Veterinary Office (FVO). Many staff members are inspectors or auditors and travel frequently, and typically up to half may be away from the office at any one time.

The activities of the **Houses of Europe** are typically administrative, communication and public outreach activities, augmented by additional functions such as conference and meeting organisation, supporting the local activities of EP Members (in the case of EPLOs), and similar. EMAS in 2021 with the sites of **Vienna (Austria)** and **Valletta (Malta)**. In 2022 the sites **Budapest (Hungary)** and **Nicosia (Cyprus)** were added. In 2023 the sites **De Haag (the Netherlands)**, **Copenhagen (Denmark)** and **Sofia (Bulgaria)** were added These sites are jointly managed with the European Parliament's Liaison Offices in buildings known as the Houses of Europe (HoE), data for the HoE are included in a separate Annex as a standalone document, due to their small size compared to the other sites and to the continuous increase of the number of sites during the years.

Contacts for further information about the Commission's Environmental Management System

For global enquiries, please contact EC-EMAS@ec.europa.eu.
For site specific queries, the contact points are listed below:
• OIB-RE3-EMAS@ec.europa.eu (Brussels)
• OIL-EMAS@ec.europa.eu (Luxembourg)
• JRC: Virginie.TREGOAT@ec.europa.eu (JRC Geel); JRC-ISPRA-ENVIRONMENTAL-OFFICE@ec.europa.eu (JRC Ispra); Andreas.BITTERHOF@ec.europa.eu (JRC Karlsruhe); Franz.HUKELMANN@ec.europa.eu (JRC Petten); JRC-SEVILLE-ENVIRONMENT@ec.europa.eu (JRC Seville)
• COMM-EMAS-IN-REPRESENTATIONS@ec.europa.eu

1.3 What was new in 2023?

In 2023 the Commission continued to implement the Communication* establishing the way towards climate neutrality in 2030.

The main system changes since 2022 related to the calculation of the **carbon footprint**, specifically:

- introducing greater coherence with the Greenhouse Gas (GHG) protocol which affected the calculation of emissions from fixed assets (except buildings), thereby accounting for the total cradle-to-gate emissions of purchased capital goods in the year of acquisition
- adding new categories in the total carbon emissions calculation such as for furniture and additional food categories (e.g. lamb, veal, fruits, vegetables...)
- upgrade, through a new 'in house' dashboard, in reporting emissions from professional travel by staff and experts
- harmonising reporting service contracts between sites, with simplified classification including two new categories

Actions identified as contributing directly to achieving the **Greening Communication objective** make up a sizable proportion of EMAS actions. Around 300 actions were identified in the 2023 Global Annual Action Plan rising to nearly 400 in 2024.

The **scope** of the EMAS system continued to expand with the addition of three further Commission Representations in Member State - Den Haag, Copenhagen and Sofia, bringing the total to seven.

While the number of individual sites within the Commission's registration increased to 15, as the total surface area covered by buildings registered in the system remained below the highest levels recorded from 2019 to 2021 (**Figure 1.1**). The slight increase in surface area from 2022 to 2023 was due largely to the inclusion of a new major building (L107), also contributing to a rise in staff (**Figure 1.2**). Since the EMAS system reached relative maturity in 2014 when it included the eight major Commission sites, there has been in recent years a reduction in total surface area, despite rising staff numbers indicating progress towards more efficient use of the
buildngs.

* https://commission.europa.eu/about-european-commission/organisational-structure/people-first-modernising-european-commission/people-first-greening-european-commission_en

Progress of Greening communication actions

No	Overall status of actions under Greening Communication Headings	Done	On target	Attention	Problem
Actions to reduce Greenhouse Gas (GHG) emissions					
	Buildings and office space				
1	**Brussels: buildings energy efficiency, implement new buildings policy of 2021**		■		
	…reduction of 25% of overall surface and 50% number of buildings to manage by 2030		■		
2	**Brussels: implement green office space (rollout of DCS)**		■		
	Energy efficiency (7 comfort pilots, complete – action extended)		■		
3	**Luxembourg: buildings, energy efficiency (JMO2 occupation by 2026)**		■		
	OP to Mercier/Post in 2023	■			
4	**JRC sites: buildings, energy efficiency**		■		
5	**On-site energy production (PVs, cogeneration, heat pumps)**		■		
	Feasibility study for photovoltaic panels in Brussels	■			
6	**Climate-resilient buildings and workspace (including vulnerability, risk assessment)**			■	
	Sustainable business travel				
7	**Devise smarter approach to missions**		■		
	Encourage use by individual DGs (pledges by individual DGs to reduce emissions)	■			
	Revise guide to missions			■	
	Reducing staff and experts' missions emissions 50% by 2024				■

Other actions to comment:

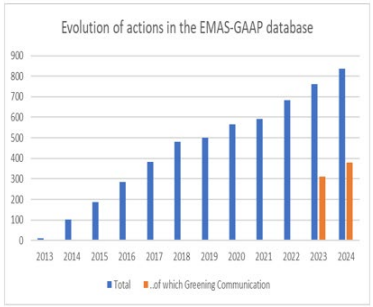
- **Mobility plan** revision
- **Carbon calculator** for events
- **GPP** working group and extension to all tenders
- **Food labelling** in canteens, more environmental information
- Addressing Greening in ***Back to School*** activities and during the "**open door**" days

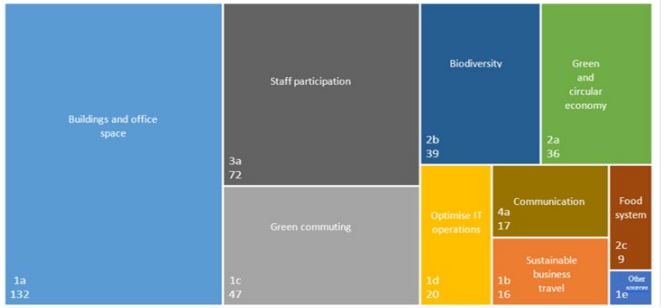
Note: the 30 Greening objectives could have one or many actions; status is based on qualitative assessment of progress on these (see Annex I of GAAP)

European Commission

Slides presented to the EMAS Steering Committee meeting of 20-02-2024

Evolution GAAP actions





In GAAP 2024, **391** actions related to the Greening Communication (**84** new actions)

Greening actions by sub-chapter

All GAAP actions (839) contained in Annex II

European Commission

In 2023, the Commission continued implementing actions from the Greening initiative by, for example:

- Preparation of the new Guide to Missions
- More than 8000 colleagues (25% office space) in dynamic collaborative space
- 79% corporate car fleet low or zero emissions: target exceeded
- Greening the real estate park: abandoning old buildings with low energy efficiency (sales procedure of 23 buildings ongoing); negotiations started for the occupation of 3 new energy efficient buildings, in addition to L107, L51, SB34 and C-46
- A survey to estimate emissions from teleworking was launched on 27.09.2023
- Brussels biodiversity study/strategy resulted in 2 biodiversity projects at buildings B-28 and ORBAN/L-41
- Development of new green roofs projects in CHAR & ORBAN.
- Brussels study for the potential for photovoltaic installation resulted in PV panels in BERL, DAV1, L-15, SB34 (still out of scope) for a total of 1140 MWh/y.
- Further optimisation of energy consumption in Commission buildings (e.g. BEST summer; end/beginning of year)
- Climate Fresk (a teamwork card-based game on climate science) Facilitators' Training Program

1.4 Environmental Policy

The Commission updated its **Environmental Policy in 2022** to incorporate the European Green Deal that Commission President Ursula von der Leyen introduced in 2019. Following the Commission's adoption of the **Communication on the Greening the Commission** in April 2022, it is now working towards its headline objective of achieving carbon neutrality in 2030.

Under EMAS individual sites may develop their own environmental policy. The policies, corporate and site level, are displayed at the entrance to all Commission buildings. For instance, JRC Ispra's site policy is displayed at the main entrance and at the entrance of the buildings hosting considerable quantity of staff (e.g. the canteen, cafeteria and Club House).

European Commission

EMAS

EMAS ENVIRONMENTAL POLICY

As a contribution to the Green Deal, the European Commission demonstrates its commitment to sustainable development, and sound environmental practice, by ensuring that it reduces the impact of its day-to-day activities in a manner consistent with the policies that it has developed for the European Union.

Continuing efforts to improve its environmental performance that started in 1997, the Commission achieved in 2005 its first registration under the Eco Management and Audit Scheme (EMAS). The Commission has implemented EMAS across its eight[1] largest sites in Europe since 2014, and will endeavour to continue extending the scope of its registration to the Executive Agencies and to its representations across Europe.

The Commission will continue to protect the environment, including preventing pollution, and in 2019, her President, Ursula von der Leyen, committed to make the Commission climate neutral by 2030.

On 5 April 2022, the Commission adopted a Communication entitled "Greening the Commission" establishing an action plan and targets to decrease its greenhouse gas emissions and to become climate neutral by 2030.

Under EMAS, the Commission seeks to continually improve its environmental management system and its environmental performance and therefore reduce the environmental impact of its everyday work in accordance with the UN's Sustainable Development Goals (SDGs) by :

(1) Using natural resources more efficiently, particularly in relation to energy, water and products such as paper ;
(2) Continuously reducing its operations' atmospheric emissions (mainly from building operations and transport) with the objective of making the Commission climate-neutral by 2030 ;
(3) Improving waste management and sorting, where waste prevention measures have been exhausted, so that waste recycling is optimised and residual waste reduced ;
(4) Protecting biodiversity ;
(5) Promoting sustainable and environmentally responsible public procurement procedures, for example by introducing appropriate criteria into the tender and contract process, and incorporating life cycle cost considerations where feasible ;
(6) Ensuring (and demonstrating) compliance with environmental legislation and regulations including in relation to emergency preparedness, thereby reducing pollution risks ;
(7) Encouraging staff and contractors to embrace sustainable behaviour through improved internal communication, awareness-raising, and training ;
(8) Enjoying transparent relations and dialogue with external parties, taking into account and addressing stakeholders' expectations ;
(9) Improving the EMAS system including ensuring consistency with European Union policies.

Additionally, and though not falling within the EMAS scope, the Commission will ensure through assessments carried out by its services, that in relation to its core business, it will :

(10) Systematically assess the potential economic, social and environmental impacts of major new policy and legislative initiatives and promote systematic integration of environmental objectives into EU policies ;
(11) Ensure the effectiveness of environmental legislation and funding in creating environmental benefits.

By virtue of the powers conferred on the Appointing Authorities, the European Commission's EMAS Steering Committee hereby approves this Policy Statement, commits to adopt the Commission's EMAS objectives, targets and action plan, to supervise the system's implementation and to monitor the use of its allocated staff and financial resources in order to ensure that the environmental management system runs efficiently.

This document is effective from the date of signature,

Brussels, 04/10/2022

On Behalf of the EMAS Steering Committee,

Gertrud INGESTAD
President

[1] Brussels, Luxembourg, Ispra (Italy), Geel (Belgium), Karlsruhe (Germany), Seville (Spain), Petten (The Netherlands) and Grange (Ireland).

1.5 Governance Structure

i) Corporate Coordination of the EMAS system

A College of Commissioners Decision ensures EMAS implementation at a high level. DG.HR's Director General chairs the **EMAS Steering Committee** (ESC) which meets twice yearly. It defines environmental policy, adopts the annual global action plan, sets environmental objectives and monitors progress. In addition, and due to the Commission's decentralised organisation, management and line managers not directly involved in the ESC or without formally defined EMAS roles also participate in the system. The Commission's Management Board established a working group to encourage closer links particularly between DG HR, SG and BUDG. The ESC comprises the following services: BUDG, CLIMA, DIGIT, ENER, ENV, HR, JRC, MOVE, SG, SANTE, MARE, RTD, SCIC, OIB and OIL , DG COMM and the Executive Agencies.

The **EMAS coordination team** based in Brussels within **HR.D7,** the Greening, Safety & Buildings Unit of DG HR, assumes day to day coordination. The **EMAS Management Representative** is responsible to Management for EMAS implementation and is the contact point for external organisations such as IGBE (Brussels Environment) and other EU Institutions. Five full time staff members work predominantly on system coordination including communication and training and are assisted occasionally by a trainee.

The Commission's size and geographic spread requires the EMAS coordination team to work with a network of over 40 staff across the Commission services whose job descriptions include their EMAS responsibilities. The network includes staff dedicated specifically to **EMAS site coordination** and to **raising staff awareness**.

ii) EMAS site coordination

The **EMAS Site Coordinators** at each of the eight sites are EMAS coordination's team's main contacts and responsible for implementing EMAS at the site level. They report on performance, contribute to the Environmental Statement and participate in preparing site level objectives and actions. The **JRC EMAS Coordination** ensures the harmonisation and coherence of the inputs of the five JRC sites, when applicable, as well as the interaction with the corporate coordination.

The **EMAS site coordination team for Brussels** is located in unit RE3 of the Office of Infrastructure for Brussels (OIB), the Office responsible for the facility management and building policy within the European Commission in Brussels. Site coordination is ensured by two full time staff members, who integrate a team of 11 responsible, among other files, for the buildings' energy performance and monitoring, environmental compliance of the EC buildings, inclusion of environmental criteria in tenders, namely concerning building works and real estate market prospecting.

The **EMAS site coordination team for Luxembourg** is located in Unit O1 of the Office for Infrastructure for Luxembourg (OIL). The Office ensures that all activities associated with the housing of staff, the management of social welfare infrastructure and the logistics of the Commission in Luxembourg are carried out to the best standards. The site coordination is ensured by two and a half time staff members.

The EMAS Site coordination for the EC Representations is located in unit D2 of DG COMM, in charge of, inter alia, management of the Representations' infrastructure. A full-time EMAS site coordinator is supported by a back-up, the project managers responsible for maintenance and works in individual sites and the internal communication team for staff engagement purposes. In the European Parliament, the site coordination for the Liaison Offices is integrated in the EMAS and Sustainability Unit attached to the Secretariat-General, supported by an EMAS representative in the Directorate-General for Infrastructure and Logistics. EMAS Site coordinators for Representations and Liaison Offices (EPLOs) ensure day to day coordination in liaison with EMAS coordinators in the Houses of Europe, composed of representatives of the Representation and EPLO.

iii) Raising staff awareness

EMAS correspondents (Brussels and Luxembourg only) provide a link between their directorate-general/department and HR.D7, particularly for communication; and are nominated by their services. They participate in formal meetings on average three times a year, usually before the start of information campaigns.

Other staff contribute to EMAS, particularly those in facilities management, for example by providing data for reporting on resource consumption or waste generation, or when participating in internal and verification audits. Communication campaigns and training target all staff to improve environmental behaviour, and whose attitudes are gauged every two years by surveys

1.6 EMAS system scope - areas and staff numbers

The system developed initially in Brussels with a first registration covering 8 buildings in 2005. Additional buildings were added yearly, and other sites joined, with virtually full reporting of the 8 main sites largely established in 2014. The scope of the registration for 2022 relating to the 8 main sites is included in Annex 9 with individual buildings indicated in Brussels and Luxembourg.

Although the area in which the system is implemented has remained stable, staff numbers continue to grow. The system is now expanding to include EU representations in Member States and starting with Valletta and Vienna in 2021, Budapest and Nicosia in 2022, The Hague, Sofia and Copenhagen in 2023.

Figure 1.1 Evolution of EMAS registered area (sq. m)

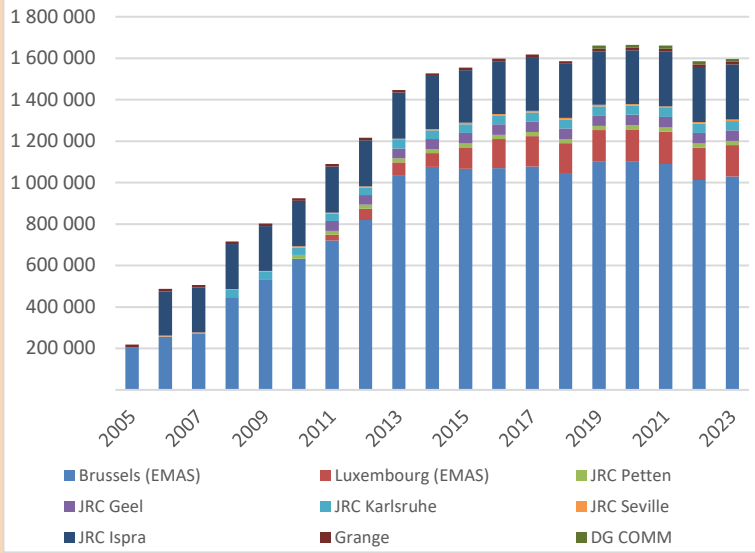


Figure 1.2 Evolution of staff in EMAS registered area

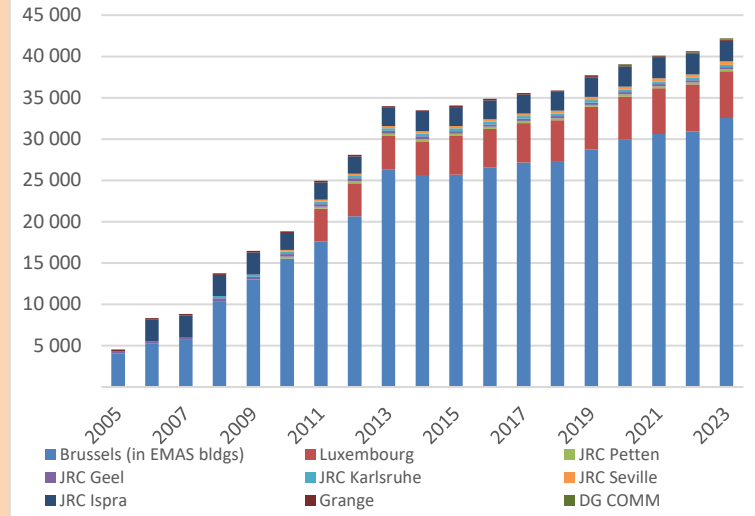


Table 1.1 Nomenclature of Economic Activities (NACE) codes for the EMAS sites

Code	Description	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Seville	JRC Karlsruhe	JRC Ispra	DG SANTE at Grange	DG COMM (Reps)
99	Activities of extraterritorial organisations and bodies	✓	✓	✓	✓	✓	✓	✓	✓	✓
84.1	Administration of the State and economic and social policy of the community	✓	✓						✓	✓
71.2	Testing and technical analysis		✓	✓	✓		✓	✓		
72.1	Research and expt'l devpt. in nat. sciences and engineering			✓	✓		✓	✓		
72.2	Research and experimental development					✓				
35.11	Electricity production							✓		
35.30	Steam and air conditioning supply							✓		
36.00	Water collection, treatment and supply							✓		
37.00	Sewerage							✓		

Table 1.2 Evolution of surface areas (sq. m)		a) Evolution in surface area where the system is implemented																		
Site	**Trend 2014-23**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels (EMAS)		206 166	257 557	272 324	446 562	533 285	633 228	721 038	820 028	1 033 183	1 075 372	1 067 270	1 069 453	1 077 739	1 042 008	1 100 473	1 100 473	1 089 419	1 012 565	1 029 363
Luxembourg (EMAS)								27 710	53 808	64 703	66 161	100 221	140 479	145 697	148 847	153 172	156 681	156 681	156 681	152 235
JRC Petten							18 400	18 400	19 150	19 150	19 458	21 397	20 502	20 842	19 996	19 996	19 996	19 996	19996	19996
JRC Geel								46 996	46 996	46 390	48 815	50 538	50 538	50 382	50 499	50 525	50 651	50 650	50650	50650
JRC Karlsruhe					35 592	35 592	35 592	35 592	35 592	41 735	41 735	41 735	43 170	43 170	43 170	43 170	43 170	43 170	43710	43710
JRC Seville			4 462	4 462	4 462	4 952	5 577	5 577	5 899	6 497	7 017	7 165	7 165	7 580	7 580	7 698	7 756	8 039	8039	8039
JRC Ispra			213 464	216 051	216 441	216 783	219 570	221 444	222 148	223 077	256 077	253 428	254 356	259 828	261 713	258 539	258 546	265 519	265516	265460
Grange		12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12 402	12402	12402
DG COMM																15 193	15 193	15 193	15 193	15 193
Commission		**218 568**	**487 885**	**505 239**	**715 459**	**803 014**	**924 769**	**1 089 159**	**1 216 023**	**1 447 137**	**1 527 037**	**1 554 156**	**1 598 064**	**1 617 639**	**1 586 215**	**1 661 168**	**1 664 868**	**1 661 069**	**1 584 752**	**1 597 048**
b) Additional surface areas also used for some calculations																				
Brussels (all)										1 051 557	1 075 372	1 069 673	1 082 004	1 090 075	1 069 020	1 124 768	1 124 768	1 128 653	1 063 530	1 095 114
Brussels (offices)		206 166	253 525	268 292	421 965	508 688	599 725	677 078	776 068	982 810	1 000 963	990 153	990 153	990 153	990 153	990 153	990 153	990 153	969 912	935 424
Luxembourg (all)								187 912	198 807	198 807	198 807	223 997	241 023	241 023	180 923	181 623	181 606	181 606	180 677	191 592
c) Total surface areas for Commission level calculations																				
Commission										**1 447 137**	**1 527 037**	**1 554 156**	**1 598 064**	**1 617 639**	**1 586 215**	**1 645 975**	**1 649 675**	**1 645 876**	**1 569 559**	**1 581 855**
Commission (all bldgs)										**1 465 511**	**1 527 037**	**1 556 559**	**1 610 615**	**1 629 975**	**1 613 227**	**1 670 270**	**1 673 970**	**1 685 110**	**1 620 524**	**1 647 606**

Table 1.3 Evolution of staff and contractor numbers*		a) Evolution in staff numbers where the system is implemented																		
Site	**Trend 2014-23**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels (in EMAS bldgs)		4 033	5 238	5 702	10 393	13 014	15 527	17 586	20 663	26 336	25 667	25 698	26 562	27 148	27 254	28 769	29 916	30 604	30 928	32 562
Luxembourg								3 999	3 997	4 048	4 043	4 667	4 653	4 786	5 016	5 138	5 240	5 559	5 698	5 642
JRC Petten							232	229	266	263	282	278	276	263	248	249	247	240	230	228
JRC Geel		318	326	331	342	317	325	331	322	341	346	328	296	265	259	262	266	263	264	264
JRC Karlsruhe					276	273	294	305	299	305	320	322	324	322	317	315	309	305	306	304
JRC Seville							212	240	244	282	289	283	300	322	342	368	382	390	403	408
JRC Ispra			2 566	2 595	2 545	2 682	2 052	2 087	2 110	2 223	2 337	2 296	2 258	2 277	2 285	2 332	2 411	2 475	2494	2468
Grange		195	195	195	195	195	188	186	189	182	179	180	190	188	179	176	173	178	182	169
DG COMM (1)																124	118	110	125	140
Commission		**4 546**	**8 325**	**8 823**	**13 751**	**16 481**	**18 830**	**24 963**	**28 090**	**33 980**	**33 463**	**34 052**	**34 859**	**35 571**	**35 900**	**37 733**	**39 062**	**40 124**	**40 630**	**42 185**
b) Additional staff numbers used for calculations																				
Brussels (all)**		21 203	22 635	23 760	24 936	24 937	25 750	26 305	28 681	26 499	27 392	27 089	26 927	28 225	28 494	28 948	29 941	30 604	30 928	34 588
Luxembourg (in EMAS bldgs)								759	1 315	1 422	1 492	2 378	3 912	4 059	4 277	4 355	4 494	4 809	5 108	4 907
c) Staff numbers for Commission level calculations																				
Commission										**33 980**	**33 463**	**34 052**	**34 859**	**35 571**	**35 900**	**37 609**	**38 944**	**40 014**	**40 505**	**42 045**
Commission (all bldgs)										**34 143**	**35 188**	**35 443**	**35 224**	**36 648**	**37 140**	**37 788**	**38 969**	**40 014**	**40 505**	**44 071**

* Includes staff (administrators, assistants, contract agents, temporary agents, local agents) and other staff (contractors, seconded national experts, trainees, interim agency staff) and Commission Members in Commission buildings

EMAS' staff are those staff located in EMAS registered buildings or premises. ** Excludes average of 1 257 staff based outside Commission buildings in 2022, and 1711 in 2023

Table 1.4 Number of buildings registered under EMAS

Site	Trend 2014-23	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		8	13	15	23	32	42	48	54	59	62	62	62	62	58	60	60	60	48	49
(all bldgs)										59	62	62	64	64	61	61	61	61	54	55
Luxembourg								2	3	4	6	7	10	11	14	14	15	15	15	13
(all bldgs)								13	14	14	14	17	19	19	18	18	18	18	17	16
JRC Petten		0	0	0	0	0	14	14	14	14	14	17	16	12	12	12	12	12	12	12
(all bldgs)		0	0	0	0	0	14	14	14	14	14	17	16	13	13	14	14	14	14	14
JRC Geel		0	0	0	0	0		14	14	14	15	16	16	16	16	16	17	17	17	17
JRC Karlsruhe		0	0	0	0	0	0	0	0	2	2	2	4	4	4	4	4	4	4	4
JRC Seville		0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
JRC Ispra		0	0	0	0	0	0		0	0	419	409	410	402	402	384	376	366	360	358
Grange		0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3
DG COMM																		3	5	8
Commission		**8**	**13**	**15**	**23**	**32**	**56**	**78**	**85**	**94**	**522**	**517**	**522**	**511**	**510**	**494**	**488**	**481**	**465**	**465**
Commission (all bldgs)											**530**	**527**	**533**	**522**	**518**	**501**	**494**	**487**	**475**	**476**

(1) including Valletta, Vienna, Nicosia, Budapest, De Haag, Copenhagen and Sofia since 2019, even if registered later

1.7 Support and testimonies by top management: Testimonies by the Director General of Human Resources and site management

Stephen QUEST : Director General for Human Resources

The European Green Deal requires Member States to commit to significant emissions reductions and underlines the importance of sustainable food supply chains and maintaining biodiversity. The 2022 Communication on Greening the Commission sets out how the European Commission will achieve its ambition to become climate neutral, as an organisation, 20 years before the Member States target. The Commission headline objective is to reduce CO2 emissions by 60% from 2005 to 2030 (or 38% from 2019) through a range of measures in different activity domains. The remaining emissions will be compensated by carbon removals in 2030. The actions needed to achieve these objectives have been incorporated into the Commission Eco Management and Audit Scheme (EMAS).

Under EMAS, the Commission publishes its environmental performance results annually in the Environmental Statement. Since 2005, when it became the first EU Institution to achieve EMAS registration, the Commission has committed to reduce the environmental impact of its everyday activities. Initially limited to Brussels, the scheme now includes its eight largest sites in Europe and seven Commission Representations in EU Member States that are shared with the European Parliament Liaison Offices. I am delighted that the Commission is still on a positive path towards its 2030 objectives.

Its environmental footprint in 2023 was 30% lower than in 2019. The rebound in the carbon footprint observed in 2022 compared to 2021 (a 14% increase) has slowed: in 2023 the increase was less than 4% compared to 2022. The carbon footprint remains dominated by emissions from buildings operations and mobility. The Commission has reduced mobility related emissions (from staff and experts' missions and staff commuting) by over 40% since 2019. While a two thirds reduction in emissions from experts' missions is an important contribution to this, almost all Commission services have pledged to help meet the Commission 2019 to 2024 target for reducing emissions from staff missions. A new Guide to Missions is close to adoption. The Commission is reducing its buildings portfolio in Brussels and Luxembourg, replacing older buildings with a smaller number of newer more efficient ones that will further reduce impacts. As a cyclist, I particularly appreciate the new mobility hubs that make it easier to bike to work. In my view, progress towards 2030 targets is encouraging, but we should be mindful that achieving them will require full implementation of the action plan on greening the Commission

Marc BECQUET, Director of Office for Infrastructure, Brussels

The mission of OIB is to ensure a functional, safe and comfortable workplace for Commission staff and to provide good quality support and well-being services, based on a client-oriented approach in an environmentally friendly and cost-effective way. Main achievements of 2022 were the reduction in energy consumption, CO_2 emissions, office paper consumption, as well as further improvements in waste sorting. They bear witness of the continuous efforts put forward by the OIB through concrete actions in these areas.

Challenging times require extraordinary measures: through the recently adopted Communication on Greening the Commission, the Institution has set a clear target to reduce its CO_2 emissions by 60% compared with 2005 figures and to become climate neutral by 2030. This ambition will require significant efforts and investments to which the EC services and in particular the OIB will strongly contribute, in improving the Commission's environmental performance, this way striving towards a more sustainable European Union.

Marc BECQUET, acting Director for Office of Infrastructure and Logistics, Luxembourg

The mission of the Office for Infrastructure and Logistics in Luxembourg (OIL) is to ensure a safe and functional workplace for the staff and to provide services such as transport, office supplies administration, catering and after-school childminding services.
Since 2020, the focus has been on the action plan on Greening the Commission to reach corporate climate neutrality by 2030. In 2023, OIL main achievements were the move of the Publications Office and DG CNECT into the Mercier-Post building with a DGNB certification, and the implementation of the DCS (dynamic collaborative space) in Luxembourg. Moreover, thanks to the various measures taken, energy consumption has continued its downward trend.
Among other actions, OIL made steps towards circular economy by organizing for the first time the Interinstitutional Repair Café. Different actions in the mobility area were also a success, namely the mobility conference organised by OIL and the Ministry of Mobility and Public Works and Velomai at the CPE with the participation of Franck Schleck.
Finally, OIL continues to supervise the construction of the Commission's main seat – Jean Monnet 2, which is the Commission's most ambitious environmental-friendly real estate project in Luxembourg.

Rien STROOSNIJDER, responsible for site management, JRC Ispra

EMAS is the most rigorous environmental management system available in Europe and is regarded as the premium standard for environmental excellence. Since early 2012, we have committed to the EMAS scheme, building on and extending our ISO 14001 certified management system. Our environmental policy aims to make sure that site operate in such a way that all activities, which have an environmental impact, are planned and executed in order to minimise damage to the environment, prevent pollution and improve environmental performance. Its implementation is only possible thanks to competent technical staff and strong engagement of all persons on site.
The EMAS results for the European Commission Ispra site during 2023 went generally beyond the targets originally set, particularly due to the impressive work done to reduce our impact on the environment carried out in recent years. Ispra Site Management continued to promote and apply energy saving measures within a more efficient management approach. During 2023 the site's energy consumption decreased by almost 9% compared to the previous year (-20.4% gas consumption) while the contribution from renewable sources increased by 33% thanks to the increasing in use of "green" grid energy (+22.5%) as well as the increase in the energy produced by the PV plants (+30%). This has led to a decrease in CO2eq emissions from energy consumption of about 20.5%.
All the energy saving measures/activities put in place on the JRC-Ispra site are in line with the Communication on Greening the Commission that aims to achieving carbon neutrality by 2030. This is how the Commission intends to implement the European Green Deal internally and thereby lead by example. Our ambitious targets will be supported by our environmental core indicators, which facilitate multi-annual comparability within and between organisations. In all this, a participatory approach and the engagement of staff are key, as is the exchange of best practices with host country authorities and transparent communication of our performance to them and the general public.

Ciáran NICHOLL, Director of JRC Geel

When JRC-Geel integrated EMAS in 2011, it vouched its commitment to implement an effective environmental management system, despite the challenges of housing and operating specialised EC laboratory infrastructures. Examples include two high energy consuming nuclear accelerators, a high-tech storage facility for reference materials, nuclear and non-nuclear laboratories with over/under atmospheric pressure requirements, etc.
Each year, JRC-Geel monitors and looks at ways to further improve in reducing its environmental impact and complying with the ever-more stringent legal requirements set by the Flanders Region. Thanks to its BMS (Building Management System), JRC-Geel is able to measure and accurately monitor its EMAS indicators and this allows management to take informed decisions and define improvement actions.
In an ageing site like JRC-Geel, real opportunity for saving energy resides in a refurbishment programme of buildings, including their insulation. To capitalise on this, JRC-Geel has launched an action plan with projects to consecutively renovate its facilities, including the deep refurbishment of one building according to the principles and values of the New European Bauhaus initiative. This action plan also seeks to integrate the present and future requirements of the respective JRC-Geel site's scientific work programmes, all the way up to up to 2034. A temporary downside when implementing refurbishment, insulation jobs and clean up exercises is an inevitable waste increase which contributes to the carbon footprint balance.
An avenue which still requires attention and improved directionality is travelling, despite the JRC commitment to do so.
Finally, the JRC-Geel site is working to preserve and foster biodiversity by creating "natural habitats for fauna" and striving to map its biodiversity through different Bioblitz projects.

Maria Pilar AGUAR FERNANDEZ, SANTE Dir. F Grange, Ireland

We are located in the lush, green farmland of County Meath, Ireland where cattle farming is the main activity although sheep are not an uncommon sight in the fields around us.
We are particularly conscious of the agricultural setting of our site and take steps to ensure that our activities do not have a negative impact on our neighbours and the local environment. We include EMAS compliance as a feature of all contracts and look at how services to our staff can be delivered in an eco-friendly way.

During 2022 we delivered a number of projects. In particular:
We continued the replacement of old watt high consumption lights with new LED low watt consumption lights on different places in our site.

Once again big sections of our grassland (±3.75 ha) were left to grow into meadows, in order to allow plants and flowers to grow and provide nectar for insects such as bees, butterflies and hoverflies. A winter plan was put in place (one section of the building was closed and staff moved in the remaining sections and sharing offices with other colleagues) and more or less 12 tonnes of CO2 were saved.

Pia RENKILDE-HANSEN, Director-General DG Communication

*The EU institutions' outposts in the Member States – **the Commission Representations** and the European Parliament Liaison Offices – joined the EMAS process in 2021. They are the institutions' public face at local level, with the overarching mission to engage with all segments of society. As such, the Representations and Liaison Offices are in the prime position to demonstrate first-hand, to the 450 million citizens of the Member States in which they are located, the European institutions' firm commitment to the protection of the environment.*

As of today, the Commission and the Parliament joined forces to implement EMAS in Valletta (Malta), Vienna (Austria), Budapest (Hungary) and Nicosia (Cyprus), whilst preparations are underway in Copenhagen (Denmark), Sofia (Bulgaria) and The Hague (Netherlands). This is done in the context of the so-called Houses of Europe, physical premises hosting the Commission Representations and the Parliament's Liaison Offices in Member States.

The two-fold aim of the project is to reduce the environmental impact of the Houses of Europe and in doing so, also add credibility to the efforts of the European Union to lead change across Europe at large. The initiative is also the first known example of two European institutions implementing EMAS together, developing additional synergies and efficiencies, as well as a possible blueprint for others to follow.

Ulla ENGELMANN, responsible for site management, JRC Karlsruhe

Among the JRC sites, Karlsruhe is unique, being in its entirety a nuclear research facility where continuous operation of energy-intensive systems is mandatory for ensuring nuclear and radiation safety at all times. Combining the very advanced EMAS goals with the realities of an aging infrastructure is not without challenges and major improvements require substantial investments. Pending the completion of our new state-of-the-art laboratory (Wing M) we have successfully optimised monitoring and operation of our old installations and thereby obtained tangible savings in energy consumption for heating and nuclear ventilation in 2022.

JRC Karlsruhe will continue pursuing further environmental improvements in its own facilities in 2023. More globally, our research contributes to ensuring the safety and security of use of nuclear energy which many EU member states rely on as an established low-carbon technology contributing to climate change mitigation.

Site management, JRC Petten

On the JRC Petten site, the European Commission conducts scientific research and delivers technical support and administrative activities for partners in relation to energy, mobility and climate policies. Increasingly research is based on modelling studies, which generates a more administrative workload.

The research is based on the results of laboratory work in facilities for hydrogen fuel cell testing, hydrogen storage tank testing and optimisation, battery testing and at several locations advanced material testing for nuclear and other high tech industries.

Mikel LANDABASO, Director Fair and Sustainable Economy, JRC Seville

In a world that urgently needs to accelerate efforts to achieve the green transition, it is essential for the European Commission to lead by example in managing and enhancing its own environmental performance. The JRC Seville site is fully dedicated to this goal, and I am delighted that our indicators demonstrate our efforts to improve our site's environmental performance while ensuring optimal working conditions for our researchers. Additionally, we are integrating sustainability into our core business of providing scientific and technical advice for policy making, demonstrating that we are turning our commitment into action. Finally, I am pleased to report that we are making significant progress towards the construction of a new building for our JRC Seville site that will meet world-class environmental performance standards through innovative design, in line with the values and principles of the New European Bauhaus initiative.

2 Significant aspects, objectives, indicators and targets

2.1 Significant aspects and objectives

Each site reviews its environmental impact to identify the direct (and indirect) significant aspects and determine how they should be managed. The detailed approach is described in the EMAS handbook's Procedure No1, and the site level results are summarised below in **Table 2.1** which is revised yearly.

There is no separate review for the Commission as a whole, although the significant aspects tend to correlate with the required reporting under Annex IV of the EMAS Regulation, and all these parameters are reported at corporate level. Significance is determined taking into account frequency, severity, breach of law, magnitude, scope for control, applicable legislation, stakeholders' concerns, previous incidents, and the potential for taking action.

Indicators and reporting have take into account the best environmental practices included in the sectoral reference document (SRD) for public administration, following a detailed site level analysis conducted in 2020. This considered all aspects of the SRD, particularly managing and minimising energy, water and waste consumption, minimising consumption of paper and consumables, and minimising the environmental impact of commuting, business travel, canteens and cafeterias, meetings and events organisation. It showed that the relevant aspects were generally well covered at Commission level. An evaluation is scheduled for 2024/5 to consider SRD aspects in the context of the new EMAS Guide (of November 2023).

Table 2.1 lists the significant aspects under the **high level objectives** in the Environmental Policy which include i) efficient resource use, ii) reducing emissions to air, iii) improving waste management, iv) protecting biodiversity, v) promoting green public procurement, and vi) legal compliance and emergency preparedness. Promoting internal and external communication in relation to these aspects, and staff participation, are also very important strategic objectives.

The Greening the Commission Communication (2019-2030) described how the Commission would seek climate neutrality by 2030, by first reducing its emissions as far as possible before compensating for the remainder through carbon removals. While reducing emissions is the most visible objective, the Communication also seeks to promote green public procurement and biodiversity. In effect the communication **reinforces the main objectives of the Environmental Management System (as shown in Table 2.1) but its main focus is quantitative targets for reducing emissions.**

Table 2.1 indicates that resource consumption, particularly in relation to energy, CO_2 emissions and other air emissions along with managing waste generation are particularly significant at most sites.

Nuclear emissions are a significant aspect of the JRC's former and current nuclear sites and are carefully controlled. Equally, waste discharges from experimental facilities at the JRC sites (whether solid or liquid) are important as they may potentially contain more hazardous chemicals than at sites serving a role of office administration, and are therefore subject to stricter control and monitoring.

Although not generally a research site, Luxembourg does accommodate a laboratory used by nuclear inspectors, and which handles radioactive material. Medical waste however also requires special consideration, and medical services are present at many of the sites.

The **Brussels site** comprises mostly office buildings (and supporting infrastructure), and therefore the main concerns are energy consumption and related emissions, as well as waste production. The impact of staff mobility (professional travel and commuting) is also important.

In Luxembourg, the activities are mainly of administrative nature, with some support and logistics services (such as catering, office supplies, childcare facilities, etc.) so broadly similar aspects to Brussels. But Luxembourg also hosts the main data centres of the Commission and a radiation protection laboratory.

For the JRC:

- **JRC Geel** is registered as a "class 1 facility" for the Flemish Environmental License, meaning that it has significant environmental impact resulting from its activities in the nuclear and chemical/biological fields. As such, almost all the aspects mentioned under the EMAS objectives (Table 2.1) apply.
- At **JRC Ispra**, the environmental aspects and impacts are calculated on the basis of a site-procedure, which takes into consideration Probability (P) and Gravity (G) criteria to define whether an environmental aspect is significant or not.
- **JRC Karlsruhe** undertook the first full update of the environmental aspects in 2007. These are described in the Environmental Aspects Register (IMS-KRU-S6.6-RGS-0001). It is usually reviewed annually and updated, when necessary and most recently in May 2023. Significant impacts associated with four main aspect groups were identified, mainly concerning the use of resources, emissions and the generation of radioactive waste. Due to the mostly static character of site activities, these have remained unchanged for several years.

• In **JRC Petten** monitors the Environmental Aspects on site level by annually carrying out the Update of the Environmental Aspect Register on unit level. The 2023 results show that all six EMAS aspects are significant.

• In **JRC Seville**, the identified significant environmental aspects are related to offices used in rented

For **DG SANTE at Grange,** a study of the Grange environmental aspects was undertaken for the first time in 2014. Examination and evaluation of Grange's environmental aspects and impacts, both direct and indirect under normal, abnormal and emergency conditions was developed in 2017.

The identification of environmental impacts takes account of the organisation's current and past activities, products and/or services. This table is reviewed and updated every year. The last addition, as a direct consequence of Covid-19, has been the indicator regarding public health.

In **DG COMM's Representations**, the activities are mainly of administrative nature, with some support and logistics services. The identified significant aspects reflect the Houses of Europe as a whole, including the EPLO

Table 2.1 Summary of significant environmental aspects at site level

			JRC						Representations in EU Member States									
EMAS Objective and significant aspect	BX	LX	PE	GE	SE	KA	IS	GR	Val	Vie	Bud	Nic	Cph	Sof		Thg	DGs	sig. Impacts*
1) Efficient resource use																		
Emissions from energy generation (large scale, gas)							✓											a
*Buildings energy consumption**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		b
*Fleet vehicle energy consumption**	✓	✓		✓						✓	✓		✓					b
Water use	✓	✓	✓	✓				✓					✓					c
Paper consumption	✓	✓	✓	✓								✓						
2) Reducing emissions to air (CO_2e and other) from:																		
*Buildings energy use**	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		a, b
Buildings refrigerant loss	✓	✓		✓	✓			✓	✓	✓	✓	✓						a
*Staff missions**	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓					✓	a, b, e
*Experts missions**																	✓	a, b, e
*Emissions from staff commuting**	✓	✓		✓						✓	✓			✓				a, b, e
Emissions from site vehicles		✓		✓					✓	✓		✓	✓	✓				a, b, e
Emissions from energy generation (large scale, gas)				✓			✓											a, b, e
Emissions of particles, etc	✓		✓	✓			✓	✓			✓							e
Nuclear emissions		✓		✓		✓												f, g
3) Improving waste management																		
Non hazardous waste	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓					g
Hazardous waste	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓		f, g
Wastewater/liquid water	✓	✓	✓	✓			✓	✓										g
Nuclear waste				✓		✓												f, g
4) Protecting biodiversity																		
*Protecting biodiversity**	✓	✓	✓	✓			✓	✓										h
5) Promoting green procurement																		
*Contractor behaviour**	✓		✓	✓			✓			✓		✓	✓	✓		✓	✓	i, j
*Promote fair, healthy, sustainable food system**																		a, c, g, k
6) *Improving management* of legal compliance and emergency preparedness																		
Managing legal compliance and emergency preparedness	✓	✓	✓	✓							✓	✓	✓	✓		✓		l

*Notes: Buildings' energy use * Direct priority of Greening Communication; Paper consumption - Indirect priority of the Greening Communication*

Table 2.1a* notes on (potential) significant impacts

a) contribution of CO_2e emissions to global warming;

b) environmental footprint of energy production, fuel storage and distribution including potential for fuel spills;

c) over exploitation of surface and groundwater sources affecting flora, fauna and human populations;

d) unsustainably forestry, and consequences for biodiversity;

e) Non CO_2 emissions (e.g. SO_2, NOx; particles) particularly affecting respiratory health and surface water pollution (tyre wear);

f) radiation deleterious to health;

g) contamination of air, soil, surface and groundwater;

h) removal of habitats conducive to diverse flora and fauna;

i) use of unsustainable material supplies;

j) noise annoyance for neighbours;

k) unsustainable agriculture (over intensive, use of too many pesticides);

l) operating outside legal with environmental, financial and reputational consequences.

2.2 Assessing the environmental impacts of European Union Policies

The Commission takes environmental issues into account when drafting and revising EU policies, through the impact assessment system usually managed through the Secretary General. This document does not consider the this system and its application to the myriad of EU policies.

The Commission provides financial support for environmental projects via the LIFE (and other) programmes and has policies addressing global warming and in relation to energy and transport. The following pages are among those dedicated to particular policies and important initiatives:

Impact assessment system: https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/impact-assessments_en
EU environment policy and evaluation: https://environment.ec.europa.eu/index_en
LIFE+ programme: https://cinea.ec.europa.eu/programmes/life_en
Climate policy: https://climate.ec.europa.eu/index_en
Energy strategy: https://energy.ec.europa.eu/index_en
Transport policy: https://transport.ec.europa.eu/index_en

The European Green Deal: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

The impacts assessment system therefore takes into account the environmental impact of EU policies and legislation on Member States. All draft impact assessment reports must be submitted for quality and scrutiny to the Regulatory Scrutiny Board (RSB). In principle, a positive opinion of the RSB is needed for an initiative accompanied by an impact assessment to proceed. RSB opinions are published alongside the final impact assessment report and proposal at the time of adoption. As the responsibility of the adoption of EU policies is shared with the European Council and European Parliament, the EMAS management system is not the appropriate tool for managing the detailed impact of these policies.

The Commission's management system therefore focuses on the Commission's operational activities, i.e. those that EC management can control or influence.

- Detailed information on EU policies available on: https://european-union.europa.eu/index_en
- https://commission.europa.eu/law/law-making-process/regulatory-scrutiny-board_en
- Impact assessment reports

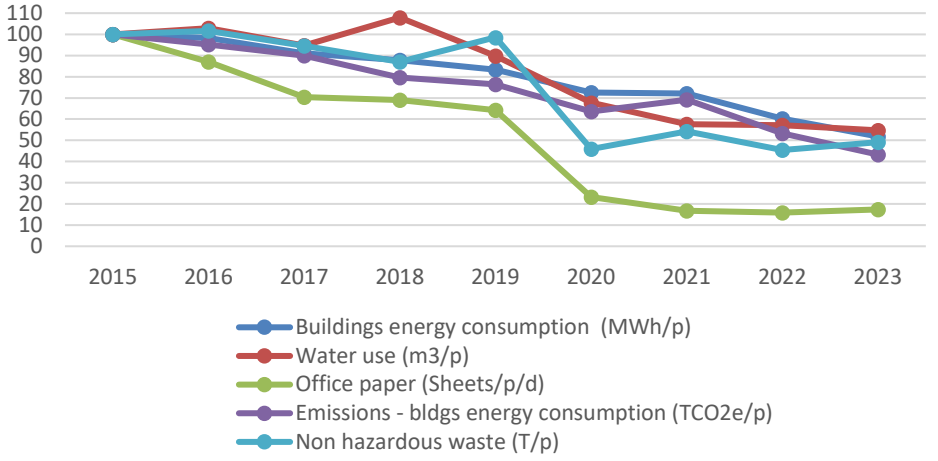
2.3 Indicators and targets

i) Corporate level indicators, initial 2020 targets

In order to monitor the reduction of environmental impact at Commission level, several core indicators are defined for reporting at all the sites, and these generally correspond (or are closely related) to the parameters required under the EMAS Regulation. Sites may have their own indicators for specific purposes, e.g. use of buses to get to the site in the JRC in Ispra and Petten, or in the case of the nuclear site of JRC Karlsruhe, the measurement of alpha and beta aerosols in the exhaust air. The site targets for each parameter are added together and weighted to provide an overall Commission target. Sites review their targets annually and any changes result in a corresponding change in the overall Commission target.

Targets for the core indicators are established for the medium to long term. When Commission level reporting was introduced in 2014 the target horizon was 2014-2020. (Currently 2015 is sometimes referred to as a base year because the data was more complete in the second Commission level reporting exercise, and because some DGs use this as a base year for model predictions).

Figure 2.1 Evolution of selected Commission core parameters, 2015 to 2023 (2015 = 100)



ii) Targets for 2030 and the Greening Communication

By 2020, the next target year for measuring the Commission's performance improvement was selected as 2030 (coherent with the Sustainable Development Goals) with 2023 as an interim year to measure progress under the current Commission. The adoption of the Greening Communication established 2019 as the baseline year for 2030 with this also adopted as a baseline in EMAS reporting particularly for emissions. 2023 data will form the basis of a progress review for the Greening Communication actions.

Overall targets include:
50% reduction in missions emissions (by 2024) and experts' missions
30% reduction in emissions from buildings operations and fixed assets
36% reduction in staff commuting and vehicle fleet emissions
29% reduction in IT fixed assets emissions
6% reduction in emissions from goods, waste and services

Other considerations

- Transition to 100% green electricity
- 100% electric vehicle fleet by 2027

iii) Past performance

Figure 2.1 shows how selected core parameters have reduced since 2015, and demonstrates continued improved performance at Commission level. The COVID situation led to significant reductions in office paper use and non hazardous waste generation as staff worked from home. Energy, water consumption also reduced although emissions rose slightly owing to the additional heating needs (as recirculation was not possible) in the office buildings.

Some of the parameters experienced a rebound in 2023 generally due to a higher office presence following the COVID pandemic and as explained in the following chapters.

Table 2.2 Corporate performance indicator and targets

				Performance (%)		Targets (%)*
Site	**No**	**Corporate indicator**	**Units***	**2015-23**	**2019-23**	**2019-30****
Comm	1a	Total energy consumption (b	MWh/p	-48	-38	-37
			kW/m^2	-33	-29	-25
Comm	1c	Non renewable energy (builc	MWh/p	-58	-46	-38
Comm	1d	Water use	m^3/p	-45	-39	-25
All			L/m^2	-34	-29	-19
Comm	1e	Office paper consumption	T/p	-83	-73	-62
Comm	2a	CO_2 emissions (buildings)***	Tonnes CO_2e	-57	-43	-44
All			$kgCO_2/m^2$	-48	-34	-35
Comm	2c	CO_2 emissions (vehicles,	gCO_2/km	-56	-42	-57
Comm		Total carbon footprint ****	Tonnes CO_2e		-30	-38
Comm	3a	Non hazardous waste	Tonnes/p	-51	-50	-24
Comm	3c	Residual waste	Tonnes/p	-69	-62	-26

Notes * targets from 2024 Global Annual Action Plan;

** target in green achieved in 2023; for individual site targets see 1a - Table 4.2, 1c - Table 4.3, 1d - Table 11.1, 1e - Table 11.3, 2a - Table 4.5, 2c - Table 5.8, 3a - Table 7.5, 3c - Table 7.7 (data based on internal targets action plan 2024)

***from operational energy use and coolant losses

**** for scope as defined in 2019

3 Overview of the Commission's Carbon footprint

3.1 Commission summary

The Commission has developed its approach to evaluating the carbon footprint gradually, with the scope expanding to incorporate expert advice provided during annual internal reviews. A significant development occurred in 2018 when, to deliver a better life cycle approach, several additional categories of (Scope 3) emissions were introduced including i) embodied (fixed asset) emissions for buildings and IT equipment, ii) for service contracts (for example catering, security, cleaning etc) and for iii) waste disposal. Emissions from experts' travel were introduced in 2021 reporting along with those from teleworking. Moreover in 2023 embodied emissions for furniture and for additional food categories (e.g. lamb, veal, fruits, vegetables...) were added. The additional categories substantially increase the data requirements for reporting, and the carbon footprint.

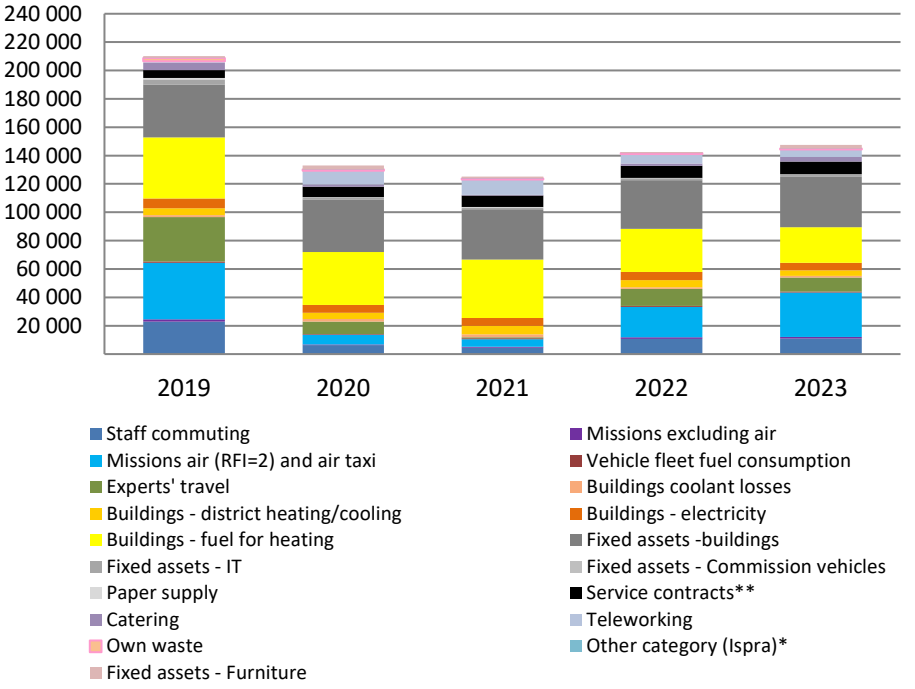
Since the Greening Communication established 2019 as a baseline for targets to achieve a 38% reduction in emissions at the 8 main EMAS sites by 2030, for consistency any new categories introduced to the carbon footprint (or procedural modifications) are calculated and applied back to 2019 where possible. Headline categories are shown in **Figure 3.1**.

In 2023 the Commission was advised to change its approach to calculating emissions for fixed assets (other than buildings) to be consistent with the Greenhouse Gas (GHG) Protocol, as this has become the dominant approach to carbon footprinting. The change mainly applies to IT and furniture and means that emissions are allocated in the year of acquisition rather than being amortised over a fixed period. For buildings the Commission continues to apply amortisation and uses the ADEME (now known as France's Agence de la transition écologique) **Bilan Carbone** methodology.

The coefficients used to calculate emissions in the Commission's carbon footprint are largely from the ADEME database. However other public sources are used where considered appropriate, for example DEFRA (UK government's Department for Energy, Food and Rural Affairs) for professional air travel (see Section 3.4).

Figure 3.1 shows the evolution of the carbon footprint since 2019. It shows a 30% reduction in emissions in 2023 compared to 2019, mainly due to a reduction in missions' emissions and of emissions from buildings' energy consumption, due in part to the Commission's goal of a 15% reduction in energy consumption in the winter of 2022-23 and which remained in place for the winter of 2023-24, in line with the EU voluntary target for Member States to reduce their natural gas consumption by 15% between 1 April 2023 and 31 March 2024.

Figure 3.1 Evolution of the Commission's carbon footprint (headline categories), (tonnes CO_2e)



The Commission reduced emissions from fuel for heating its buildings by 44% since 2019. This is due to a combination of measures including closing buildings where possible over low occupancy periods, and managing 'comfort hours more efficiently across the sites.

While emissions from staff and expert missions along with staff commuting reduced drastically with Covid in 2020 and 2021, there has since been a rebound in all three and this was strongest for staff missions, which will challenge the Greening objective of a 50% reduction in 2019-24.

Data for Figure 3.1 (tonnes CO_2e)											***Trend******
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	***2019-23***
Staff commuting	13 908	12 103	12 725	13 086	13 611	22 837	6 230	4 581	10 748	10 881	*-52%*
Missions excluding air	1 643	1 795	1 814	1 633	1 597	1 803	546	607	1 197	1 281	*-29%*
Missions air (RFI=2) and air taxi	55 467	50 870	51 005	51 572	52 286	39 801	6 971	5 355	21 302	31 270	*-21%*
Vehicle fleet fuel consumption	965	976	1 001	947	947	943	525	585	648	599	*-36%*
Experts' travel						31 216	8 730	748	12 141	10 092	*-68%*
Buildings coolant losses	1 119	1 830	2 950	1 160	1 308	1 293	1 781	2 050	1 048	988	*-24%*
Buildings - district heating/cooling	3 544	4 296	3 815	3 859	4 824	4 898	4 441	6 093	5 034	3 955	*-19%*
Buildings - electricity	14 328	12 947	11 435	12 243	8 189	6 871	5 385	5 503	5 729	5 416	*-21%*
Buildings - site generated renewable energy	177	253	217	216	408	309	288	398	318	465	*51%*
Buildings - fuel for heating	41 718	48 264	48 977	45 928	42 061	43 076	37 452	41 216	30 375	25 101	*-42%*
Fixed assets -buildings					37 589	37 476	37 054	35 378	34 439	35 357	*-6%*
Fixed assets - IT					828	3 419	1 127	1 235	1 275	1 373	*-60%*
Fixed assets - Furniture					1 081	1 243	2 727	1 148	746	2 356	*90%*
Fixed assets - Commission vehicles					174	173	101	123	148	140	*-19%*
Paper supply					913	888	328	226	280	274	*-69%*
Service contracts**					5 062	5 581	7 384	8 090	8 322	9 083	*63%*
Catering					649	5 073	1 477	495	1 620	3 073	*-39%*
Teleworking					816	1 065	9 865	10 764	6 669	5 316	*399%*
Own waste					2 000	2 374	739	745	679	721	*-70%*
Other category (Ispra)*					168	143	143	143	143	124	*-14%*
Total (tonnes CO_2e)	**132 869**	**133 333**	**133 939**	**130 644**	**174 510**	**210 483**	**133 293**	**125 485**	**142 861**	**147 864**	*-30%*
Change in total (tonnes CO_2e) since 2019 (%)							-37%	-40%	-32%	-30%	
Total (tonnes CO_2 e/person)	***3,97***	***3,92***	***3,84***	***3,67***	***4,86***	***5,60***	***3,42***	***3,14***	***3,53***	***3,52***	*-37%*

*Wastewater treatment or goods (e.g. furniture) calculated on the basis of the Ispra Organisation Environmental Footprint (OEF) methodology

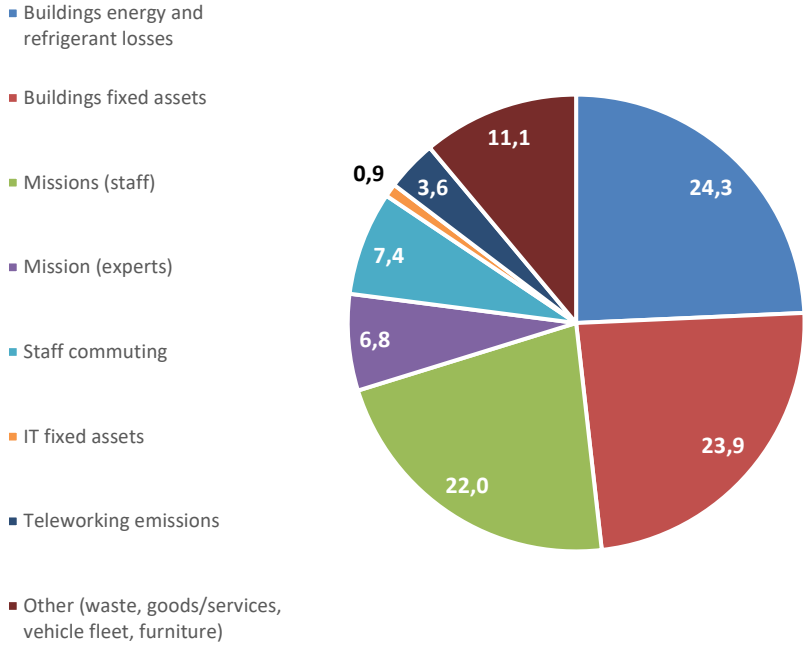
** The scope of service contract reporting is currently under revision

*** Change in emissions from 2019-23 for… i) staff missions: -22% …ii) staff missions and experts' travel: -41% …iii) overall mobility (staff missions, experts travel and commuting): -44%

The Commission reduced mobility emissions (staff commuting, staff professional travel and experts' travel) by over 40% since 2019. In this period, emissions generated by staff commuting more than halved, experts travel emissions reduced by two thirds, and those from staff professional travel by air reduced by 22%. In 2019 these categories represented 45% of the carbon footprint, reducing to 35% in 2023.

Figure 3.2 shows the main components of the carbon footprint. Buildings related emissions account for roughly half with those from buildings energy use and refrigerant loss equivalent to those generated from construction (fixed assets). The emissions from fixed assets increased from 2022 to 2023 due to a new building entering the EMAS scope, but will reduce in coming years under the Commission's real-estate policy.

Figure 3.2 Main components of the Commission's carbon footprint in 2023 (%)



3.2 Detailed carbon footprint, and site specificities

Table 3.1 (overleaf) shows the categories of the carbon footprint by scope, providing more detail than **Figure 3.1**. The totals clearly reflect different site characteristics and patterns of energy usage. For example:

- Brussels, Luxembourg and JRC Seville have the lowest per capita footprint (<4 tonnes), consistent with their mostly administrative role and with facilities comprising office accommodation and ancillary support activities.

- Some JRC sites have a far greater per capita carbon footprint, reflecting the energy-intensive nature of their activities.
  In particular, **JRC Karlsruhe** must comply with legal requirements, which is the dominant influence on energy consumption. For example, the site is obliged to maintain an air flow of around 300 000 m^3 per hour, 24 hours per day throughout the year. Moreover, JRC Karlsruhe is located in the campus of the Karlsruhe Institute of Technology has no direct control over the selection of the electricity mix (and therefore emissions). Due to the nature of the site, indicators are usually per m^2 because the floor space is the main indicator and is independent from the number of staff working and only based on technical and regulatory requirements and scientific activities.

- In **JRC Ispra**, CO_2e emissions are mainly related to onsite buildings. The site's tri-generation plant accounts for 60.9% of the emissions (10 606 tonnes CO_2e) as its processes use natural gas to produce electrical, as well as heating and cooling energy. Fixed asset buildings' emissions account for 16.2% of the total emissions (2 816 tonnes CO2e). The data related to emissions linked to service contracts currently includes only cleaning and safety contracts.

  There are currently a large number of other contracts in force in JRC Ispra, which include different aspects (e.g. linked to decommissioning activities, architectural and engineering services, maintenance works and civil works) but which require further in-depth analysis before being reported. As explained in chapter 4.2.1c, the energy consumption related to third parties are not included within the above reporting. This consequently also affects the calculation of the CO_2 emissions associated with this figure. The total value of CO_2e emissions for Ispra site, including all third parties are 18 080 tonnes in 2023.

- **JRC Geel** and Grange have similar per capita emissions, about double the Commission average. JRC Geel has a wide range of scientific installations and activity, whereas Grange has a relatively large surface area as it accommodates two large meeting rooms with translator facilities. One of these is among the largest in Ireland.

Table 3.1 Emissions at the EMAS sites in 2023 (tonnes CO_2e)

Scope and category of emissions	Brussels	Luxem-bourg	JRC Petten	JRC Geel	JRC Seville	JRC Karlsruhe	JRC Ispra	Grange	Total carbon footprint
Scope 1: Own fuel use and direct loss	**10 407**	**2 286**	**378**	**236**	**34**	**10**	**8 993**	**225**	**22 569**
Fuel for bldgs: mains gas	9 286	1 984	342	191	33		8 914		20 749
Fuel for bldgs: tanked gas (1) (biogas)								1,27	1,27
Fuel for bldgs: diesel	67	20	2,28	6,84	0,85	2,76	14,62	224	338
Biomass		6,16							6,16
Commission vehicle fleet	343	97	10,17	3,60	0,00	7,67	26	0,00	487
Refrigerants (2)	711	178	24	35	0,00	0,00	39	0,00	988
Scope 2: Purchased energy	**266**	**1 611**		**99**		**4 638**		**13**	**6 628**
External electricity supply (grey),	266	0	0	0	0	3 071	0	13	3 351
External electricity supply contract (renewables), combustion	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
District heating (combustion)		1 611		99		1 566			3 277
Scope 3: Other indirect sources	**90 208**	**14 502**	**850**	**1 601**	**804**	**1 322**	**8 271**	**1 107**	**118 667**
Fuel for bldgs: mains gas (upstream)	1 763	377	65	36	6		1 692		3 939
Fuel for bldgs: tanked gas (upstream) (1)								0,19	0,19
Fuel for bldgs: diesel (upstream)	15	4,35	0,50	1,49	0,19	0,60	3,19	49	74
Site generated renewables (upstream) (3)	4,51	11,11	8,35	1,75			433,26		459
External grey electricity supply, line losses	8,84	0,00	0,00	0,00	0,00	255	0,00	1,16	265
External 'renewables' electricity contract (upstream with line	1 097	449	34,24	103	31,00	0,00	85,61	0,00	1 799
District heating (upstream)		334		20		324			678
Business travel: air (combustion) + (including air taxi)	27 704	858	155	75	509	146	1 205	618	31 270
Business travel: rail (combustion)	378	40	6,24	2,68	8,66	10,79	25	2,08	473
Commission vehicle fleet (upstream)	77	23	2,43	0,82	0,00	1,86	6,12	0,00	112
Non rail surface travel 2 – hire cars, private vehicles, boat, bus,	409	282	6,46	10,72	8,57	43	42	5,58	808
Commuting (combustion and upstream) (4)	6 102	3 107	194	176	94	339	704	167	10 881
Experts' travel	10 092								10 092
Fixed assets - buildings	27 121	4 589	130	396	0,00	111	2 826	184	35 357
Fixed assets - IT	795	170	1,29	250	26	0,00	128	3,07	1 373
Fixed assets - Furniture	2 070	228	0,23	0,35	0,00	4,98	52	0,00	2 356
Fixed assets - Commission vehicles	104	26	2,44	0,41	0,00	0,00	7,76	0,00	140
Paper supply	227	29	0,00	1,50	1,37	1,93	12	1,31	274
Service contracts	5 880	2 386	174	411	40	27	135	30	9 083
Catering (5)	1 914	617	0,00	41	0,00	0,00	484	16,87	3 073
Teleworking emissions	3 945	876	62	46	79	42	239	26,48	5 316
Own waste	503	96	8,43	27	0,61	15	69	3,52	721
(Other category) - Ispra*							124		124
Sum	**100 881**	**18 400**	**1 228**	**1 936**	**838**	**5 970**	**17 264**	**1 346**	**147 864**
Total tonnes CO_2 per person	*3,10*	*3,26*	*5,39*	*7,34*	*2,05*	*19,64*	*7,00*	*7,96*	*3,52*

Notes: N.a. - Not applicable, Ne - Negligible

*Wastewater treatment calculated on the basis of the Ispra Organisation Environmental Footprint (OEF) methodology

(1) Grange is the only site with tanked gas rather than mains gas

(2) Refrigerant losses reported as zero at Seville (maintenance register), Karlsruhe (according to maintenance protocols- less than 3%)

(3) Geothermal, biomass, PVs, for JRC Geel electricity supply for heat pumps includes upstream emissions

(4) Can include Commission bus service when appropriate

(5) The JRC sites in Petten, Karlsruhe and Seville use restaurant facilities outside the site boundary.

3.2a The evolution of performance of individual sites to 2023 is as follows:

The evolution of the total carbon footprint at the individual EMAS sites is presented in Annex 10 and gives rise to the following observations

Brussels:
Brussels increased its carbon footprint in 2023 by 10% compared to 2022. Overall increase are mainly due to emissions from business travel and buildings' fixed assets because a new building entered the scope. Scope 1 emissions, mainly related to energy consumption, decreased by 15% showing the efficiency of the energy savings measures.

Luxembourg:
Luxembourg reduced its carbon footprint in 2023 by 2% compared to 2022. Overall reductions in energy consumption are reflected by reduced CO_2e emissions from energy use while those from business travel increased significantly. It must also be noted, in particular, that Luxembourg hosts the Commission's data centres. Emissions from fixed assets (buildings) increased in 2023 as Mercier Euroffice and Mercier Post were included although the latter replaced the former during the year.

For the JRC:

- In **JRC Geel**, the implementation of the energy savings plan has reduced CO_2e emissions. The main decrease (-11%) compared to 2022 is linked to the energy consumption.

- **JRC Ispra** observed a 11% reduction in emissions in 2023 (17 428 tonnes of CO_2e) with respect to 2022. This was mainly related to the reduction of the emissions related to buildings' energy consumption reported (-20.5% compared to 2022) due to a lower consumption of natural gas in favour of a greater contribution of renewable energy, as well as a reduction in the total site energy consumption in absolute terms.

- At **JRC Karlsruhe,** there was a significant increase in CO_2e emissions from electricity, mainly due to the CO_2 conversion factor increasing from 0,251 in 2022 to 0,273 in 2023 reflecting a change in the supplier's electricity mix. Fortunately, this was completely compensated by the reduction in CO_2e emissions from lower heating consumption. Closer examination of heating consumption during the winter months of 2021 to 2023 - specifically focusing on October to March and their relation to degree days - shows that heating consumption for the winter of 2022-2023 is significantly lower than predicted by the degree days from December onwards. This suggests that the energy-saving measures (implemented in winter 2022, cf. 4.2.2) were somewhat effective in reducing heating consumption.

- **JRC Petten's** carbon footprint increased by 0,6% compared to 2022. Overall Scope 1 emissions (own fuel use) decreased in 2023 while Scope 3 emissions (indirect sources) increased. In particular, emissions from staff professional travel by air have increased significantly in line with the general trend across the Commission.

- In **JRC Seville**, purchasing electricity from renewable sources was key to reducing CO_2e emissions in recent years. In the carbon footprint calculation for 2023 the 30-year old building, that used to represent around 10% of the footprint, was amortised. Professional air travels continue to rise, as elsewhere in the Commission. Additionally, the scope of service contracts included in the calculation has been expanded. Overall per capita emissions were similar in 2023 and 2022.

3.3 Commission carbon footprint and Greening Communication action plan

Table 3.2 shows the distribution of expected emissions reductions for 2019-30 by category under the Greening Communication action plan, resulting in an overall reduction of 38%. While there is some site specificity, for several categories the quantities are Commission wide.

The scope of the carbon footprint when the Communication was published has since expanded. Teleworking was not included and generates additional emissions, but consequently commuting emissions are reduced. Although not introduced until reporting for 2021, it has been estimated for the baseline year 2019 and for the following years. The new category of furniture (fixed assets, or embodied energy emissions) accounts for roughly 1,5% of the total carbon footprint.

However, the carbon footprint has remained relatively stable since data processing for the Greening Communication despite several procedural developments.

3.4 Conversion factors used for calculating emissions

Too many conversion factors were used to prepare this report to list here. However, as in previous years, the majority were provided under the Bilan Carbone methodology that was originally established by ADEME, and available to the public: https://bilans-ges.ademe.fr

This was complemented by multiple other sources including, but not exclusively:

- DEFRA, the UK Government Department for Environment, Food and Rural Affairs, used for commercial aviation emissions, and carbon trust for calorific values of liquid fuels
- IEA, the International Energy Agency, used for the emissions factors for national electricity networks
- -FEBIAC, the Belgian federation of automobiles and motorcycling, for emissions of national vehicle fleet
- EUROSTAT and https://www.odyssee-mure.eu projects for factors relating to domestic space heating and cooling data in EU Member States
- Internal operational data for vehicle fleets
- Commercial sources for global warming potential for some refrigerants

Table 3.2 Progress against Greening Commission targets for emissions reduction 2019-2030

Progress on Greening Communication targets	**2019***	**GC Target**		**Actual 2023**	
Emissions source	value tCO_2e	reduction % of CF	tCO_2e value	n to % of CF	value tCO_2e
1) Buildings, operations, fixed assets		**-13,1**		**-10,9**	
Brussels reduce office surface area by 200k sq. m	36 100	-5,9	18 613	-2,8	30 273
Brussels office space energy efficiency		-2,5			
Luxembourg; move to JMO2- Post building	6 288	-1,6	2 957	-0,1	6 121
all other buildings, real estate	51 535	-2,6	45 081	-8,0	34 887
all other buildings, increased energy		-0,5			
2) Mobility		**-16,2**		**-10,3**	
Staff Missions	41 604	-13,9	12 667	-4,3	32 551
Staff commuting Brussels	13 916	-2,1	9 544	-3,8	6 102
Staff commuting other sites	8 921	-0,1	8 713	-2,0	4 779
Vehicle fleet	1 116	-0,1	908	-0,2	739
3) IT fixed assets	3 419	**-1,4**	505	**-1,0**	1 373
4) Goods and services, own waste (plus "other" Ispra)	14 060	**-0,3**	13 436	**-0,4**	13 275
5) Subsidised travel (experts travel)	31 216	**-6,8**	17 061	**-10,1**	10 092
Total (original greening scope)	**208 175**	**-37,8**	**129 485**	**-32,7**	**140 192**
6) Teleworking (added in 2021)	*1 065*			**2,0**	*5 316*
7) Fixed assets furniture (added in 2023)	*1 243*			**0,5**	*2 356*
Total (including teleworking)	***210 483***			***-29,8***	***147 864***

Note * 2019 data reported in 2023

The Commission's approach to the carbon footprint is reviewed annually by experts who recommend updates to the methodology, coefficients and sources when required. This year the methodology to calculate scope 3 emissions results in some small changes, as stated in Section 3.1

4 Using more efficient, sustainable and climate resilient buildings and workspaces

Greening The Commission: *.....the Commission will comply with the relevant targets set in the package of proposals on energy and climate action aiming at delivering the European*

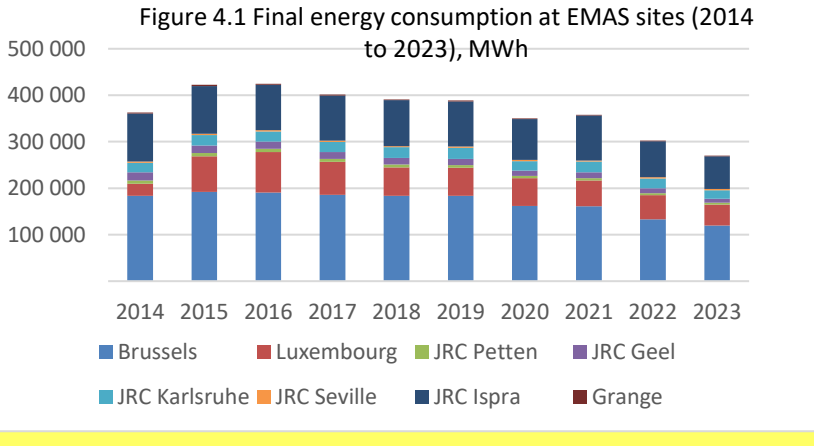
4.1 Introduction

Emissions from buildings represent a major part of the Commission's carbon footprint, and the aspect over which it exercises the most control is **energy consumption.** Reducing overall energy consumption and **dependence on fossil fuels** are the two most important elements for reducing emissions. A minor contributor, in comparison, are **losses of refrigerants** from the technical installations in buildings of which each kilogram lost may result in several tonnes of CO_2e. Far more important are the **embedded emissions from building construction**, and which are accounted for using an amortisation approach.

4.2. Overview of buildings' energy consumption at the Commission's EMAS sites

Figure 4.1 indicates that the Commission continues to reduce its total buildings' energy consumption, and in the COVID years of 2020 and 2021 maintained this trend although more ventilation was required to avoid recirculating air in the buildings. The Commission reduced final energy consumption by 11% in 2023 compared with 2022, and by over 30% since 2019.

Figure 4.1 Final energy consumption at EMAS sites (2014 to 2023), MWh



There is a general downward trend observed at all sites due to a combination of Commission wide and site level initiatives as described in Section 4.2.

4.2a Brussels, key achievements and actions

- The Commission seeks, under the Greening Communication, to halve the number of buildings it occupies and reduce the surface area by 25% by 2030. The announced sale, in 2024, of 23 older and inefficient buildings will be key.

- Recurring short term buildings closures:
  - 30 office buildings closed from 03 to 06/1/2023
  - 21 buildings closed from 31/07 to 25/08/2023
  - 42 buildings closed from 26 to 29/12/2023
- 7 buildings fully organised in dynamic collaborative space (DCS)
- Buildings plan foresees occupying only 31 buildings by 2030
- Successful implementation of the winter energy consumption reduction plan, aiming at a 15% reduction both in electricity and gas, target was exceeded (17% achieved in 2022/23)
- In 2023, occupation of greener buildings as to L107, L51, SB34
- In 2024, occupation of the first Brussels 'zero emission in-use' building, the new CO46

4.2b Luxembourg, key achievements and actions

- Revised operational modes of HVAC systems were adopted both for winter and summer leading to reductions in energy consumption. For 2023, 13.6% energy reduction achieved compared to 2022.
- In 2023 all bldgs have 'green' electricity but we report 97%, as owner of LACC didn't provide GoO certificate - origin of green energy.
- Mercier Euroffice Building abandoned 31 July 2023 and OP and DG CNCT staff moved to Mercier-Post building 1 August 2023. The building has Platinum level DGNB environmental certification for sustainable construction. It is the first Commission building in Luxembourg to be organised as dynamic collaborative space (DCS).
- Progress on construction of the Jean Monnet 2 (JMO2) building, to be completed by May 2026 (phase 1), and December 2026 (phase 2).
- Data for 2023 include some estimations due to broken counters, managed by the owner, in DRB.
- Data from 2018-2022 were updated to incorporate corrections to past estimations not properly followed up. Moreover heating and cooling in BECH were reported as gas supply while it was district heating and cooling by a special on site system using gas cogeneration.

Table 4.1 Final energy consumption at EMAS sites (2014 to 2023), MWh

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		183 896	191 982	190 364	185 485	183 868	183 707	162 011	161 381	132 879	119 623
Luxembourg		25 988	76 681	87 795	71 232	60 905	60 139	59 244	55 213	52 352	45 239
JRC Petten		6 766	6 913	6 623	6 298	6 551	6 035	4 918	5 015	4 372	4 213
JRC Geel		17 719	16 243	15 737	14 777	13 750	13 049	11 797	12 550	9 964	8 161
JRC Karlsruhe		20 500	22 786	21 889	22 104	23 158	24 222	20 486	22 977	21 366	18 614
JRC Seville		2 639	2 542	2 414	2 612	2 351	2 315	2 259	2 555	2 691	2 272
JRC Ispra		103 362	102 941	97 609	97 025	98 618	97 245	88 114	96 846	77 393	70 722
Grange		2 271	2 425	2 389	2 185	1 925	2 034	1 709	1 525	1 502	1 415
Commission		**363 140**	**422 512**	**424 820**	**401 716**	**391 125**	**388 747**	**350 537**	**358 063**	**302 519**	**270 258**

4.2c JRC (non Brussels) sites, key achievements and actions

Overall, the JRC reduced its energy consumption in 2023 compared to 2022 by approximately 17%. This was achieved through measures such as reducing temperatures and the daily schedule for heating and ventilation, where possible. Some medium-term measures are also being developed such as more efficient planning of scientific activities.

It should be borne in mind that most JRC sites host energy-intensive scientific and/or nuclear infrastructures that need to comply with specific regulations. For example, some of these facilities need to be continuously ventilated due to legal compliance. In addition, some scientific tests require (high) energy consuming specific procedures (e.g. the use of very low temperature freezers).

• **JRC Geel** is a high-energy consumer due to some of its activities (e.g. Gelina nuclear accelerator). By continuing energy saving measures and shutting down Gelina due to technical problems, JRC Geel reduced its energy consumption by 18% in 2023.

• **JRC Ispra's** total energy consumption decreased by 8.6% in 2023 compared with 2022. This was due to the many actions aimed at reducing energy consumption implemented on site (see table 4.2.2). Management supported with a new approach promoting the integration of the trigeneration plant production (-20% compared to 2022) with renewable energies, both on and off-site (e.g., +22.5% of "green" electric energy purchased). With reference to data reported in Fig.4.2.1 and Tables 4.1- 4.2, to relate the site's consumption to the activities under the responsibility of JRC Ispra, the following energy consumption contributions are not included within the reporting because outside the EMAS scope of JRC Ispra: EUROPOL Decryption platform (in force since 2021), Ispra-1 nuclear facilities (under SOGIN administration since end of 2019), Italian Fire Brigade, Bank office, Carabinieri station, bus contractor's office.

Starting from 2021, also the contribution of the new VELA 10-11 laboratory has been included within the data set despite the activities carried out, i.e. tests on vehicle emissions on the market are for third parties and, more important for target consistency purposes, they have been planned after the definition of EMAS targets.
The total energy consumption of the Ispra site for 2023, including all the above contributions is 74 862 MWh (-15.8% compared to previous year), that corresponds to 30 MWh/p and 282 kWh/km2.

• Due to the specific site characteristics of **JRC Karlsruhe**, only actions with major infrastructure works (e.g. thermal insulation of the old parts of buildings or renewal of the ventilation systems) that require heavy financial investment (ie likely more than EUR 10 million per action) will have a significant environmental impact on buildings' energy consumption. As such funding levels cannot be foreseen, JRC Karlsruhe refrains from detailed planning in this context. Although they contribute to a more limited extent to improving energy consumption, other lower cost site actions such as exchanging "conventional" lights by light-emitting diode (LEDs), or reducing the time when the ventilation of the controlled areas is operating at 100% have been implemented..

• In 2023, several restoration and repair works of buildings were launched in **JRC Petten**. Laboratory installations underwent regular assessments and were powered down if not in use. Additionally, a feasibility and compatibility study on using the existing geothermal system in the future was conducted and is in development. JRC Petten implemented various measures from the Building Energy Savings Together (BEST) initiative such as decreasing building temperatures and reducing ventilation during holidays.

• **JRC Seville** partially occupies a building built in 1990, that itself was made in part from reclaimed materials. The landlord plans to implement several energy efficiency measures, such as the installation of photovoltaic panels. JRC Seville is looking to reduce the number of its ICT infrastructure rooms. In the medium-term, it also plans to move to a new energy-efficient building inspired by the values of the European Bauhaus.

4.2d DG SANTE at Grange, key achievements and actions

Most of the energy requirements for the buildings are met from the electricity grid and from heating oil supplied on average three times per year and stored in an 85,000 litres bunded storage tank. There is no mains connection for gas on site because there is no mains gas in the area. Bio-LPG is supplied by two small propane storage tanks of 2,000 lts each and used for cooking in the canteen and restaurant, and to heat the water on from May to September when oil boilers are shut down. Heating oil has in recent years provided a larger share of the site's energy use than electricity. The trends in energy consumption are largely related to external causes such as climate, seasons (natural light levels) and to office occupancy rates.

Insulating the building's roof and replacing/refurbishing windows has been effective. The replacement of old high wattage lights with lower consuming LEDs will continue across the site. Final energy consumption reduced by 6% since 2022 and by more than 30% since 2019. A wing of the site was largely closed off for all 2023 and also helped reduce energy. consumption since then.

4.3 Main actions to reduce energy consumption and emissions at EMAS sites

The Global Annual Action Plan (GAAP) 2023, highlights more than 100 actions under the heading *Use more efficient sustainable, and climate-resilient buildings and office space*. Some of the more visible actions are highlighted below.

i) Corporate actions to reduce buildings energy consumption (and emissions) include :

- Buildings closure over holiday periods
- Lower thermoset settings and reduced 'comfort hours' for heating and ventilation
- More efficient use of office space, and adoption of dynamic collaborative spaces
- Efforts in line with EU initiative of Member States to reduce winter energy consumption by 15% compared to the five year average
- Contracting electricity from renewable sources (most sites)
- Regular communication campaigns urging staff to switch off and generally minimise energy consumption

4.3 Main actions to reduce energy consumption and emissions at EMAS sites

ii) Site level actions are as follows

Overall, the JRC - beside implementing the actions mentioned in section i) above - have put in place additional measures such as

- Reduction of the temperatures to 19 °C and the daily schedule for heating and ventilation, where possible.
- Medium-term measures such as the temporary mothballing of least energy-effective buildings or the efficient planning of the scientific activities.

More specifically and as an example, the main measures implemented in **JRC Ispra** in 2023:

- Ventilation and heating provided in offices only between 8:00 and 18:00, from Monday to Friday
- Reduction of street lighting hours
- Reduction of hot water temperature in the district heating, from 85°C to 80-70°C (depending on weather conditions)
- Heating and ventilation switched off during the Christmas holidays until 08.01.2024 but in critical buildings
- Closure of buildings 63 and 5a
- Specific actions implemented in laboratories (e.g. punctual shutdown of air conditioning systems serving areas not used intensively in VELA 10)

JRC Karlsruhe has introduced energy-saving measures since winter 2022 which reduce the time when the ventilation in the controlled area is running at 100% by 2.5 hours per day, hence increasing the time when the system is running at 50%. In addition, the controlled area was closed on days when less work was expected (e.g. bridge days) during which ventilation was running at 50%.

Grange maintained temperature reductions (19°C in occupied offices, and 14°C in unoccupied offices), turned off parking and street lights between 9pm and 7am in addition to the replacement of old lights by LEDs.

4.4 Final energy consumption data by surface area and staff

Table 4.2 presents energy consumption as per capita and per square meter. As indicated previously, the JRC sites in Ispra, Geel, Petten, Karlsruhe have laboratories and conduct energy-intensive experiments, which explain the higher consumption (per capita or m^2) than other EMAS sites, consisting mainly of offices.

Key Corporate level communication campaigns: addressing energy use

EU Institutions joined forces to achieve 15% of energy savings every autumn/winter as a contribution to European solidarity in times of energy scarcity. Energy-saving actions are continuing as part of the longer-term greening objectives.

Some of those measures are already being implemented in the context of the greening of the Commission. This includes, for example, the temporary closure of some buildings during the summer, under the 'Building Energy Savings Together' (BEST) action", which achieved roughly 330MWh of electricity savings.

Table 4.2 Buildings' final energy consumption, 2014-23

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target * 2030
Part A - MWh/p												
Brussels		7,2	7,5	7,2	6,8	6,7	6,4	5,4	5,3	4,3	3,7	*3,8*
Luxembourg		6,4	16,4	18,9	14,9	12,1	11,7	11,3	9,9	9,2	8,0	7,3
JRC Petten		24	25	24	24	26	24	20	21	19	18	*21*
JRC Geel		51	50	53	56	53	50	44	48	38	31	*36*
JRC Karlsruhe		69	75	68	69	71	75	65	73	69	61	75
JRC Seville		9,1	9,0	8,0	8,1	6,9	6,3	5,9	6,6	6,7	5,6	3,8
JRC Ispra		44	45	43	43	43	41,7	37	39	31	29	27
Grange		12,7	13,5	12,6	11,6	10,8	11,6	9,9	8,6	8,3	8,4	7,6
Commission		**10,85**	**12,41**	**12,19**	**11,29**	**10,89**	**10,34**	**9,00**	**8,95**	**7,47**	**6,43**	***6,55***
Part B - kWh/m^2												
Brussels		171	180	178	172	176	167	147	148	131	116	*125*
Luxembourg		131	342	364	296	337	331	326	304	290	236	232
JRC Petten		348	323	323	302	328	302	246	251	219	211	*261*
JRC Geel		363	321	311	293	272	258	233	248	197	161	*189*
JRC Karlsruhe		491	546	507	512	536	561	475	532	489	426	550
JRC Seville		376	355	337	345	310	301	291	318	335	283	180
JRC Ispra		404	406	384	373	377	376	341	365	291	266	244
Grange		183	195	193	176	155	164	138	123	121	114	112
Commission		**235**	**256**	**250**	**235**	**241**	**239**	**216**	**218**	**193**	**171**	***176***

Note **** 2030 target value already reached in 2023***

Case Study 4.1: Level-ing up JRC buildings' performances

Level(s) is the European Framework for Sustainable Buildings developed by the JRC, It is an assessment and reporting tool for the sustainability performance of buildings. It is closely affiliated with the goals of the European Green Deal for a sustainable building sector, and part of the actions described in the new Circular Economy Action Plan and the Renovation Wave Strategy. It was developed as one of the important elements of the **New European Bauhaus (NEB)** initiative.

There are several sustainable practices of Level(s) at the JRC such as in Seville where candidates of the international architectural design contest for the new building were asked to include reports based on the Level(s) checklist in their proposals. Also in Geel, Level(s) is used for the refurbishment of the conference building (B100). This co-creation project involved JRC Geel staff in the building design which developed both flexible and multiple functionalities.

How does Level(s) support the New European Bauhaus?

Environmental sustainability is one of the three values of the New European Bauhaus, and part of the initiative's strategy is to better connect the European Green Deal to our daily lives and living spaces. Level(s) complements this agenda by equipping proponents of the NEB in the building sector to identify measures to improve the sustainability of Europe's buildings at every life cycle stage.

∞ Level(s) - European Commission (europa.eu)

4.5 Total renewable energy consumption

The Commission has reduced the total quantity and proportion of energy from non-renewable sources over the years, as shown in **Table 4.3**. Consumption of energy from non renewable sources in 2023 was 18% lower than in 2022, and 41% lower than in 2019. Non renewables represented 51% of energy consumption in 2023, down from 55% in 2022 and 59% in 2019.

In 2023 in **Brussels**, the reduction in renewable energy consumed is linked to the overall decrease in energy used, due to continued reduction in the office space of the EC building portfolio and continued replacement of old buildings by more sustainable ones, the implementation of a medium and long-term energy efficiency action plan in the buildings to reduce energy consumption.

In Brussels, in 2023, the BERL, SB34 and L-15 were equipped with photovoltaic panels (PV). The installation of PV in CO46 and future buildings is due in 2024. A project for the new renewable energy sharing schemes from nearby PV is under negotiation for DAV1 & NOHE.

In 2023 in **Luxembourg**, the reduction in renewable energy consumption is linked to the overall decrease of energy use (renewable electricity accounted for 97% of total supplied electricity).

For the JRC:

• In 2023, **JRC Geel**, the 12% reduction in renewable energy consumed is linked to the decrease of electricity used.

• In **JRC Ispra,** the renewable energy in 2023 increased by almost 33% compared to previous year mainly due to the 22.5% increasing of the electricity purchased from outside, considered 100% "green", as well as the increase in the energy produced by the PV plants (+30%). Renewable energy considers the contribution of thermal exchange with lake water. This contribution takes into account the entire value of lake water. A campaign to install lake water meters in buildings is on-going. Afterwards it will be possible to have a more detailed metering. To be noted that the value of renewable energy also includes the contribution of heat pumps located in buildings 46i and 58 and the heat pump located in building 59x (recovering heat from the district cooling network). This value is instead not reported in the final energy consumption (table 4.1) as it cannot be considered primary energy. The same assumption of chapter 4.2.1c was made also for the calculation of total renewable energy consumption: the relative third party contributions were therefore excluded from the reported data. The total 2023 Ispra site renewable energy consumption (MWh) contributions including all third parties is 24 428 MWh.

• **JRC Karlsruhe** does not set a target regarding the non-renewable energy use in buildings because the only type of energy coming from renewable sources is electricity. Electricity is supplied by KIT and upstream supplier(s) without JRC Karlsruhe having any influence on its sources.
• In 2023, the total renewable energy consumption decreased slightly in **JRC Petten**. The possible reason could be milder summer temperatures compared to previous years.

• In **JRC Seville**, the modernisation of the HVAC has increased its baseline energy consumption and inherent complexity. Nevertheless, the building owner continues to implement further energy-saving measures at the request of JRC. The decrease in gas consumption is partially attributable to these initiatives, for example the reduction of heating times. The scheduled electrical supply cut-off for replacing and upgrading the low-voltage transformers played a key role in reducing the overall consumption in 2023, and the new transformers installed are expected to deliver savings in the short-term.

Table 4.3 Total renewable and non renewable energy consumption (MWh)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Renewable energy consumption (MWh)											
Brussels		104 875	104 273	106 440	103 916	104 266	103 922	89 277	79 966	73 036	68 061
Luxembourg		18 756	38 262	40 167	31 187	27 597	28 687	27 717	26 443	29 065	25 819
JRC Petten		148	208	230	227	3 124	2 930	2 647	2 532	2 467	2 353
JRC Geel						9 392	9 276	8 197	8 102	7 612	6 731
JRC Karlsruhe		3 681	4 833	4 640	4 855	5 603	6 273	5 687	3 953	3 606	3 645
JRC Seville		597	427	381	429	486	313	1 798	2 106	2 292	2 092
JRC Ispra		4 629	6 173	5 069	5 486	10 416	8 400	10 859	13 068	17 360	23 077
Grange		171	209	240	260	300	302	242	213	366	438
Commission		**132 857**	**154 385**	**157 165**	**146 360**	**161 183**	**160 103**	**146 424**	**136 383**	**135 804**	**132 216**
Commission (as % of total energy)		**37**	**37**	**37**	**36**	**41**	**41**	**42**	**38**	**45**	**49**

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target * 2030
Non renewable energy consumption (MWh)												
Brussels		79 020	87 709	83 924	81 569	79 602	79 785	72 734	81 415	59 843	51 562	51 463
Luxembourg		7 232	38 419	47 629	40 045	33 308	31 452	31 526	28 770	23 287	19 420	15 150
JRC Petten		6 618	6 705	6 393	6 071	3 427	3 105	2 271	2 482	1 904	1 860	*2 813*
JRC Geel		17 719	16 243	15 737	14 777	4 357	3 773	3 600	4 449	2 352	1 430	*3 019*
JRC Karlsruhe		16 818	17 953	17 250	17 249	17 556	17 949	14 799	19 024	17 760	14 969	*17 949*
JRC Seville		2 042	2 114	2 033	2 183	1 865	2 002	461	449	399	180	
JRC Ispra		98 733	96 768	92 540	91 539	88 203	88 845	77 255	83 779	60 033	47 645	*62 192*
Grange		2 100	2 215	2 149	1 925	1 625	1 732	1 467	1 312	1 136	976	*1 146*
Commission NON renewable energy consumption (MWh)		**230.283**	**268.127**	**267.655**	**255.357**	**229.942**	**228.644**	**204.113**	**221.680**	**166.715**	**138.043**	**153.733**
Commission NON renewable energy consumption (MWh/p)		**6,9**	**7,9**	**7,7**	**7,2**	**6,4**	**6,1**	**5,2**	**5,5**	**4,1**	**3,3**	**4,0**
Commission (% non ren. energy con)		**63**	**63**	**63**	**64**	**59**	**59**	**58**	**62**	**55**	**51**	

*Note: 1) Site generated renewable energy details is reported in Annex 1 ; Note 2) * 2030 target value already reached in 2023*

4.6 Fuel use by site

The mains points are as follows:

- Most sites have contracted electricity with certificates of origin from renewable sources in recent years
- JRC Karlsruhe and DG SANTE at Grange do not have a main gas supply.
- The main source of energy in JRC Ispra site is the internal trigeneration natural gas plant, complemented by electric energy purchased from the grid, on site photovoltaic plants and cooling energy provided by exchange with cooling water. Other contributions come from different heat pumps (e.g. through exchange with wastewater or groundwater) located along the site and from diesel and petrol used for laboratories.
- JRC Petten uses diesel fuel for the Emergency Generator. The last delivery was made in June 2022, meaning the consumption data for diesel is valid for the timeframe June 2022- March 2024.
- District heating supplies 5 buildings in Luxembourg and the JRC sites in Karlsruhe and Geel.
- Most buildings in Luxembourg (7 out of 13) have a main gas supply, while the CPE5 uses woodchip/biomass.
- Diesel is only used as the predominant heating fuel at DG SANTE at Grange, although at most sites it is used for testing the back up generators. It was phased out in Brussels buildings several years ago.

4.7 Developing site generated renewable energy

The main points are summarised below:

- There have been large increases in use of geothermal heat pumps in recent years,
- Brussels plans to develop solar panel installation in the following years, as specified before.
- Luxembourg's JMO2 building will be one of the most technologically advanced building to be used by the European Institutions. It is targeting a BREEAM certification level "Excellent", and will benefit for example, from: a photovoltaic solar system, a water softener with CO_2 (healthiest and most ecological system available on the market), building occupation detection**,** energy recovery elevators converting braking energy into electricity, ventilation heat recovery of over 85%, etc.

At the JRC:

• **JRC Geel** is currently making a study for the implementation of solar panels. So far, approximately 1000 panels for a capacity of around 400 KW should be installed.

• At **JRC Petten**, a feasibility and compatibility study on using in future the existing geothermal system for heating/cooling in buildings was conducted. The study is still in development.

• **JRC Ispra** will further increase its renewable site energy consumption in the next few years by installing other PV systems (2 MW by 2024) and running pilot projects to produce and use hydrogen on site. On top of that, the site has analysed the possibility to acquire bio-methane to replace natural gas in the trigeneration plant. However, there are currently important technical and market capability obstacles. Currently the renewable energy sources of JRC Ispra are:

  - electrical energy purchased from the grid (100% green);
  - electrical energy produced from the photovoltaic panels system (+12,9% of peak capacity compared to 2022);
  - cooling energy from lake water heat exchange;
  - thermal and cooling energy recovered through the heat pumps located in buildings 59x, 46i and 58.

- At **JRC Karlsruhe**, the installation of PV is not possible due to regulatory restrictions.

4.8 Emissions from buildings These represent a significant proportion of the Commission's carbon footprint, and include those from energy use in the buildings, from refrigerant losses for installations, and from construction of the buildings. Non CO_2 emissions, such as particulate matter are also considered.

4.8a Emissions from buildings' energy consumption

Buildings' energy consumption represents the part of the carbon footprint over which the sites have the most control. Data in **Table 4.4** show that the Commission reduced emissions by **16%** just in the last year, from 41 ktonnes CO_2e in 2022 to 35 ktonnes in 2023.

Table 4.4 Emissions from buildings' energy consumption at Commission EMAS sites (tCO_2e), 2014 - 2023

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels	17 838	19 606	18 406	17 809	18 201	18 506	16 873	18 691	14 135	12 507
Luxembourg	2 458	7 121	8 938	7 159	5 531	5 439	5 736	7 295	6 040	4 796
JRC Petten	2 985	2 951	2 592	2 504	813	751	603	572	466	452
JRC Geel	5 303	4 821	4 673	4 384	1 267	1 083	1 052	1 302	723	459
JRC Karlsruhe	6 165	6 440	6 093	6 955	6 853	6 548	5 226	5 506	5 612	5 220
JRC Seville	676	799	697	739	607	568	114	125	121	72
JRC Ispra	23 272	22 820	21 597	21 253	21 114	21 709	17 487	19 293	14 018	11 142
Grange	796	848	771	666	542	550	475	424	342	288
Total	**59 492**	**65 406**	**63 766**	**61 469**	**54 928**	**55 153**	**47 566**	**53 210**	**41 456**	**34 936**
Total change since 2019 (%)							**- 14**	**12**	**- 22**	**- 16**

Table 4.5 Emissions from buildings' energy consumption at Commission EMAS sites (tCO_2e/p), 2014 - 2023

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target * 2030
Brussels	0,69	0,76	0,69	0,66	0,67	0,64	0,56	0,61	0,46	0,38	0,39
Luxembourg	0,61	1,53	1,92	1,50	1,10	1,06	1,09	1,31	1,06	0,85	0,61
JRC Petten	10,58	10,61	9,39	9,52	3,28	3,02	2,44	2,38	2,02	1,98	*2,74*
JRC Geel	15,33	14,70	15,79	16,54	4,89	4,13	3,95	4,95	2,74	1,74	*2,95*
JRC Karlsruhe	19,27	20,00	18,80	21,60	21,62	20,79	16,91	18,05	18,34	17,17	*21,33*
JRC Seville	2,34	2,82	2,32	2,29	1,78	1,54	0,30	0,32	0,30	0,18	*0,25*
JRC Ispra	9,96	9,94	9,56	9,33	9,24	9,31	7,25	7,80	5,62	4,51	4,31
Grange	4,44	4,71	4,06	3,54	3,03	3,12	2,75	2,38	1,88	1,71	0,93
Total	**1,78**	**1,92**	**1,83**	**1,73**	**1,53**	**1,47**	**1,22**	**1,33**	**1,02**	**0,83**	**0,85**
Total change since 2019 (%)							**- 17**	**- 9**	**- 30**	**- 43**	**- 42**

*Note: * 2030 target value already reached in 2023*

Table 4.4 also shows that Brussels emissions from energy consumption are relatively low considering its total consumption reflecting that electricity is supplied from renewable sources. **Brussels** and **JRC Ispra** together accounted for nearly two thirds of total CO_2e emissions from buildings' energy consumption in 2023, with JRC Seville and Grange responsible for very small amounts. All the sites reduced emissions in 2023.

Luxembourg: Corrections in energy consumption were made, from 2018-2022, to incorporate improper reporting of heating/cooling in BECH as main gas supply while it was district heating. This resulted in reduction of CO2 emissions for these past years.
In 2023**,** Luxembourg reduced its CO_2e emissions from buildings' energy by 16.7% compared to 2022 due to overall reduction of the energy consumption. To be noted that for 2023 97% Green Electricity.

In 2023, **JRC-Geel** reduced its CO_2e environmental impact by the reduction of the energy consumption and in particular the use of district heating (more than 50% reduction).

At **JRC Ispra**, the tri-generation gas plant provides for a more efficient energy supply for the site than that would be provided by the market and satisfies the thermal energy needs that anyway could not be provided by any external operator. The grid supplies a small amount of electricity and the site is therefore responsible for a significantly greater proportion of the total emissions. The emissions related to buildings' energy consumption in 2023 decreased by -20.5% compared to 2022 due to a lower consumption of natural gas and to a greater contribution of renewable energy, as well as a reduction in the total site energy consumption in absolute terms. The same assumption of chapter 4.2.1c was made also for the calculation of total emissions from buildings' energy consumption: the relative third-party contributions were therefore excluded from the reported data. The total 2023 Ispra site values for CO_2 emissions related to buildings' energy consumption including all third parties is 11 794 tonnes.

Table 4.5 shows the historical trends in per capita buildings emissions along with the aggregated Commission value. A gradual return to work in 2021, resulted in a 5% increase in per capita emissions but 2022 and 2023 continue to show a decrease despite the return to the office.

The **JRC sites in Geel and Petten** significantly reduced their emissions in 2018 by switching to an electricity contract with predominantly renewable sources. JRC Geel employs heat pumps in one of its main buildings. **JRC Seville** followed in 2020. Although such contracts result in low or zero emissions for energy use, there is a small amount representing embedded emissions of the renewable sources.

Overall, the Commission has reduced emissions from buildings gradually since all sites have been included in reporting in 2014. There are relatively few actions that directly target reducing CO_2e emissions from buildings, as this is often an additional benefit of actions that primarily target reducing energy consumption.

4.8b Emissions from refrigerants used in buildings and experimental installations

Refrigerants have Global Warming Potentials (GWP) typically between 1 000 and 10 000 meaning that a leak of just a few kilograms can have the equivalent atmospheric global warming impact of several tonnes of CO_2. They typically account for 1 to 2% of buildings' CO_2e emissions from energy consumption.

Between 15 and 20 refrigerants are recorded in EMAS reporting at JRC Ispra and JRC Geel, and 15 at JRC Petten, and the distribution by site is shown in **Figure 4.2.**

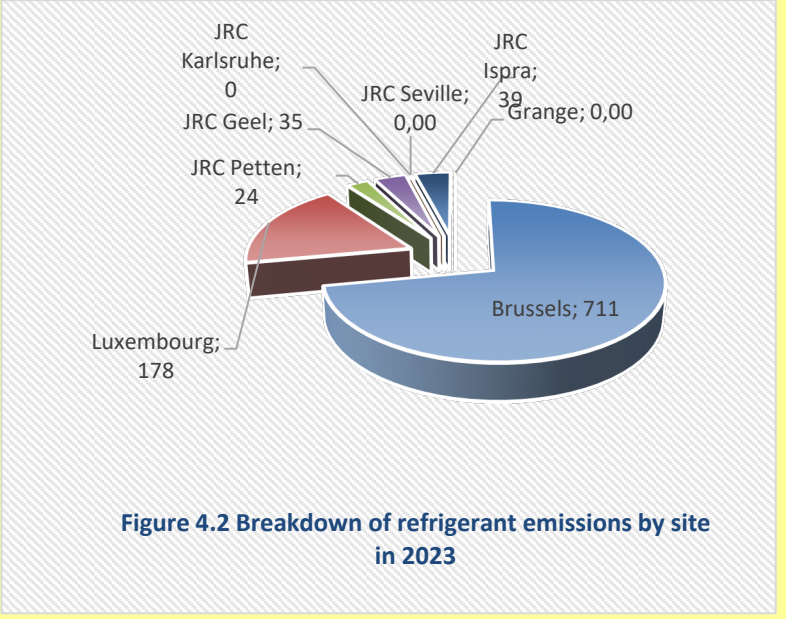


Figure 4.2 Breakdown of refrigerant emissions by site in 2023

The evolution of refrigerant emissions from 2014 to 2023 is shown in **Table 4.6**

Table 4.6 Refrigerant emissions at Commission EMAS sites (tCO_2e), 2018 - 2023

	2018	2019	2020	2021	2022	2023
Brussels	847	677	876	1 163	771	711
Luxembourg	218	89	211	336	79	178
JRC Petten	46	42	2,40	28	69	24
JRC Geel	98	278	143	195	62	35
JRC Karlsruhe					0	0
JRC Seville	27				4,88	0,00
JRC Ispra	37	208	540	315	62	39
Grange	34		7,88	11,79	0	0,00
Total	**1 308**	**1 293**	**1 781**	**2 050**	**1 048**	**988**

Trends in emissions from refrigerant leaks

Overall, the Commission's total and per capita refrigerant losses have reduced considerably since 2021, and **Brussels** accounts for nearly two third owing to the large number of staff working in buildings with HVAC systems.

In **Luxembourg**, total losses increased significantly, as losses of R134a and R404a gases were reported in 7 installations during yearly control, 4 of them at the newly acquired MERCIER POST Building.

For the JRC:

• **JRC Geel** continues its efforts in mitigating the F gas leaks. As a result, the 2023 observed leaks were reduced by 43 %. The main impactful leaks derived from SF6, which is not used as a refrigerant but as an insulation gas.

• In **JRC Ispra**, the 39 tonnes of CO_2e losses recorded in 2023 originated from 1 chiller installed in VELA10-11 laboratory. Following the cause analysis of the incidents who interested the laboratories in the last 2 years (VELA 10 in 2022 and VELA 10-11 HVAC in 2023), flexible hoses have been installed on all the 3 chillers of the laboratories in order to avoid vibrations and resonances that cause refrigerant leaks and service interruption. As improvement action, in 2023 VELA labs replaced R404a and R507c gas installed in older equipment with R448a, a refrigerant with lower GWP. Thanks to this action, the potential total quantity of CO2eq emissions reduced by 65%.

• **JRC Karlsruhe** continues to report no losses during normal operation under its protocol (less than 3%).

• **JRC Petten** recorded a decrease in refrigerant loss in 2023 compared to 2022. In 2022, a significant number of installations were replaced with more energy efficient units. Therefore, the peak in 2022 was not a loss but rather a removal of refrigerants.

Grange did experience gas losses in 2023 under the F-gases maintenance schedule. The 10 tonnes of CO_2e losses originated from one of the LU-VE units outside the main server room.

4.8c Emissions from buildings fixed assets (embodied emissions)

Emissions from buildings (fixed assets) are evaluated using an amortisation approach in which the emissions for a building are distributed over its assumed design life. Different sites may use different values according to the characteristics of their buildings. It is a 'broadbrush' approach, a relatively small number of factors are applied to the calculation. The calculation of fixed asset emissions by site in **Table 4.7** are subject to the following considerations:

Table 4.7 Fixed asset (embodied) emission for Commission buildings, (2018-2023)

	2018	2019	2020	2021	2022	2023
Brussels	28 466	28 920	28 381	27 154	26 264	27 121
Luxembourg	4 279	4 298	4 298	4 298	4 298	4 589
JRC Petten	138	138	130	130	130	130
JRC Geel	647	538	540	540	504	396
JRC Karlsruhe	111	111	111	111	111	111
JRC Seville			87	87	87	0
JRC Ispra	3 733	3 257	3 292	2 844	2 831	2 826
Grange	215	215	215	215	215	184
Total	**37 589**	**37 476**	**37 054**	**35 378**	**34 439**	**35 357**

4.8c Emissions from buildings fixed assets (embodied emissions)

Brussels
The spreading of these emissions across a long period of time limits the impact of the introduction of just one building in the scope. Figures for 2022 show the first effects of the new building policy, in the framework of the Greening of the EC communication, aiming at a reduction of 200 000 m² by 2030. The small increase for 2023 is due to the entry of the new building L107 in the EMAS scope.

Luxembourg
In 2023, in Luxembourg, fixed asset emissions for buildings account for 4 589 tCO_2e, increased by 6.7% since 2022. HITEC Building was abandoned end of 2022 and was out of EMAS scope for 2023. The Mercier Post building replaced the Mercier Euroffice building in August 2023, but both buildings are considered in the EMAS Scope for 2023. The value will change in the next few years as more buildings are removed from the portfolio with the final move to JMO2 in 2026 and which should be a long term solution.

For the JRC:

• In **JRC Ispra**, fixed asset emissions account for 2 816 tonnes CO2e in 2023. It depends on building's design life and the type of construction, and is based on a 50 years amortisation period. The overall value reduced by 13,3 % since 2019 and 0.2% with respect to last year.

• In **JRC Karlsruhe**, fixed asset emissions are based on the generic factor - "not specified - offices" (m²) - which is unchanged since 2016.

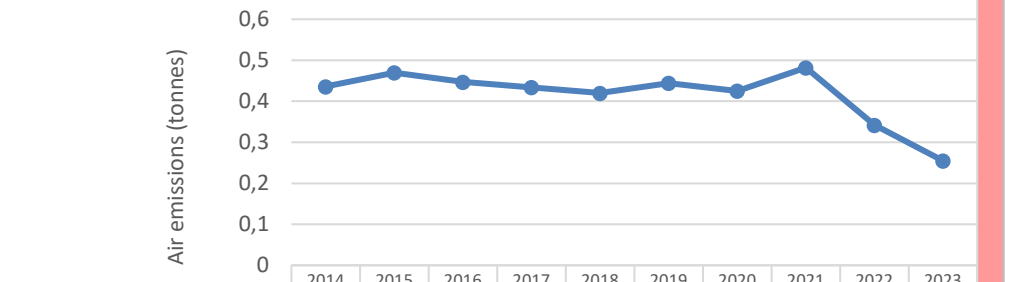
• In **JRC Seville**, the 30-year building is fully amortised.

4.8d Non CO_2 emissions to air

Considerations are as follows at the JRC sites where calculations have been presented for several years:

At **JRC Geel**, the emissions from air pollutants (SO_2, NO_2, etc.) are rather low and relatively stable because most of the buildings are heated by natural gas and hot water. Other emissions arise from the use and testing of the emergency generators, which run less than 100 hours/year. In 2023, the total air emissions was reduced by around 25% compared to 2022.

Figure 4.3 JRC Geel: Total air emissions buildings (tonnes) as minimum (SO_2, NOx, PM_{10})



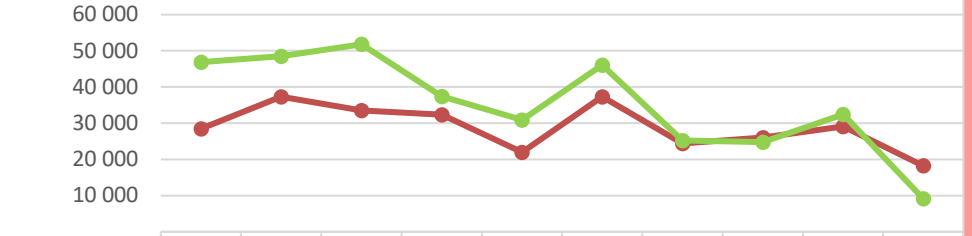
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total air emissions buildings	0,436	0,47	0,447	0,434	0,42	0,444	0,425	0,482	0,342	0,255

At **JRC Ispra**, **Figure 4.4** shows that total emissions of CO and NO_x from the trigeneration plant in 2023 have decreased compared to last year mainly due to the actions carried out between the end of 2022 and beginning of 2023 (i.e. the installation of new catalyst filters on three of the engines and the extraordinary maintenance of one of the engines), but also due to the reduction in total operating hours on an annual basis of the engines.

The yearly emission of ammonia (NH3), monitored since 2022, underwent a significant increase (from 140 to 720 kg) compared to the previous year but still remained at low absolute values. The yearly emissions are communicated to Regione Lombardia and other Italian Authorities according to JRC Ispra's specific legal framework.

As agreed with the Italian authorities, the trigeneration emissions threshold values set by Region Lombardy are ensured by means of the overall emission, in terms of mass flow for CO and NO_x, assuming the continuous operation of the plant for the entire year. These values were respected also during 2023 and will be communicated to the interested parties. The start-up of the new highly efficient trigeneration plant is scheduled for the end of 2024.

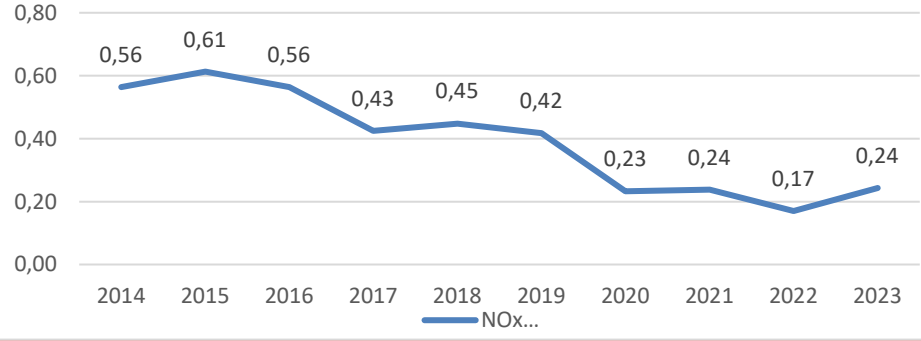
Figure 4.4 NO_x, CO total emissions from Ispra trigeneration plant



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
NOx (kg)	28 498	37 292	33 507	32 317	21 962	37 322	24 450	26 040	29 100	18 230
CO (kg)	46 835	48 489	51 800	37 376	30 887	46 093	25 240	24 800	32 450	9 150

At **JRC** Petten, NO_x emissions are generated by heating installations as by-product of the combustion. Compared to 2022, the NO_x emissions increased by 41% (**Figure 4.5**). It should be noted that the NO_x emission values are based on calculations.

Figure 4.5 Estimated NO_x emissions (tonnes) at JRC Petten

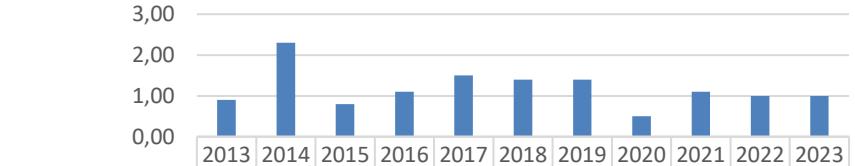


JRC Seville's non-CO_2 air emissions are mainly the result of the consumption of gas by the boilers. The calculation multiplies the gas consumption by the maximum concentration of NO_2 emissions, announced by the manufacturer (NO_x < 56mg/kWh).

4.9 Nuclear emissions

JRC Geel, with its nuclear license, is strictly regulated by the Federal authorities (Fanc and BelV). In the frame of the environmental impact, besides the waste produced, one of the site's obligations is to monitor alpha emissions. As shown in the **Figure 4.6** below, these emissions are rather stable and well below the limit of 888 kBq.

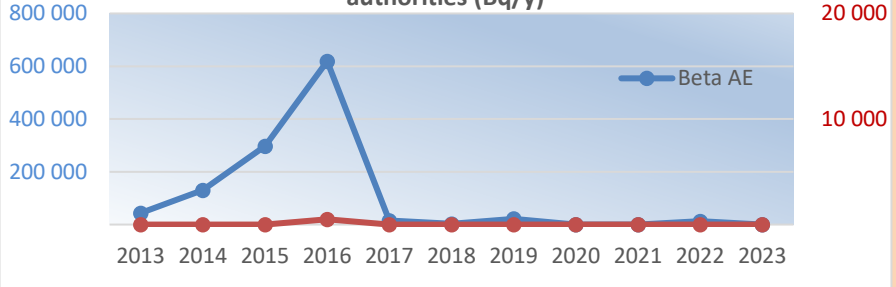
Figure 4.6 Atmospheric emissions containing α emitting aerosols at JRC Geel



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
α aerosols (kBq)	0,90	2,30	0,80	1,10	1,50	1,40	1,40	0,50	1,10	1,00	1,00

In **JRC Karlsruhe**, for official values relating to potential radioactive emissions to the surrounding environment, the site participates in the KIT Campus Nord's surveillance program in addition to constant measurements made by JRC-Karlsruhe itself. KIT has an extensive surveillance program measuring air, soil, water, and vegetation for radioactivity and is obliged to give regular reports about these measurements to the Umweltministerium Baden-Württemberg, the supervising authority for nuclear installations in Baden-Württemberg. (**Figure 4.6**)

Figure 4.7 JRC Karlsruhe exhaust air: Aerosols declaration to authorities (Bq/y)



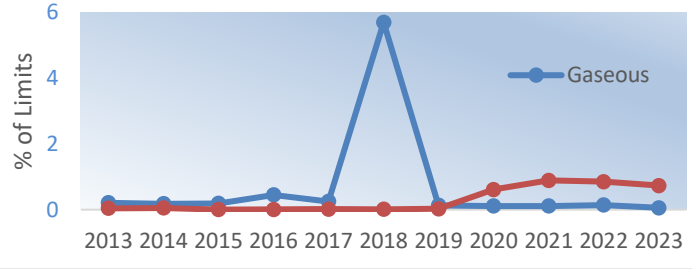
<u>Note:</u> The y-axis is scaled to 20% of the maximum value for beta-aerosols (4 .000 000 Bq/y) and alpha aerosols (100 000 Bq/y); the value "0" means below the detection limit.

JRC Ispra, as established in the operational provisions for nuclear installations and under Italian law, has set up a program of environmental monitoring in order to detect and record potential radioactive releases and monitor the level of radioactivity in the environment in its surroundings. This uses a network of fixed instrumentation for sampling and/or direct measurement complemented by environmental sampling made within the site and in the surrounding areas.

The site is authorised to discharge low quantities of gaseous and liquid radioactive effluents, through authorised release points, in accordance with the limits set out in operational provisions issued by the Italian Regulatory Authority (Discharge Formula). Gaseous radioactive effluents can be released from the nuclear installations after filtration and continuous radiometric control. Similarly, the release of radioactive liquid effluents is permitted only after treatment and prior radiometric control. The amount of releases is measured in activity (Bq), compared with the authorized limits and reported as a percentage of the site discharge Formula limits.

In 2022, a new discharge formula was approved by the Italian control authority, which is also valid for future decommissioning activities, and which in some cases led to a reduction in the authorized discharge limits. The total activity released in 2023, both liquid and air, is of the same order of magnitude of the previous years and remains well below the authorised limits. The amount of gaseous radioactive releases is equal to 0.058% of the limits and the amount of liquid releases are equal to 0,731% of the limits (**Figure 4.8**).The overall releases resulted in negligible doses for the population, quantified well under 1 microSv/year, even under conservative assumptions.

Figure 4.8 Gaseous and liquid effluents at JRC Ispra



The 2024 target is to keep discharges well under the authorised limits, in line with the values of recent years and to keep, in any case, the dose values to the population well below the threshold of non-radiological relevance of 10 microSv/year, as defined by Italian legislation and European directives.

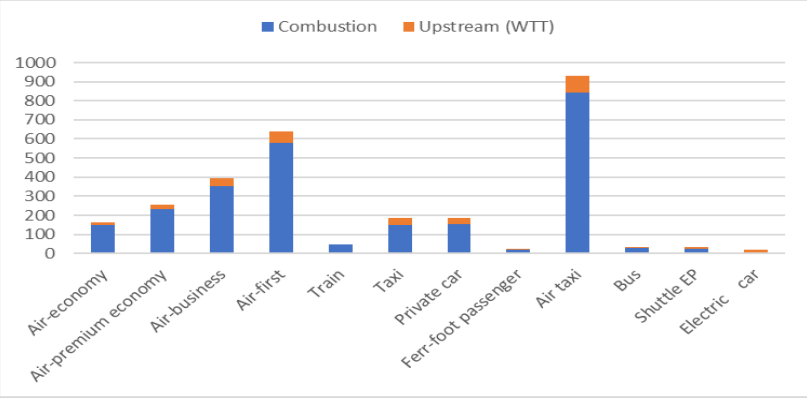
5 Reducing mobility emissions through more sustainable modes of transport

Greening The Commission: *Mobility has become one of the key enablers of the Commission to fulfil its duties. With the digitalisation of our ways of working and the development of soft or green mobility, the Commission will reduce the environmental impact linked to travels whilst ensuring that it continues to reach out to stakeholders, international partners, and the public.*

5.1 Reducing emissions from professional travel

Emissions are calculated using specific factors for the different modes of travel as shown in **Figure 5.1** which highlights in particular the difference in emissions between different classes of air travel. It shows the importance of encouraging economy travel where flights are necessary to reduce emissions.

Figure 5.1 Selected emissions factors for travel, gCO_2e/passenger.km



5.1a Background

Data from staff missions has been extracted from a new dashboard developed by the Paymasters Office (PMO). This uses the information encoded in the Commission's management system for professional travel (MiPS).

The new approach was used to calculate emissions back to 2019 and provides more accurate real-time output than data previously extracted from the MiPS green reporting tool.

Staff define the geographical parameters of their travel itineraries, identifying individual travel segments and the mode of travel for each. Conversion factors (that are reviewed annually) are used to calculate the emissions based on the distance and mode of travel. The main emissions factors used to calculate distances from emissions in 2023 are shown in **Figure 5.1**.

These take into account both combustion and upstream (or Well to Tank, or WTT) emissions - those associated with extracting the fuel and making it available for use.

Figure 5.2 Emissions from staff professional travel *, tCO_2e

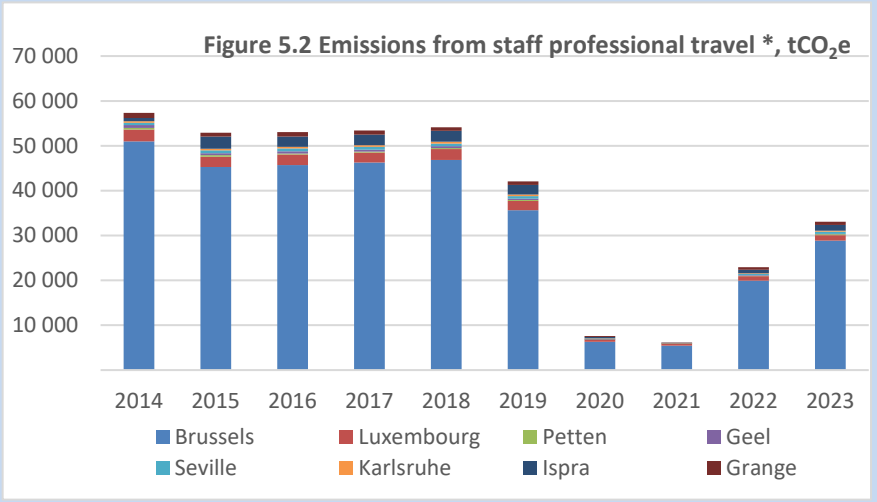
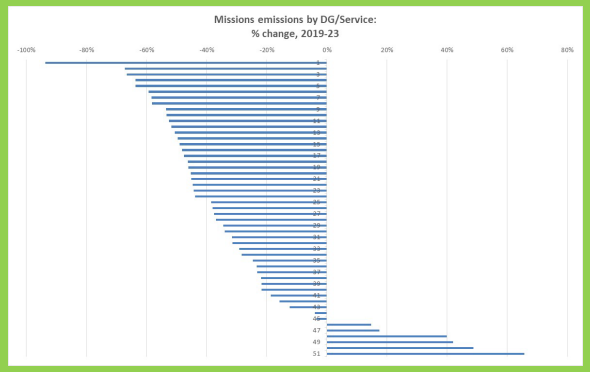


Figure 5.2 highlights the collapse in professional travel emissions associated with the COVID outbreak in 2020, that was maintained in 2021, but also shows the 'rebound' effect of a greater staff presence at work, and increasing mobility in 2022 and 2023.

5.1b Green Communication objective

A core component of the Commission's 2030 emissions reduction target is to **reduce staff missions emissions by 50% from 2019 to 2024**. To deliver this, 50 of 51 services pledged to reduce emissions. As shown in the figure below, 13 services met or exceeded the 2019-24 reduction target while further 19 services achieved between a 30% and 50% reduction.

Figure 5.3 Distribution of services' staff missions emissions reductions, 2019 -2023



Other tools to assist reducing missions emissions include:

- A new Guide to Missions (under finalisation in 2024), allowing train travel in certain circumstances when more costly than flying
- Display of emissions by different transport modes on the missions booking tool to increase awareness of the environmental consequences of different travel choices.

Table 5.1 Total professional travel emissions by mode (2019 - 2023), tCO_2e

	2019	2020	2021	2022	2023
Air travel (economy)	16 712	2 441	2 091	8 229	11 730
Air travel (not economy)	22 626	3 670	2 040	12 011	18 548
Air taxi (and helicopter)	463	860	1 225	1 062	992
Rail	684	146	132	385	473
Non rail surface travel 1 –Commission vehicle fleet	425	108	183	432	514
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	1 119	400	476	812	808
Total	**42 029**	**7 625**	**6 145**	**22 931**	**33 065**

5.1c Reducing emissions from professional travel

A breakdown of modal data in MiPS is presented In **Table 5.1**. It is evident that:

- In 2020 emissions reduced to less than 20% of the 2019 value, reducing further to 16% of the 2019 value in 2021. However a rebound, already evident in 2022, continued in 2023 with emissions nearly 80% of the 2019 total.
- Air travel dominates emissions, in 'normal' times accounting for 90% or more of the total although in 2020 and 2021, the proportion of non air travel was 22% and 33% respectively. In 2023, with the return to more "normal" times, air travel accounted for more than 95% of professional travel emissions.
- Air taxi (i.e. private charters) accounted for roughly 1% of professional travel emissions in 2019, but this increased to 19% in 2021 before reducing to 3% in 2023. The reduced availability of commercial services in 2020 and 2021 explains this trend.

5.1d Carbon emissions intensity by site

Table 5.2 and **Figure 5.4** display the carbon intensity for the sites between 2019 and 2023, based on PMO dashboard data. It is evident that Luxembourg, and JRCs Geel, Seville and Karlsruhe have the lowest values (all below 200gCO2e/km) which is indicative of a greater proportion of surface travel and or predominantly economy class travel by air.

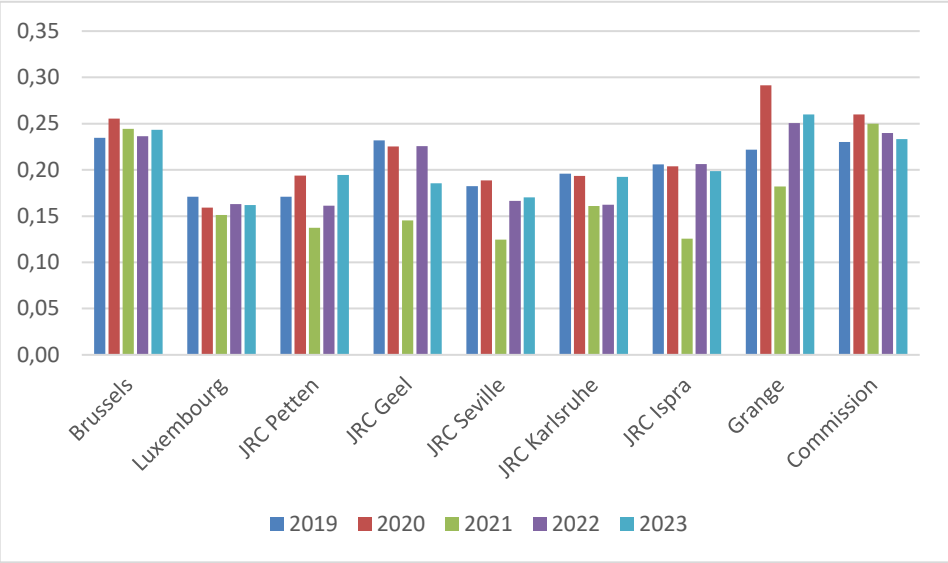
Grange has the highest value as many of its staff are inspectors who travel widely from Ireland, and consequently largely by air.

Carbon intensity is a useful measure that should reduce as staff fly less (or in economy rather than business class), or convert to surface travel, particularly rail. The Commission value increased during the COVID pandemic, with the increased used of private charters as commercial services were severely diminished, and has been reducing since.

Table 5.2 Total carbon intensity by site (2019 - 2023), kgCO_2e/km

	2019	2020	2021	2022	2023
Brussels	0,23	0,26	0,24	0,24	0,24
Luxembourg	0,17	0,16	0,15	0,16	0,16
JRC Petten	0,17	0,19	0,14	0,16	0,19
JRC Geel	0,23	0,23	0,15	0,23	0,19
JRC Seville	0,18	0,19	0,12	0,17	0,17
JRC Karlsruhe	0,20	0,19	0,16	0,16	0,19
JRC Ispra	0,21	0,20	0,13	0,21	0,20
Grange	0,22	0,29	0,18	0,25	0,26
Commission	**0,23**	**0,26**	**0,25**	**0,24**	**0,23**

Figure 5.4 Emissions intensity per site, gCO_2e/passenger.km



Case study 5.1: ***Making Commission's conferences and events even greener!***

Since 2018 when the EMAS Steering Committee approved the **Guidelines on organising sustainable meetings and events at the Commission**, it has been recommended to all event and conference organisers for activities ranging from internal team-building to large and complex external conferences and events.

The purpose of this Guide is to advise EC-staff to ensure that we 'practice what we preach'.

There are 7 simple steps to take for making a Commission event more sustainable:

- Step 0: Is a physical meeting/event necessary?
- Step 1: Is the venue sustainable enough?
- Step 2: Is the printed and promotional material sustainable?
- Step 3: Are the 3Rs applied? (Reduce, Recycle and Reuse)
- Step 4: Is the catering sustainable?
- Step 5: Are the accommodation and transport environmentally friendly?
- Step 6: Have social aspects been considered?
- Step 7: Are you sharing environmental awareness?

For each of the above steps, there are two categories of 'greening' actions:

i. minimum requirements which all Commission events and meetings should meet to contribute to continual reduction of environmental footprint and
ii. advanced options with more ambitious sustainability goals for event organisers who wish to go further.

In addition, since 2020 the Commission organises an **annual corporate competition on sustainable conferences and events**, in order to highlight and promote the successful and innovative sustainable events' practices already in place, under the aegis of **Commissioner Hahn,** responsible for Budget and Administration.

In 2024, the Commission Guidelines were updated to address virtual and hybrid events.

Under the "greening' initiative we will also investigate the possibility of developing a **common tool for the calculation of the environmental impact** of conference organisation.

5.2 Reducing emissions experts' travel

In 2021 the Commission included emissions for expert travel (covered by the Commission's administrative budget) for the first time, and has extended the calculations back to 2019.

The calculations use a database describing an expert's country of origin with mode of travel assumed based on distance. In 2024 the Commission developed a more automated approach to calculate 2023 data.

A more systematic method to allocate meetings by site is under development, so currently all experts' travel emissions are allocated to Brussels. Emissions are summarised in **Table 5.3** which suggests that emissions in 2023 reduced by 66% the emissions from experts' travels compared to 2019.

Table 5.3 Total experts' missions emissions (2019-2023) by mode, tCO_2e

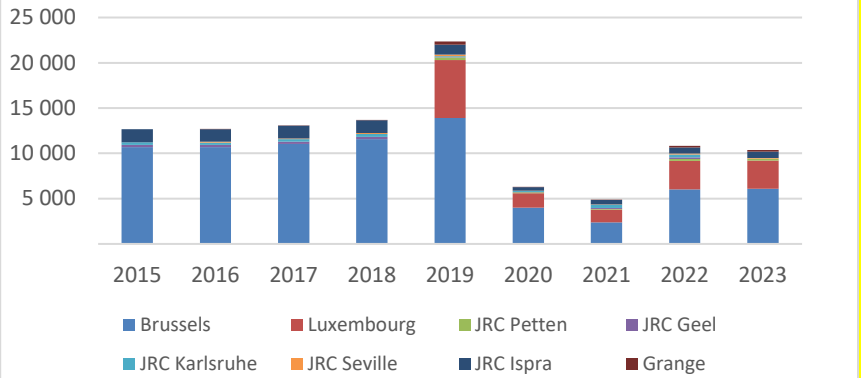
	2019	2020	2021	2022	2023
Air	30 919	8 683	722	12 048	10002
Rail	48	9,4	0,6	13	16
Car	250	38	26	81	74
Total	**31 216**	**8 730**	**748**	**12 141**	**10 092**

5.3 Greener commuting options

Emissions from staff commuting are presented by site in **Figure 5.5** with data from **Table 5.4**. Values from 2019 onwards were updated and data collected from a staff survey conducted in 2022 used to evaluate emissions at several sites, that was re-evaluated with the 2023 population and presence data and the updated emission factors.

The calculations use a Commission wide average for the number of working days according to HR data that takes into account bank holidays, sick leave, annual leave, and other absences. Prior to 2019 not all sites reported commuting emissions.

Figure 5.5 Evolution of commuting emissions, tCO_2e



5.3a The Greening communication requires that the following **Corporate level** actions be completed:

- Revision of the mobility policy (in progress) in relation to commuting
- Facilitation of charging electric or hybrid vehicles at some Commission car parks.

5.3b Brussels COBRACE (1) compliance works were carried out as part of the extension of different buildings' environmental permits. Since 2017 the Commission has removed 3 558 parking spaces including 535 in 2023. Between 2021 and 2023, 1 410 bicycle parking spaces were created. The demand for electric bike chargers has risen substantially and OIB has steadily increased the number of chargers available. OIB has recently asked the electrical grid supplier for adequate development of charging capacity and established a working group. Large capacity hubs for cyclists already installed in 3 buildings, L130, BRE2 and L-41. A digital tool (Wheret2Park) developed to allocate parking space (Tool already available in 19 buildings L107, L-51, L130, BREY, BRE2, J-27, CSM1, SB34, B232, B-28, F101, J-70, L-15, MO15, J-54, J-99, L-41, MADO, ORBN). Finally, the mobility actions organised by OIB in 2023 enabled 341 colleagues to follow Bike Repair or Safe Cycling training.

(1) Code bruxellois de l'Air, du Climat et de la Maitrise de l'Energie

5.3.c JRC Most JRC sites are located in remote areas, which makes it more difficult for staff to use sustainable modes of transportation as the sites are often not well connected by public transport. The JRC nevertheless supports sustainable commuting by organising shuttle buses or offering service bikes/e-bikes and providing showers and bike parking infrastructures. Charging stations for electric vehicles and electric/hybrid service vehicles are also available on most of the JRC sites. The JRC also performs awareness-raising activities as a strong sense of responsibility on the part of all staff is essential to achieving the ambitious Commission's target.

In **JRC Geel**, the majority of the staff commute by car due to the remoteness of the site. The CO_2e emissions for the commuting is estimated as previous years from a 2016 survey but considering the new way of working (teleworking regime). As an incentive to reduce on-site CO2e emissions charging stations for electrical vehicles are available for visitors and staff. Bicycles are also provided to facilitate movement between buildings. Moreover, commuting by bike was promoted (e.g., during the VeloMai initiative). However, staff residences are spread widely throughout Flanders and Wallonia. Teleworking may have reduced carpooling efficiency.

In **JRC Ispra**, commuting staff emissions are mostly related to the use of private cars (704 tCO2e in 2023). This value is related to a higher presence on site (45% in 2023 vs 42% in 2022). This is explained by the fact that the site is not connected to a widespread public transport system. The emissions deriving from the use of other means of transport are significantly lower (e.g., only 112.4 tCO2e for the use of JRC buses). In 2020, a *JRC Ispra Transport Survey* was carried out in the framework of the Living Labs. This was used to calculate the JRC Ispra commuting mode split. This revealed that the car is the most commonly used mode of transport (used by 76% of staff), followed by the bicycle (8%) and the JRC bus (6%). Ispra site management is committed to foster a more sustainable commuting, in particular looking into creating synergies with public transport. From June 2021, following an agreement with the local public transport agency TPL, the site has a terminal stop at the main entrance for two main public bus lines, connecting the site with the city of Varese and other regional transport hubs.

In **JRC Karlsruhe**, the CO_2e footprint of staff commuting was estimated in 2016 with a survey conducted on site using a simple approach considering the main and potentially second modes of transport along with the distance to the workplace. The CO_2e commuting footprint resulted in approximately 273 tonnes per year. In 2022, the Commission-wide mobility survey resulted in slightly higher values. However, as this survey uses only data based on the first "main" mode of transport, these results should be looked at carefully.

In **JRC Petten**, the majority of staff reside in and around the next city, Alkmaar. JRC Petten organise three buses with different routes between Petten and Alkmaar and surroundings. One bus links Petten and Amsterdam. Furthermore, service bikes (together with showers) are provided, giving the staff the options to cycle within and beyond the site perimeter.

In **JRC Seville**, A mobility survey conducted in 2022 garnered responses from approximately 40% of the staff, with over 50% indicating that they commute by bicycle, walking, or public transport. The 2023 data are directly proportional to the number of staff, taking the aforementioned survey as a reference. The site is encompassed by a comprehensive network of bike paths, as well as several bus lines. Furthermore, staff have access to safe bike parking and shower facilities. Lastly, five electric vehicle chargers have been installed in the building, of which two are for exclusive use of JRC staff.

Table 5.4 Total commuting emissions by site (tonnes)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels										
Direct	10 672	10 672	10 672	11 046	11 565	11 565	3 325	1 966	5 233	5 286
Upstream						*2 351*	*676*	*400*	795	815
Total	10 672	10 672	10 672	11 046	11 565	13 916	4 001	2 366	6 028	6 102
Luxembourg										
Direct						5 296	1 329	1 180	2 630	2 593
Upstream						*1 077*	*270*	*240*	519	514
Total						6 372	1 599	1 420	3 149	3 107
JRC Petten										
Direct						256	74	74	163	162
Upstream						*52*	*15*	*15*	32	32
Total						308	89	89	195	194
JRC Geel										
Direct			281	251	246	256	26	58	100	176
Upstream										
Total			281	251	246	256	26	58	100	176
JRC Karlsruhe										
Direct			273	273	273	273	78	78	277	275
Upstream						*55*	*16*	*16*	64	63
Total			273	273	273	328	94	94	341	339
JRC Seville										
Direct			76	82	89	155	24	30	76	76
Upstream						*35*	*5*	*6*	*17*	*17*
Total			76	82	89	190	29	36	93	94
JRC Ispra										
Direct	3 236	1 431	1 409	1 420	1 425	904	318	422	544	578
Upstream						*192*	*69*	*92*	*119*	*126*
Total	3 236	1 431	1 409	1 420	1 425	1 096	388	514	662	704
Grange										
Direct			14	14	14	303	4,00	4,00	147	136
Upstream						*67*	*0,81*	*0,81*	33	30
Total			14	14	14	370	4,81	4,81	179	167
Total	**13 908**	**12 103**	**12 725**	**13 086**	**13 611**	**22 837**	**6 230**	**4 581**	**10 748**	**10 881**

Note1: *for Bruxelles, Luxembourg, Petten, Karlsruhe, Grange 20,33% upstream emissions are included from 2019 (prior reporting included only combustion emissions)*

Note2: *for Seville and Grange, commuting emissions were recalculated for 2019, according to 2022 survey data reparametered with 2019 office presence*

5.3c Luxembourg In March 2020, when all public transport became free of charge in Luxembourg, OIL put in place a scheme to partially reimburse the public transport ticket for staff members living abroad (Germany, France or Belgium). In 2023, there were 197 requests reimbursed, an increase of more than 50% compared to 2022. In addition, the Commission continues to offer free subscription to Vel'OH!, the self-service bike rental system of Luxembourg City. In 2023, 158 new codes were attributed, representing an increase of 73% compared to 2022. A total of 887 staff members benefited from this measure since the beginning of the campaign on 2021.
Commission staff continues to benefit from the use of the Parliament's shuttle between Luxembourg and Brussels.

5.3e Grange The rural location of our site and the poor public transport network make it difficult for staff to use sustainable modes of transport. An increase staff in purchasing EVs led to a feasibility study for installation of EV chargers in 2023. Unfortunately, due to technical and resources reasons it has not been possible to launch the procurement procedure in 2023.

Case study 5.2: Velomai - an example of staff participation

A staff wellness initiative 'Be Well' in collaboration with the Executive Agencies HaDEA and EISMEA has launched the 2023 edition of Velomai, the interinstitutional cycling challenge from 1 to 31 May.

This year's theme is **Cycling for sustainable living**. Colleagues across EU institutions, agencies, and bodies as well as delegations around the world compete by registering the ridesin the Velomai app.

Case study 5.3: EU Mobility week 2023 - an example of a staff campaign

In 2023, the promotion of soft mobility during EU Mobility Week (16-22/09) was celebrated: (a) In Brussels, with the organisation of 2 bike repair workshops, 4 safe cycling training sessions (online and presential), one guided bicycle tour, one walking tour in the EU neighbourhood and a film screening 'Women don't cycle' organised by the EU cycling group, (b) In Luxembourg, with the organisation of a Car-free day on 18 September, an IMS Luxembourg initiative in Cloche d'Or, a mobility conference in Mercier-Post building on "the best ways to move around the Central train station area", together with Luxembourg's Verkéiersverbond and OIL EMAS. Moreover, OIL Reportage presented two videos on: 'Shared space' in Bertrange: the Mayor of the commune explains this new way of moving in our cities and Re)discover the 'Interview with François Bausch, Minister for Mobility and Public Work' and (c) In Ispra, by launching a survey on soft mobility and transport, in order to propose practical solutions based on staff insights to enhance our bikes service.

5.4 Developing a more sustainable Commission vehicle fleet

The Commission sites have sought to rationalise their fleets, and in recent years the total number of vehicles has been below 300 (**Table 5.6**). They also seek to use more vehicles with no (or lower) tailpipe emissions, and the proportion of the total vehicle fleet comprising hybrid or electrical vehicles has risen to 65% (**Table 5.7**). The evolution in manufacturer tailpipe emissions is presented in **Table 5.8.**

The Commission's carbon footprint has included emissions for experts' travel since 2019. The calculations use a database describing an expert's country of origin with mode of travel assumed based on distance.

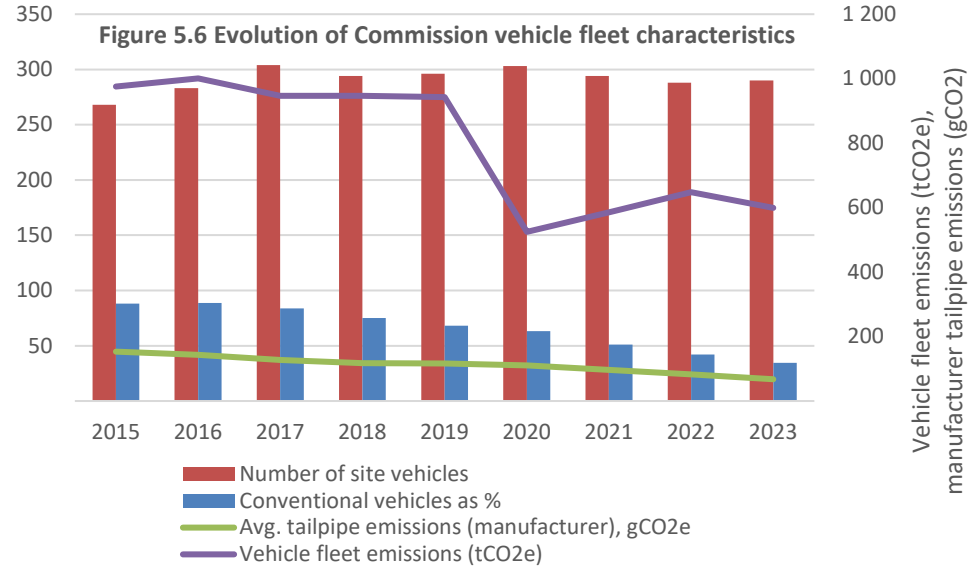
The Commission developed a more automated approach to evaluating these emissions. The output is shown in a dashboard that is similar to that used for staff emissions. Overall trends are shown in **Figure 5.6.**

Table 5.6 Number of vehicles in site fleets										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		117	107	129	126	131	129	125	123	127
Luxembourg		25	30	30	33	32	32	31	30	31
JRC Petten		3	3	3	4	4	4	4	4	4
JRC Geel		0	7	7	7	7	7	7	7	7
JRC Karlsruhe		0	11	12	12	12	12	12	12	11
JRC Seville	1	0	1	1	1	1	1	1	1	0
JRC Ispra	104	122	123	121	110	109	118	114	111	110
Grange		1	1	1	1					
Total	**105**	**268**	**283**	**304**	**294**	**296**	**303**	**294**	**288**	**290**

Table 5.7 Number of hybrid or electric vehicles in site vehicle fleets										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels	0	10	10	13	33	45	54	76	87	108
Luxembourg	0	0	0	0	2	9	12	14	15	20
JRC Petten	0	1	1	1	1	1	1	1	1	1
JRC Geel	0	0	0	0	0	1	1	1	2	2
JRC Karlsruhe	0	0	0	1	1	2	2	2	4	4
JRC Seville	0	0	0	0	0	0	0	0	0	0
JRC Ispra	3	21	21	34	36	36	41	50	58	55
Grange	0	0	0	0	0	0	0	0	0	0
Total	**3**	**32**	**32**	**49**	**73**	**94**	**111**	**144**	**167**	**190**
as % of fleet	**3**	**12**	**11**	**16**	**25**	**32**	**37**	**49**	**58**	**66**
Conventional vehicles as %	**97**	**88**	**89**	**84**	**75**	**68**	**63**	**51**	**42**	**34**

Table 5.8 Average tailpipe emissions of vehicle fleet according to manufacturer (gCO_2e/km)											
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target *2030
Brussels	148	145	129	118	116	119	113	94	82	53	*71*
Luxembourg	171	167	161	158	145	142	126	121	110	92	*95*
JRC Petten	168	148	148	148	148	148	148	148	148	148	132
JRC Geel											
JRC Karlsruhe	202	172	165	162	157	146	151	151	140	117	*139*
JRC Seville	136	136	136	136	136	136	136	136	136	0	0
JRC Ispra	186	158	157	132	111	109	104	91	71	74	5
Grange	174	174	174	174	174	0	0	0	0	0	0
Total	**185**	**153**	**143**	**127**	**117**	**117**	**110**	**97**	**82**	**68**	**50**

*Note: * 2030 target value already reached in 2023*



5.4a Brussels

Brussels has steadily increased the number of hybrid and electrical vehicles in the fleet, since 2019 it has increased to represent a majority of vehicles

5.4b Luxembourg

All Commission fleet cars in Luxembourg are being gradually replaced by less polluting leased cars, leading to a reduction in manufacturer emissions. In 2023, 4 full eclectic vehicles were added in the fleet replacing thermic or hybrid ones. Currently, 64.5 % of the fleet is either a full electric or a hybrid car.

5.4c JRC

Approximately half of the vehicles in use at the JRC (not only cars but also mini bus, vans, forklifts, etc.) are electric or hybrid electric vehicles. This number went up in the past years and progress is even more significant in terms of CO_2e emissions linked to the use of JRC's vehicles fleet. In addition to greening its fleet, the JRC has also taken further steps towards greener mobility. For example, via the installation of charging stations for electric vehicles or the offer of alternatives to cars such as services bikes/e-bikes (see section 5.3c).

Case study 5.4 - Smart EV-Charging stations at the JRC

The JRC hosts the DES-Lab committed to testing innovative energy-related solutions in living contexts. High-tech start-ups can apply for testing their technologies upon an open call of interest, making use of a living environment such as the JRC Ispra site.

The winning applicant to last JRC open call, *Silla industries*, has signed an agreement with the JRC Ispra for a 3-year experimental project to test their technologies on-site. *Silla industries* offer a product called PRISM, an electric vehicle charger featuring an open solution for smart charging of electric cars. In particular, PRISM allows smart charging using the electricity produced instantaneously by a PV system connected to the local grid.

In cooperation with the Infrastructures department, the DES-Lab has installed nine EV charging stations by the JRC Ispra solar parking for staff usage. The information collected (availability of the chargers, instant power, total energy supplied within a session) is at disposal of staff and shown on an interactive dashboard. The Living Lan approach allows studying user behavioural implications in relation to new technologies and steering users towards more virtuous and sustainable practices.

∞ Driving forward with cleaner energy - European Commission (europa.eu)

In 2023, **JRC Geel's** vehicle fleet was unchanged from 2022. The total CO_2e missions increased by 23% due to higher kilometres made by the inspections rounds from the security service, and to send the fire truck for repairs and maintenance.

JRC Ispra has a service vehicles fleet of 110 vehicles, which support site staff in their research and other technical and operational activities, providing mostly internal mobility. The fleet includes mobile laboratories, internal postal service, firefighting, ambulance and other work vehicles. In 2023, electric cars decreased by three units due to non-repairable faults while combustion vehicles increased by two units following the entry into operation of a new ambulance and a new fire engine in use by the JRC fire brigade ERSS.
33 recharging points for internal electric vehicles (EVs) have been installed with a monitoring system that allows the site to monitor the EV's electrical consumption (16.49 MWh in 2023 with a 7.8% increase with respect to 2022) and their indirect upstream CO_2 emissions.

In an effort to promote sustainable mobility, JRC Ispra has also upgraded its service bicycles policy, which comprises a dedicated on-site service which manages 159 service bicycles (of which 45 are electric).

JRC Karlsruhe has a fleet of 11 vehicles, five of which are primarily or exclusively used on the premises. Four electric cars became operational in since mid 2022. In 2023, the fleet emitted a combined CO_2e output of 7.7 t, significantly lower than in 2022. This reduction can be mostly attributed to the two electric service cars mentioned above. The contribution of CO_2e emissions from cars to the site's carbon footprint is very low (e.g., 0.2% in 2023 or 0.3% in 2022).

JRC Petten has four site service vehicles, which are used for internal goods transport, missions, taxi support to Schiphol and Petten. One of the service vehicles is an electric car. In addition, 40 service bicycles are available, which can be used within and outside the premises of the site.

In **JRC Seville** no longer has a service car.

5.5 The evolution of the overall vehicle fleet

Table 5.9 shows that there is a long term downward trend in vehicle fleet emissions, although in 2022 there was a slight rise, probably due to the regularisation of office activities after the COVID pandemic.

Case study 5.5: European Research Executive Agency (REA) - reducing physical presence in evaluations

REA manages an evaluation facility in Brussels for various EU Programmes. By 2018, it had already shifted significantly towards online and hybrid evaluation meetings, rather than inviting all experts to Brussels. And in 2022 they signed the corporate pledge for reducing CO_2 emissions linked to staff and experts' travel, seeking a 50% reduction by 2024 compared to 2019.

To support this change in programme implementation, REA converted 108 of 140 meeting rooms at one facility to hybrid rooms with improved audio-visual equipment to cater for online meetings and provide more flexibility for the management of online or hybrid meetings for evaluations and reviews.

Reduced physical presence owing to these measures (and COVID), led in 2020 to REA closing the proposal printing service and saving, in addition, 3 million sheets of paper annually (equivalent to 300 trees, and with a financial saving of €135,000).

Table 5.9 Emissions from Commission vehicle fleet (tCO_2e, combustion and upstream)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Commission total	965	976	1001	947	947	943	525	585	648	599

6 Monitoring and mitigating emissions from other sources

Greening The Commission: *The Commission plays an active part in societal changes. It is thus logic that with the Communication it commits to continue to explore options for further GHG emission reductions and to ensure that it takes into account all new operations linked to its way of working.*

6.1 Fixed asset (embodied energy) for IT fixed assets

Several actions encompass the IT domain, and a new digital strategy was created in 2022. The emissions associated with IT fixed assets are calculated using the annual inventory for 17 categories of IT equipment (see Chapter 7). Following a switch to accounting all emissions for IT equipment in the year of purchase according to the GHG protocol, the resulting Commission level emissions reduced from 3 419 to 1 373 tonnes between 2019 and 2023 (Chapter 3).

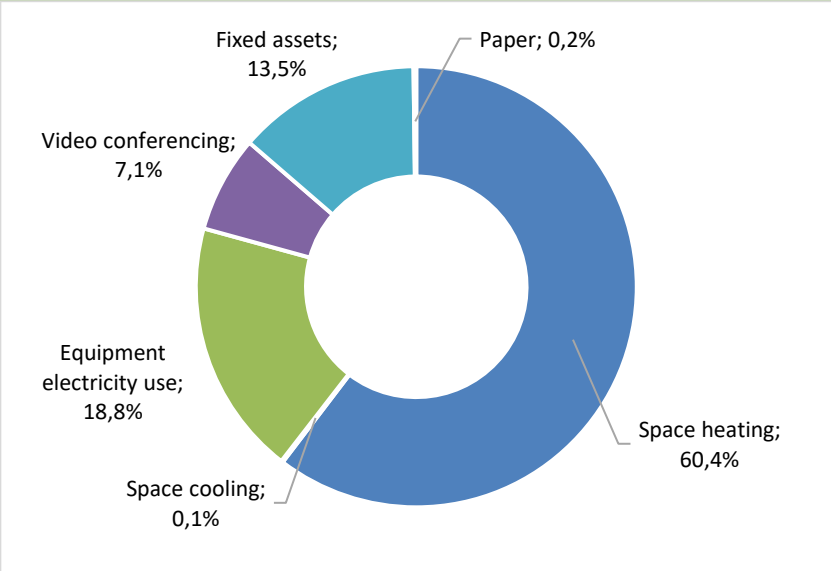
The reasons for this include a reduction in the number of larger equipment items such as laptops, desktop printers as well as in some coefficients used in the calculations. The site level breakdown is included in **Annex 3**.

6.2 Emissions from teleworking

The first estimates of teleworking emissions were included in the 2021 reporting exercise, and this section contains results from the second, more detailed exercise of evaluation. Like the 2021 exercise, heating energy and emissions characteristics were compiled from publicly available national data sets, combined with Commission staff survey data. While 2021 reporting benefitted from a small number of questions on teleworking in the Staff Environmental Awareness Survey that was addressed to a selection of staff, this exercise drew upon a dedicated teleworking survey that was sent to all staff.

The breakdown in the components of teleworking emissions in 2023 is presented in **Figure 6.1** for all the sites. As in 2021, the largest components were space heating (60%) and equipment electricity use (19%).

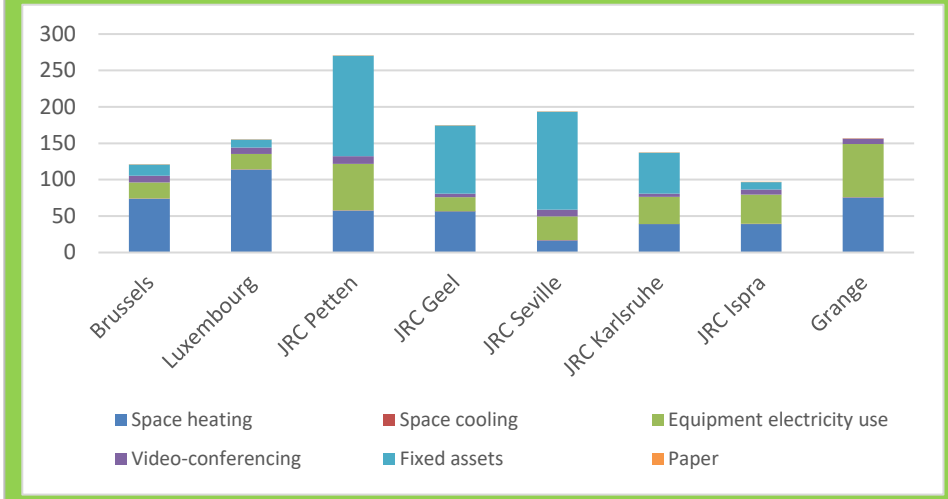
Figure 6.1 - Components of total teleworking emissions in 2023



Teleworking emissions	Total (tonnes CO_2e)	Total (%)	Per person (kg CO_2e)
Space heating	3 209	60,4%	76
Space cooling	6,7	0,1%	0,2
Equipment electricity use	998	18,8%	24
Video conferencing	376	7,1%	9
Fixed assets	716	13,5%	17
Paper	11	0,2%	0,3
Total	**5 316**	**100,0%**	**126**

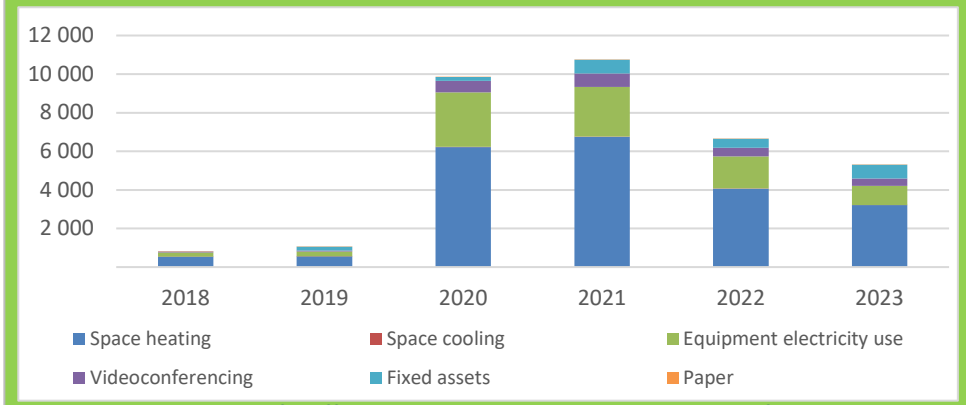
The distribution of teleworking emissions between the sites is shown in **Figure 6.2**.

Figure 6.2 Teleworking emissions at EMAS sites in 2023 ($kgCO_2e$/person)



While climate plays a role, Seville has very little heating emissions, the national energy mix is also important. The evolution of total teleworking emissions is shown below compiled with data from **Annex 8**.

Figure 6.3 Evolution of teleworking emissions, tonnes CO_2e



Teleworkers were 6% of staff in 2018, 7% in 2019 and 8% in 2020 before the lockdown. The percentage of teleworkers during the pandemic varied between 50% and 100% from site to site.

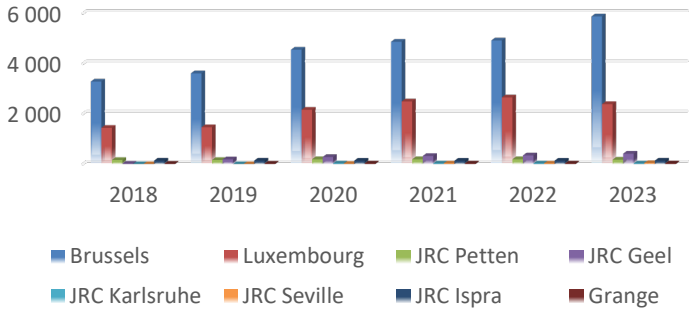
Greater emissions were observed in 2021 than in 2020 because staff were encouraged to telework for the whole year.

The Commission adopted the Working Time and Hybrid Working Decision in 2022 after which teleworking accounted for 40% to 60% of working time across the sites. Therefore, benefitting from more flexible working arrangements, most staff spend more time working at home than they did in 2019, but not as much as during the Covid pandemic.

6.3 Emissions generated by service contracts

Emissions generated by service contracts are shown in **Figure 6.4**. Categories include security, cleaning and, following a harmonisation exercise by all sites three further categories identified with different emission factors: iii) 'hard' service contracts: printing, advertising, architecture and engineering, multi-technical building maintenance, iv) 'soft' service contracts: service/insurance, banking services, advice, and fees and v) other heavy service contracts. The data in **Annex 5** suggest that hard service contracts are the largest contributors for most of the sites.

Figure 6.4 Emissions from service contracts (tCO_2e)



Generally higher emissions in recent years is likely in part due to more complete reporting. The reporting of emissions relating to service contracts concerning nuclear activities is under review.

6.3.a Brussels

The increase in Brussels' emissions from 2018 to 2021 is due to more complete reporting. In 2023, the increase is mainly attributable to maintenance.

6.3.b Luxembourg

In 2023, FTEs for Security and Cleaning contracts remain at the same level as in 2022 (-2%). The decrease in emissions followed a reduction of 0.985 kEUR spent in service contracts that were categorised according to the new guidelines to reflect and provide a more accurate estimation of CO_2e.

6.3.c JRC

In **JRC Geel**, the increase in the contract weight in kEUR in 2023 due to the price indexation for most of the large contracts (e.g. waste collection, security, catering) had a direct impact on the increase of the estimated CO_2e emissions.

In **JRC Ispra,** service contracts emissions are based on the number of Full Time Equivalent (FTE) staff for the cleaning and security services contracts on site. There was a slight increase in 2023 due to the five-unit increase in FTEs of security contract. Emissions accounted for 135 tonnes of CO_2e, 2% more than in 2022. To be noted that at the JRC Ispra site there are currently a large number of other contracts in force which include different aspects (e.g. linked to decommissioning activities, architectural and engineering services, maintenance works and civil works) but which require further in-depth analysis before being reported.

In **JRC Karlsruhe**, emissions from service contracts follow the same approach as in 2022 considering only the FTEs of cleaning and security staff, and are unchanged. Other service contracts are not considered as the used conversion factors are solely based on the contract value. As the site's operations are entirely in the nuclear area, and service contracts in this area are typically significantly more expensive than non-nuclear ones, using these factors would lead to incorrect values.

The scope of the service contracts has been expanded. This can account for the approximately 60% increase in emissions in this area for **JRC Seville**.

The service contract emissions at **JRC Petten** decreased slightly compared to 2022 as the waste contract is not included due to delay of invoices of the waste company.

6.3.d DG SANTE at Grange

No significant changes were recorded in 2023 as there is continuity in the external service contracts which haven't changed.

7 Supporting a green and circular economy

Greening The Commission: *The Commission contributes to the circular economy by implementing green public procurement (GPP) principles in its goods, services and work contracts and its everyday operations.*

7.1 Greening contracts

Overall: The Commission recorded the number of contracts including some additional specific environmental criteria (**Figure 7.1**) and in 2018, started to use the European Court of Auditors' recommended grading scale to show the degree to which tenders incorporate sustainability, as follows:

- **Not green**: Tender documents without environmental considerations or having clauses without impact on purchasing approach
- **For light green to very green:** the main difference is the weighting of the environmental criteria as a share of the total (for price and quality), as follows:
    - **Light green**: <10%;
    - **Green 10% to 25%;** and
    - **Very green** >25%
- **Green by nature**: Where the primary purpose is "green", for example construction of a green roof, or consultancy services to improve environmental performance.

Under this approach, data in **Table 7.1** indicates that 68% of contracts were 'not green' in 2018, but this reduced to 53% 2023.

Table 7.2 provides an overview of the presence of 'green' products in the office supply catalogue, which has accounted for over half the expenditure since 2020, with the overall Commission trend shown in **Figure 7.2**. Staff can also access the GPP helpdesk. Site level data is provided in **Annex 6**.

Figure 7.1 Contracts with additional 'eco' criteria by site (% of total)

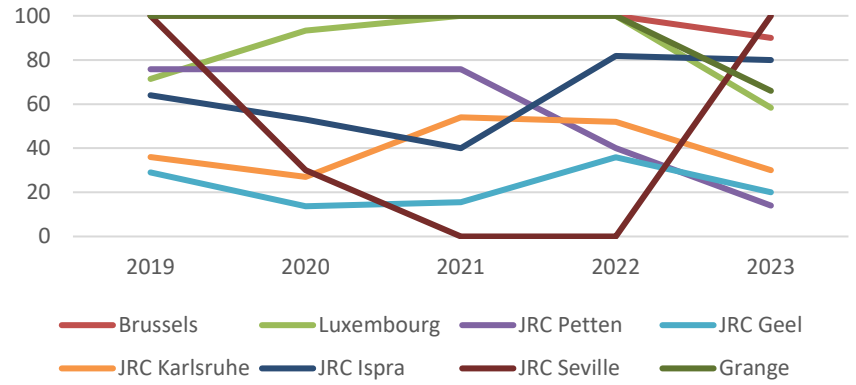


Figure 7.2 evolution of 'green' products in office supply catalogue

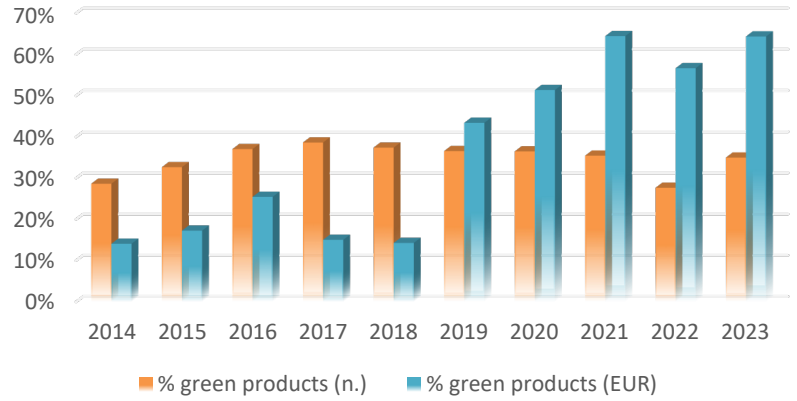


Table 7.1 'Greenness' of procedures, European Court of Auditors (ECA) approach*

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of number of tender procedures according to ECA 'green' scale											
Not green						134	68	103	102	74	104
Light green						22	21	23	29	37	44
Green						31	28	35	34	36	39
Very green						5	5	3	2	3	3
Green by nature						4	3	6	0	10	5
Total (No)						**196**	**125**	**170**	**167**	**160**	**195**

*ECA Special Report 14/2014: "*How do the EU institutions and bodies calculate, reduce and offset their greenhouse gas emissions*"

Table 7.2 Total green products in the office supply catalogue

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Office supply catalogue											
Green products (no)		445	590	683	676	669	411	416	338	288	519
Green products (EUR)		66 729	79 429	82 402	46 415	44 522	960 374	319 217	363 416	373 504	452 099
Total products (no)		1 553	1 806	1 843	1 749	1 788	1 124	1 140	953	1 041	1 483
Total products (EUR)		473 508	459 696	323 490	308 450	311 469	2 211 184	621 127	563 705	658 906	702 269
% green products (n.)		**29%**	**33%**	**37%**	**39%**	**37%**	**37%**	**36%**	**35%**	**28%**	**35%**
% green products (EUR)		**14%**	**17%**	**25%**	**15%**	**14%**	**43%**	**51%**	**64%**	**57%**	**64%**

7.1a Brussels

The OIB launched, in cooperation with OXFAM, a new furniture collection made exclusively by upcycling old furniture (see photos for case study 7.1). The workshop hires mostly socially disadvantaged workers, thus also contributing to their participation in the community.

In 2023, additional projects were launched such as sorting stations made in collaboration with a sheltered workshop.

7.1b Luxembourg

In 2023, 5 out of 12 new contracts encountered challenges in incorporating EMAS related clauses. This may be in the case of monopoly or in contracts with the City of Luxembourg, which insists on their own terms, particularly in areas such as water and heating.

There is a systematic consultation of the GPP helpdesk and inclusion of GPP criteria in most contracts even though for some clauses it is not always feasible to confirm their implementation, i.e. the use of electric vehicles from contractors.

7.1c JRC

Although JRC's core business (e.g. contracts for research studies, freelance services) is different than the GPP priority products – making it challenging to reduce the percentage of non-green contracts – the JRC is a pioneer in putting in place a system to flag procedures that have an environmental dimension through the Public Procurement Management Tool (PPMT). In addition, and coherent with the Green Deal, green aspects are proposed in some contracts even when no specific GPP guidance is published.

JRC Ispra started to green its contracts and check the application of EU GPP criteria in 2014. In order to extend the field of application, additional requirements applying circular economy principles (circular procurement) were included to contracts that could potentially be "greened" further. In this way a category called "special mention" contracts was introduced in 2019.

Special mention contracts have extended the possibility of greening more contracts and results are constantly positive since the beginning. The objective in future years is to further broaden the field of application of special mention contracts, which better reflect the procurement effort to greening the contracts of JRC Ispra.

The results of GPP and circular procurement principles vary each year according to the specific procurement carried out (the majority of contracts cover a four years' time span). In 2023, GPP criteria were applied to the 100% of contracts where GPP criteria are available and 14 additional contracts were classified as "special mention" (70% of the potential "special mention" contracts). The positive results reached in the last years of application of circular procurement was summarised in a specific report.

To raise staff awareness, the Ispra site GPP Correspondent delivered specific trainings on GPP and related implementation aspects. These trainings are followed by all staff dealing with procurement procedures and reached 28 members of staff in 2023.

The above-mentioned framework is complemented by the use of the inter-institutional framework contract of the European Parliament: 'GPP helpdesk for Buying Green'.

To promote sustainable practices in catering services at **JRC Seville,** special attention has been given to greening the low-value contracts and orders, such as catering services associated to scientific (and other) events. The success of this practice stems from swift communication channels between the environmental officer and the operational units. This practice also contributes to raising awareness among caterers as they must supply a declaration of the green aspects of their services with their financial offer.

7.1d Grange

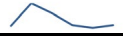
In 2023 all tenders for the Grange site incorporated GPP. The tender for the provision of facilities management services included a clause where the legal compliance aspects of EMAS will be managed by the contractor entirely, representing a significant innovation for the site.

7.2 Evolution of IT inventory and recycling

The evolution of main categories of new IT equipment at Commission level are shown in **Table 7.3**. The categories show a reduction in all categories other than those that permit mobile working (laptops, docking stations, flat screens and routers).

The reduction in notably larger IT equipment numbers has helped to reduce the embodied emissions part of the Commission's carbon footprint that is associated with IT.

Table 7.3 Evolution of the new IT inventory from 2018 to 2023 at Commission sites*

Category of equipment		2018	2019	2020	2021	2022	2023	% change 2018-23
Computers and screens								
Desktop PCs		859	1 400	1 364	728	834	522	- 39
Laptops		458	1 758	7 601	7 052	10 784	9 712	2 021
Docking stations		191	18 295	4 981	7 729	5 425	5 581	2 822
Flatscreens		1 336	8 765	5 325	6 351	6 103	9 614	620
Printers and scanners								
Individual printers		75	205	65	27	22	19	- 75
Network printers and copiers		93	616	110	157	115	77	- 17
Scanners		6	17	19	42	34	4	- 33
Fax machines								
Telephones and faxes								
Simple (portable) phones		44	45	49	16	22	15	- 66
Smartphones		87	1 205	1 153	785	1 357	1 455	1 572
Fixed line telephones		765	762	770	795	1 485	925	21
Servers and switches								
Informatics server		263	1 209	621	458	567	370	41
Firewall router switch		1 382	1 783	2 141	2 077	2 087	2 726	97
Video equipment								
Projectors		41	46	41	30	30	32	- 22
Videoconference installations		12	116	134	43	43	22	83
Televisions		77	164	126	80	69	80	4

*data from DG DIGIT for Brussels, Luxembourg, Grange. Remaining sites from JRC.

7.2a Recycling of IT inventory

Three framework agreements with OXFAM, Close the Gap and South Cluster have been in force since December 2023 for a maximum period of 6 years. They are inter-institutional agreements with all other major EU institutions – notably the Parliament, the Council, the Court of Justice, the Court of Auditors. Until 2021 DG DIGIT managed other contracts for the collection and recycling of IT equipment from Brussels and Luxembourg.

New (temporary) arrangements were introduced in 2022 and until December 2023. Historically, as indicated in **Table 7.4**, a high percentage of the equipment was sold for second hand use.

Table 7.4 - Number of IT and telephony items collected and recycled in Brussels and Luxembourg

Parameter	Year of collection	2014	2015	2016	2017	2018	2019	2020	2021	2022 [2]	2023 [2]
Collected items		27 513	30 918	23 969	18 133	15 988	30 001	31 483	16 763	N.a.	N.a.
Processed items [1]		27 375	30 918	23 554	18 088	15 988	28 893	31 483	16 763	N.a.	N.a.
Items for second hand use		24 759	27 952	21 736	14 287	10 549	14 357	12 935	15 851	N.a.	N.a.
Second hand use (%)		90	90	92	79	66	49	41	95	N.a.	N.a.
Recycled or dismantled (%)		10	10	8	21	34	51	59	5	N.a.	N.a.
Weight of collected items (tonnes)		76	72	45	68	56	216	151	153	N.a.	N.a.

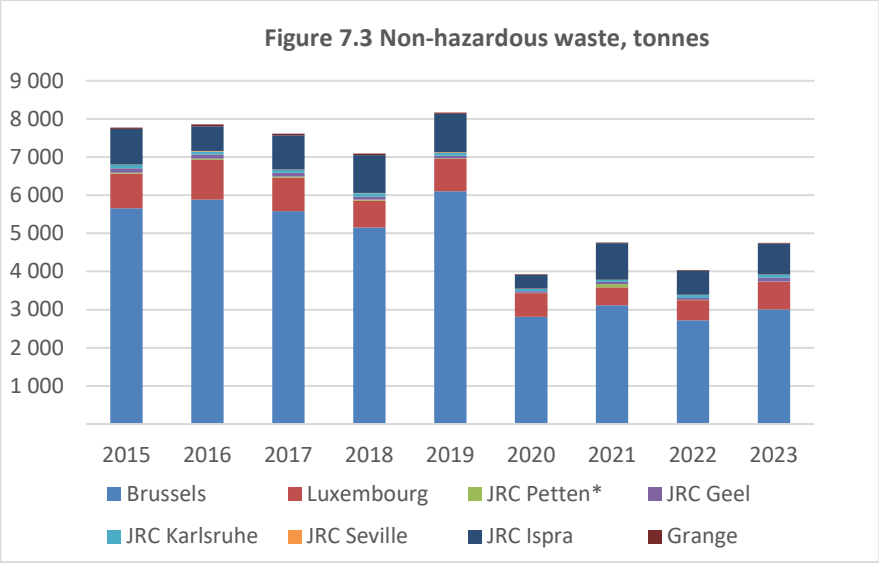
Note 1: processing could take place in following years (source DG DIGIT)

Note 2: N.a. data not available - pending the implementation of the new multi-institutional contracting framework.

7.3 Improving waste management and sorting

Overall: One of the Commission's main objectives is to generate less waste and improve recycling.

Non-hazardous waste generation increased slightly in 2023 mainly due to a higher office presence after the Covid pandemic, as shown in **Figure 7.3.** The 2019-30 waste reduction target has already been met **(Table 7.5)**.



Case study 7.1: Upcycling of old furniture in Brussels

Pictures showing the furniture collection made exclusively out of the upcycling of old furniture

The evolution in hazardous waste generation and waste sorting is presented overleaf (**Figures 7.4, 7.5** and **Tables 7.6, 7.7**). While hazardous waste generation shows a downward trend, per capita residual waste generation exhibits a small rebound but the overall longer term trends are encouraging.

Case study 7.2: JRC Ispra circular economy

JRC Ispra approaches the circular economy from a range of perspectives.

• Furniture in good condition from buildings demolition or refurbishment are collected and stored in warehouses where it is ready to replace old or damaged furniture. In 2023, 80% of desks, 65% of office cabinets and 50% of drawers dismissed were reused internally. Also, 13 computer monitors were donated and 29 downgraded laboratory instruments and equipment were recovered for internal use.

• A Stationery Corner was introduced - a place for collecting unused stationery items to give them a second life.

• Finally, a group of colleagues inaugurated a collaborative space, called *Repair Café*, where, once a month, people gather to try to fix broken items, thus reducing waste and applying circular economy principles.

7.3a Brussels

The contract for refurbishment works signed in 2019 applies the principles of circularity, paying special attention to:
- reusing and repairing construction products;
- improving the construction waste sorting and recycling;
- using low environmental impact materials, such as products containing recycled materials (i.e. wall tiles, suspended ceiling plates, carpet tiles) and products with environmental certifications (i.e. cradle-to-cradle certified wall partitions, water based eco-labelled painting, FSC certified wood).

The environmental management implemented in the framework contract, in cooperation with the contractor, allows continuous improvement of data quality and more thorough target setting, monitoring of KPI evolution and the implementation of new actions aimed at lowering the activity's environmental impact.

In 2023, following the obligation to collect organic waste in the Brussels Capital Region, the Commission started a pilot project for the collection of organics in the kitchenettes of buildings L107, CHAR, ORBN, B-28. The increase in waste volume in 2023 is due to the return to the office following the COVID pandemic, the opening of new canteens and construction waste due to works in buildings.

7.3b Luxembourg

In 2023 waste production increased by 38% compared to 2022. Leaving 'Mercier', a building occupied by OP since 1998, is the main reason for this. Paper waste alone accounted for 205t, of which 126t was from the Mercier building. Some renovation works in the new 'Mercier-Post' building inevitably also contributed to this rise. An increase in waste generation is expected when moving out of Laccolith in 2024 and the final move to occupy JMO2 in 2026, although much of the waste will be recycled.

In 2023, residual waste accounted for 22% of total waste, a 19% reduction compared to the 2022 value of 27%. Data tables were updated to include Paper and IT waste for 2022 and 2023 from DG ENER specific contracts.
Empty fire extinguishers, decommissioned by a specialist contractor, were added as hazardous waste for 2022.

The Commission is making continuous efforts to improve waste management including by undertaking 'waste visits' to all buildings and through ad hoc interventions when waste issues are detected through information from various stakeholders (staff, cleaning personnel, etc.).

7.3c JRC

In **JRC Geel**, the Flemish regulations regarding waste sorting streams have become stricter and "punishing" criteria were introduced for sorting incorrectly. JRC Geel pays particular attention to reducing its waste and on increasing awareness on the importance of sorting correctly to optimised recycling. The site undertakes regular communications to staff, the critical actors in waste production. JRC Geel recorded a significant increase in waste generation in 2023 and this was linked in particular to building waste from several refurbishments. The per capita residual waste (non-recyclable waste) has nevertheless decreased by 10% illustrating the efficiency of waste segregation at site level.

In **JRC Ispra** in 2023, there was a 32% increase in non-hazardous waste production compared to 2022. The production of almost all categories increased due to the refurbishment or demolition of buildings and warehouse stocks clearing (+62% paper, +53% mixed waste), ventilation filters replacement and wastewater treatment plant (+32% “other waste”). A reduction was achieved for plastic (-10%) glass (-3%) and street cleaning (-8%).

In 2023, an improvement action for laboratory waste management was started, which led to an overall reduction of reagents (-10%, EER 16.05.06*) and better sorting for some waste categories which can now be delivered as “non-hazardous waste” if not contaminated, such as laboratory glassware (-24%, EER 15.01.10*) and filter materials and personal protective equipment (-24% EER 15.02.02* or +55% EER 15.02.03).

Hazardous waste production increased by 28% in 2023 compared to 2022. The increase is due to an extraordinary disposal of waste from buildings, streets maintenance and electrical equipment (52% of all hazardous waste). All other categories were reduced or remained unchanged since 2022, in particular batteries (-81%), filters (-78%), paints and spray cans (-48% each).

In **JRC Karlsruhe**, for the category "unsorted waste" (or residual waste), the German ordinance on industrial waste (*Gewerbeabfallverordnung*) defines different criteria for waste separation than those applied under EMAS. This consequently leads to different values so the values presented here are for informational purposes only and are intended for comparison with other sites.

For **JRC Petten**, the waste data is provisional as some invoices are pending for collected waste. Hazardous and non-hazardous waste are based on “Weegbonnen”, which are estimations and not invoices.
- *Non-hazardous waste*: For carton/paper and regular waste, there are some weight receipts which are outstanding. This results in lower values. For other waste streams (such as wood, metal, hard plastic) there were several collections throughout the year, but no specifics on exact weights, as these are confirmed in the invoices, some of which are still pending.
- *Hazardous waste*: There were 3 different collections for hazardous waste in 2023, for which the transport notes are available, but these do not record the exact weight collected. The data provided on hazardous waste are based on “Chemical Waste Registration Forms”, which are created for each hazardous waste. Here, again the invoices for the collections are pending.

JRC Petten has made considerable efforts to encourage more timely and complete delivery of waste collection documentation.

In **JRC Seville**, the global per capita waste production has decreased by 45% between 2019 and 2023. However, it is important to note that this indicator is significantly influenced by the large-scale removal of items such as archival documents, furniture or IT equipment among others, which may vary from year to year.

7.3d Grange

Waste generation is an environmental aspect with significant impact. The decrease in 2023 compared to 2022 was 4,4%. The main component was municipal waste (6.1 tonnes) produced as a consequence of more staff increasing their site presence compared to the previous year.

Figure 7.4 Evolution of hazardous waste generation (tonnes)

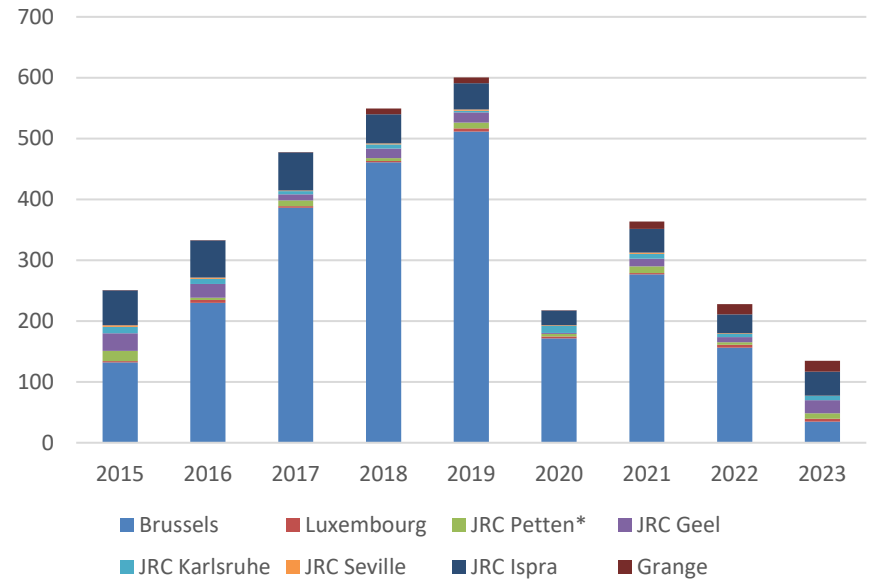
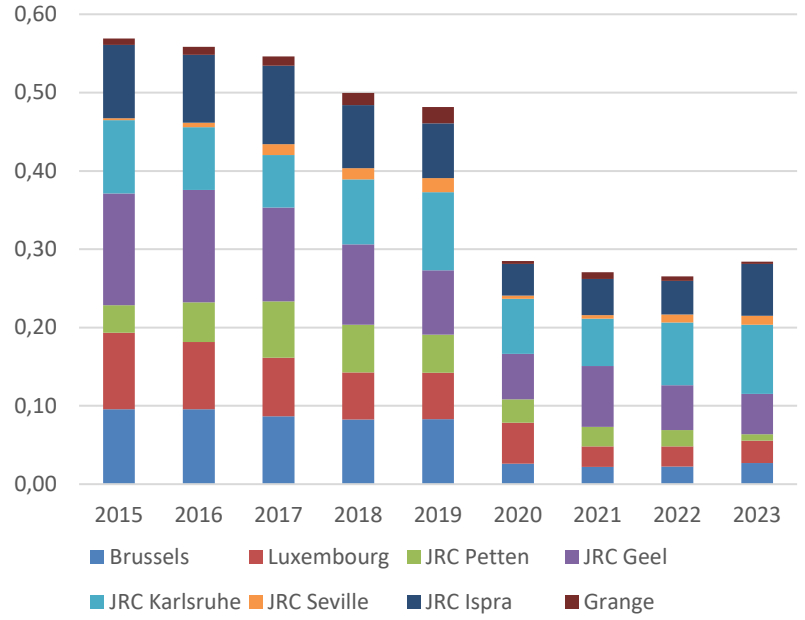


Figure 7.5 Evolution of residual waste (tonnes/person)



7.4 Emissions from waste management

The CO_2e emissions associated with waste disposal are calculated on the basis of the following main categories of waste management processes and waste types:

- Incinerated waste - 1. residual waste, 2.food
- Methanisation - food
- Composting - food
- Recycled/reused - 1. paper, 2. cardboard Recycled/reused - wood, 3. glass, 4. plastic PMC, 5. others
- Hazardous waste - all types
- Landfill - residual waste

The evolution of total waste emissions is shown in **Figure 7.6** and shows an improvement in waste management despite the increase of total quantities.

Figure 7.6 Emissions from waste management (tonnes CO_2e)

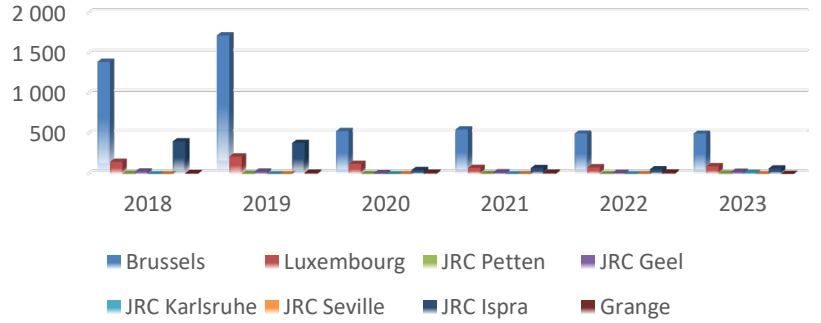


Table 7.5 - Total non-hazardous waste, (tonnes; tonnes/person)

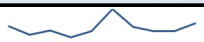
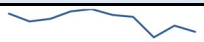
Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target *2030
Brussels		6 081	5 654	5 882	5 580	5 158	6 103	2 810	3 116	2 722	3 004	*4 891*
tonnes/person		0,222	0,209	0,218	0,198	0,181	0,211	0,094	0,102	0,088	0,087	*0,158*
Luxembourg		154	907	1.043	876	702	844	619	466	526	725	*655*
tonnes/person		0,038	0,194	0,224	0,183	0,140	0,164	0,118	0,084	0,092	0,129	*0,110*
JRC Petten*		30	28	32	36	28	24	16	84	9	5	*21*
tonnes/person		0,105	0,100	0,117	0,136	0,115	0,097	0,066	0,349	0,038	0,020	*0,090*
JRC Geel		166	115	108	95	76	65	40	59,19	47,54	99,96	55
tonnes/person		0,479	0,351	0,364	0,358	0,292	0,249	0,151	0,225	0,180	0,379	0,210
JRC Karlsruhe		107	102	82	80	85	78	60	57	81	76	68
tonnes/person		0,333	0,317	0,253	0,248	0,269	0,246	0,194	0,187	0,264	0,251	0,220
JRC Seville		6	5	18	11	11	16	5	4	11	10	10
tonnes/person		0,022	0,019	0,060	0,035	0,031	0,044	0,014	0,010	0,027	0,024	0,020
JRC Ispra		888	925	641	895	989	1.001	362	958	624	814	*951*
tonnes/person		0,380	0,403	0,284	0,393	0,433	0,429	0,150	0,387	0,250	0,330	*0,380*
Grange		45	41	50	38	45	40	15	18	18	16	*36*
tonnes/person		0,251	0,225	0,262	0,204	0,249	0,227	0,088	0,102	0,097	0,095	*0,200*
Commission		**7 477**	**7 778**	**7 856**	**7 611**	**7 094**	**8 171**	**3 928**	**4 763**	**4 037**	**4 749**	***6 687***
tonnes/person		**0,212**	**0,219**	**0,223**	**0,208**	**0,191**	**0,216**	**0,101**	**0,119**	**0,100**	**0,108**	***0,170***

*Note: * 2030 target value already reached in 2023*

Table 7.6 - Total hazardous waste (tonnes, tonnes/person)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		152	132	230	386	461	512	171	277	156	35
tonnes/person		0,006	0,005	0,009	0,014	0,016	0,018	0,006	0,009	0,005	0,001
Luxembourg		0,92	2,27	4,56	2,93	2,23	5,40	3,31	1,96	4,71	4,70
tonnes/person		0,0002	0,0005	0,0010	0,0006	0,0004	0,0011	0,0006	0,0004	0,0008	0,0008
JRC Petten*		11,41	16,94	4,00	9,41	4,77	9,29	4,30	11,10	4,32	9,06
tonnes/person		0,040	0,061	0,014	0,036	0,019	0,037	0,017	0,046	0,019	0,040
JRC Geel		23	29	22	10,09	15,81	17	1,76	12,99	8,51	21,24
tonnes/person		0,066	0,088	0,076	0,038	0,061	0,063	0,007	0,049	0,032	0,080
JRC Karlsruhe		10,51	10,26	8,23	5,07	6,96	2,59	11,37	7,56	5,17	6,87
tonnes/person		0,033	0,032	0,025	0,016	0,022	0,008	0,037	0,025	0,017	0,023
JRC Seville		3,37	2,68	2,41	1,13	1,31	2,43	1,10	2,29	1,04	0,34
tonnes/person		0,012	0,009	0,008	0,004	0,004	0,007	0,003	0,006	0,003	0,001
JRC Ispra		50	57	61	63	48	43	24	39	31	40
tonnes/person		0,021	0,025	0,027	0,027	0,021	0,019	0,010	0,016	0,012	0,016
Grange		0,00	0,04	0,15	0,16	9,02	9,19	0,37	12,14	17,17	18,17
tonnes/person		0,000	0,000	0,001	0,001	0,050	0,052	0,002	0,068	0,094	0,108
Commission		**251**	**250**	**333**	**477**	**549**	**600**	**218**	**364**	**228**	**135**
tonnes/person		**0,007**	**0,007**	**0,009**	**0,013**	**0,015**	**0,016**	**0,006**	**0,009**	**0,006**	**0,003**

Table 7.7 - Residual waste as proportion of total waste at EMAS sites (%, tonnes/person)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target *2030
Brussels		41	45	42	41	42	36	26	20	24	31	
tonnes/person		0,093	0,096	0,096	0,087	0,082	0,083	0,026	0,022	0,023	0,027	*0,067*
Luxembourg		55	50	38	41	43	36	44	31	27	22	
tonnes/person		0,021	0,098	0,086	0,075	0,060	0,059	0,052	0,026	0,026	0,029	*0,040*
JRC Petten		29	22	39	42	45	36	36	6,33	37	14	
tonnes/person		0,042	0,035	0,051	0,072	0,061	0,049	0,030	0,025	0,021	0,008	*0,090*
JRC Geel		30	33	33	30	29	26	37	28	27	11	
tonnes/person		0,162	0,143	0,143	0,120	0,103	0,082	0,058	0,078	0,057	0,051	*0,070*
JRC Karlsruhe		31	27	29	25	28	39	31	28	28	32	
tonnes/person		0,113	0,093	0,080	0,067	0,083	0,100	0,071	0,060	0,080	0,088	0,220
JRC Seville		22	9,12	7,83	36	41	36	23	29	34	46	
tonnes/person		0,008	0,003	0,005	0,014	0,014	0,018	0,004	0,005	0,010	0,012	0,020
JRC Ispra		24	22	28	24	17,69	15,65	25	12	16	19	
tonnes/person		0,095	0,093	0,087	0,100	0,080	0,070	0,040	0,046	0,043	0,066	*0,060*
Grange		5,14	3,71	4,02	5,82	5,29	7,42	4,19	3,17	1,95	1,56	
tonnes/person		0,013	0,008	0,011	0,012	0,016	0,021	0,004	0,009	0,006	0,003	*0,200*
Commission		**237**	**211**	**220**	**245**	**252**	**233**	**226**	**158**	**197**	**177**	***- 26***
tonnes/person		**0,084**	**0,095**	**0,093**	**0,085**	**0,078**	**0,078**	**0,031**	**0,024**	**0,025**	**0,030**	***0,170***

8 Biodiversity and food supply

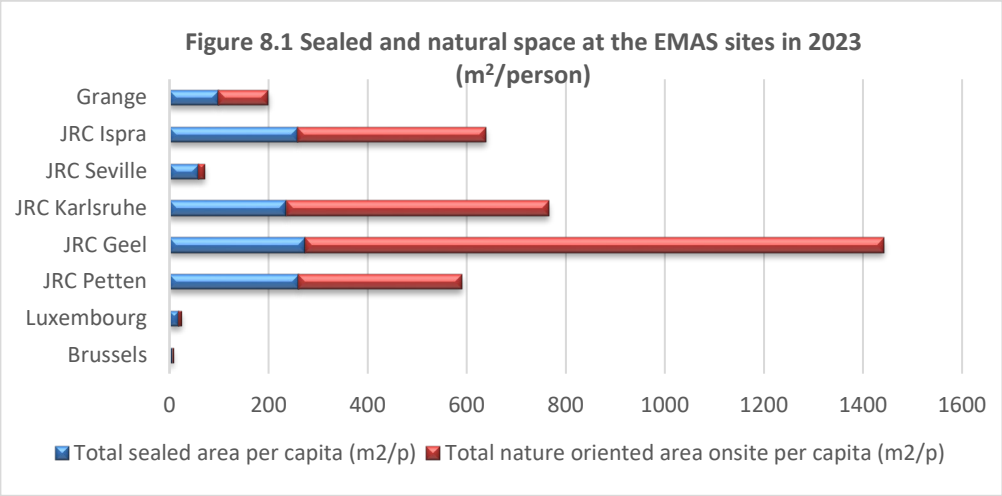
8.1 Preserving and restoring nature and biodiversity

Greening The Commission

•The Commission considers preserving biodiversity as a key element of its greening activities and has already launched several ecosystem and biodiversity programmes, in particular in its non-urban sites

•The Commission will continue to develop and implement these initiatives to preserve and restore ecosystems and their biodiversity, including protected habitat and species, and in particular in Natura 2000 protected areas close to its rural and urban sites.

Overall: **Figure 8.1** shows sealed and natural surface areas on a per capita basis at the sites, indicating that JRC Geel is the most sparsely populated site, followed by JRCs Karlsruhe, Ispra and Petten. Each of these sites offers several hundred square meters of land per person, although not necessarily all accessible. Brussels, Luxembourg and Seville are all located within the city and therefore have less space. Data on total use of land, total sealed area, nature oriented areas offsite/onsite are included in **Annex 5.**



8.1a Brussels

OIB management implemented a new approach to biodiversity for the European Commission's buildings and surroundings in Brussels in October 2022. In 2022 the OIB also launched projects in the BERL and BRE2. In 2023 pilot projects targeted the inner courtyards of B-28 and L-41 to support measures enhancing the quality of office buildings.

Discussions about the projects for greening of the roofs of CHAR and ORBN buildings will continue in 2024, and which will cover 260m^2. A study was launched for the BERL site, with the objective of enhancing the strategy's visibility along with

8.1b Luxembourg

The future Jean Monnet 2 building (JMO2) will benefit from spaces promoting biodiversity as part of the BREEAM Certification. The project concerning the green rooftop of the Euroforum is on hold. Green roofs are implemented on top of the technical floors in the new Mercier Post building acting as a water management measure and at the same time contributing positively to the microclimate of the city of Luxembourg.

In 2023 synergies continued between OIL EMAS Team and the nursery schools (CPEs) to develop workshops and events for the educators on sustainability (e.g. compost projects, differentiated grass mowing).

OIL has also contacted several actors in Luxembourg to define indicators allowing for monitoring biodiversity on the Commission's sites.

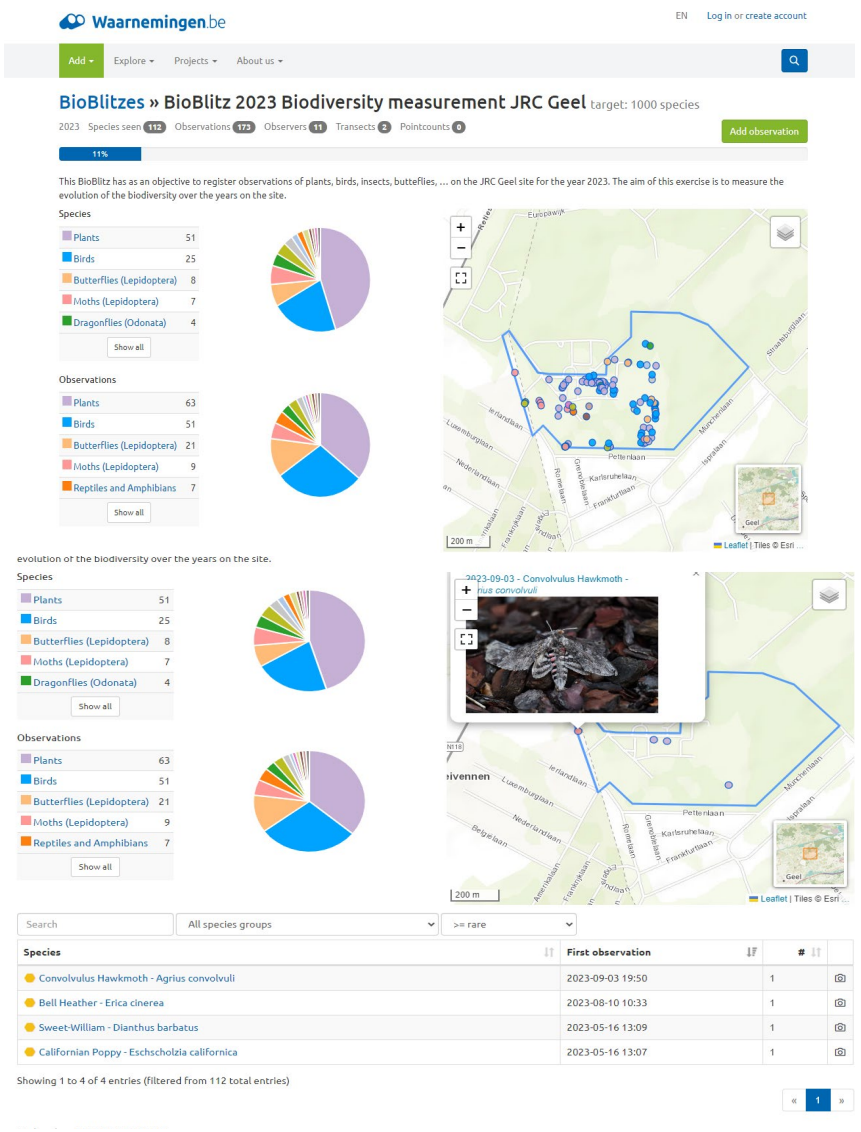
8.1c JRC

Due to their geographical remoteness (mostly "non-urban" sites), there is plenty of room for nature at the JRC, which contributes a great deal to preserving biodiversity. The actions taken are coupled with awareness-raising.

In 2023, **JRC Geel** organised several actions to foster its biodiversity, either by preserving the fauna or improving its habitat. Annually, JRC Geel helps toads to cross the road, and avoid being run over when they move to the pond during the mating season. With the participation of its staff members, the site created an abode for salamander and toads (as shown).

Additionally and to better assess its biodiversity, JRC Geel launched a 'bioblitz' project, allowing staff to picture the fauna and flora present on site with the application *Obsidentify* and uploading their observation on the e-platform *Warnemingen.be*. The platform provides the location of the sighting, the photo and indicates the rarity of the species identified.

Case study 8.1 JRC Geel's biodiversity activities



JRC Ispra features 34 hectares and 8 habitats of conservation concern covered by the Habitat Directive, including 2 classified as priority habitats (3140, 6230*, 6510b, 6510c, 91E0*, 9160, 9190, 9260). The latest habitat monitoring plan was carried out in 2022 and the relevant documents were completed in 2023. This work made it possible to study and put into practice new specific conservation measures and, hopefully, to improve biodiversity in the long term. Habitat restoration and protection projects are planned to improve conservation and develop the site's natural heritage.

In **JRC Karlsruhe** almost 70% of the site's surface is a non-sealed "natural" area. A large part is natural forest, similar to the surrounding forests, which provide a natural habitat for different species. The glass walls of one of the site's bike racks have been fitted with opaque film strips in a test project to prevent bird strikes (the other bike rack remains with concrete walls).

JRC Petten is one of the greenest Commission sites, with more than 80% of the site left for wildlife to roam free. Part of the site is a Natura 2000 "dry heath" habitat. The site is implementing an advanced scenario for nature preservation and restoration in order to achieve the goal of sustaining biodiversity on site.

Despite the challenges of working in an urban area, **JRC Seville** is also making progress by promoting a guided bike tour to identify native trees in a nearby park. Additionally, a contract was initiated to install interpretative signage on the trees in the courtyard.

Case study 8.2 JRC Ispra's biodiversity activities

JRC Ispra has a valuable naturalistic character. The site hosts many interesting wildlife species and habitats within its boundaries and aspires to protect, enhance biodiversity and possibly to be regarded as a hot spot of biodiversity in the regional area. The most recent on-site activities that implement the EU Biodiversity strategy 2030 are listed below.

As a symbolic gesture to preserve the site's green areas and to engage staff, a yearly JRC Tree day was established. On 2nd November, 112 native trees and shrubs were planted undactivity in 2023.

In 2016, a standardised annual programme was established for monitoring the *Rana latastei* population, using a capture-mark-recapture methodology, to evaluate if any protective additional actions are needed. In 2016-2017, the population size was estimated at about 87 breeding frogs and grew to 176 in 2019. The monitoring had a new start in 2023 after a pause due to the pandemic and it was influenced by anomalous weather making it difficult to identify the best period for a new reliable estimate of population size.

However, collected data allowed to perform occupancy (22%), and detectability models (83%), showing that, when present, the species is easily detected, especially when the suitable habitat occupied by species decreases. Actions to improve habitat quality were implemented. Frog passages were implemented in the fence during refurbishment works in order to help them reach local wet areas.

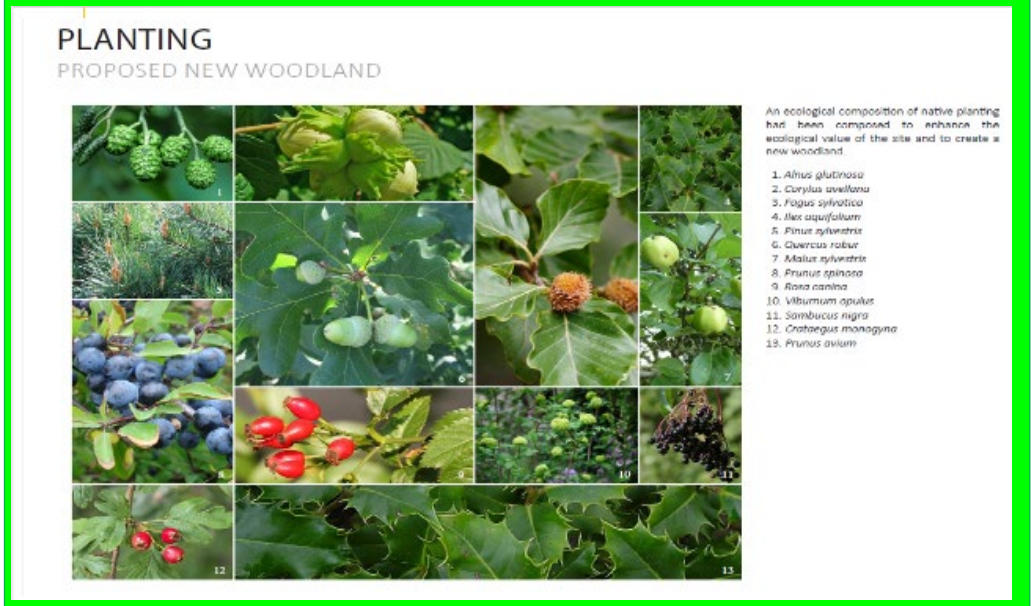
Under the European Butterfly Monitoring Scheme (EBMS), JRC Ispra has, since 2022, implemented a weekly butterfly monitoring program within its territory, named “butterfly transect”. This is part of overall efforts to monitor and conserve butterfly populations across Europe. During 2023, 26 species were identified and around 450 butterflies captured and released.

For the building sector, measures were implemented to contribute, directly or indirectly, to protect biodiversity such as the green roofs for building 102 and Sport Hall, the landscaping project for b. 102 and implementing 13 ecological targets in the framework of its BREEAM certification. These include butterfly gardens, bat boxes, nests for invertebrates, log pyramids and bird nestboxes.

Furthermore, during 2023 the Europa Science Experience (ESE), a Nearly Zero Energy Building, was completed. It will be soon be integrated with a biodiversity corner, consisting of aromatic plants and wildflowers to attract pollinators and a dead wood garden made by the JRC fallen trees to support a wide range of biodiversity, including fungi, lichens and mosses, which provide food and shelter for various wildlife species.

8.1d Grange

Grange has a five year land management plan and in 2023, under that plan, planted 5160 trees over c.1 ha area. Some animals have returned since the plan was introduced, and have been captured by CCTV cameras as shown below.



8.2 Promoting a fair, healthy sustainable and good food system

Greening The Commission: *The Commission will study and implement actions to further reduce or remove single-use items, particularly from catering, meetings and conferences. More generally, it will update its internal approach to food and catering, through embedding GPP criteria such as labels certifying sustainable food for the canteens.*

Overall: The COVID pandemic severely disrupted catering services, with many restaurants and cafeterias closing. In 2023 the rebound in catering activity since COVID continued. This is reflected in **Table 8.1** which shows the quantities of 14 food types consumed at Commission sites' canteens since 2019. New categories (Lamb, Veal, Fruits, Vegetables, Bread, Pasta and Rice) were introduced for reporting this year to have a more complete picture. Although 2023 saw a recovery, total consumption remained less than half the 2019 value. One reason for this is the reduction of the number of canteens after the Covid crises and the new ways of working.

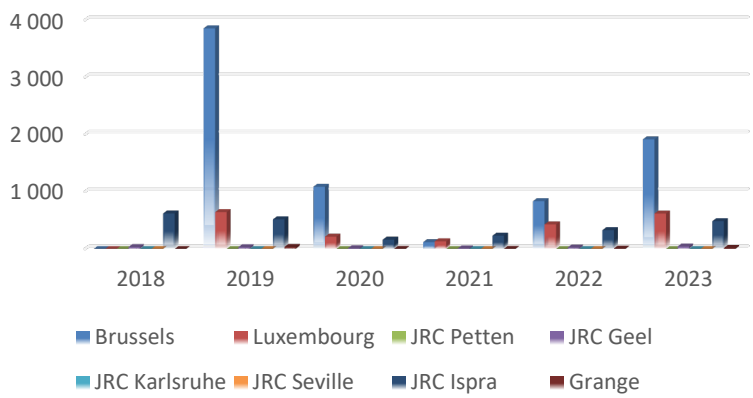
Table 8.1 Annual consumption of selected food groups in Commission cafeterias (tonnes)

Food item	Factor kg CO_2e/t	2019	2020	2021	2022	2023
i) Beef	33 770	82	24	4,1	21	25
ii) Pork	9 350	104	30	8,7	29	32
iii) Chicken	4 470	134	37	10	35	33
iv) Fish	10 970	90	27	11	26	41
v) Milk	1 490	75	25	10	26	85
vi) Other dairy*	8 960	37	12	8,8	20	58
vii) Coffee	9 400	19	8,7	8,6	6,6	21
viii) Lamb	40 204	15	16	4,1	5,6	36,5
ix) Veal	17 092	123	70	21	19	61
x) Fruits	589	32	30	8,7	8,8	19
xi) Vegetables	846	82	71	21	26	95
xii) Bread	689	11	8,2	3,1	3,5	8,7
xiii) Pasta	2 145	31	28	5,4	14	29
xiv) Rice	2 754	14	12	3,7	5,7	14
Total		**848**	**399**	**128**	**245**	**558**

* Average of yoghurt/butter

Data in **Table 8.1** show that Lamb and Beef are the most carbon intensive food group and the proportion of both on the total has decreased from 11% in 2019 to 7% in 2023. The emissions generated by these food groups is illustrated below in **Figure 8.2**. Data is not reported for sites lacking a dedicated canteen (JRCs Petten, Karlsruhe, Seville).

Figure 8.2 Annual emissions of seven food groups (tonnes CO_2e)



8.2a Brussels

The current focus is to redevelop the cantine service with a new post pandemic delivery model. Improvements continue towards delivering a more sustainable service in the spirit of Brussels Capital Region's 'Good Food' label.

Given the quantities requested, the supply of organic or short circuit produce cannot be guaranteed within the framework of current supply contracts.

Restaurant management aims to minimise the production of food waste for example, vegetable scraps are reused for soups or to produce chips for cafeterias. Friday dishes are designed at the last minute to empty the fridges. So environmental management of kitchens remains an OIB priority.

8.2c JRC

Sustainable catering services have been offered at the JRC for a couple of years, when appropriate (in Ispra, the canteen is managed by the OIB and there is no canteen in Seville). For the sites without a canteen/cafeteria, efforts are mostly made for organised events.

JRC Geel's catering contract includes measures for a fair, healthy and sustainable food system. For instance, the caterer has a "biogarantie" certificate for a significant proportion of the products used, that should also be seasonal. JRC Geel proceeds with the sustainable food measures (water "fountains", glass bottes for beverages, provision of vegan, organic and fair trade desserts, 25% meat portion reduction, take-away available to reduce food waste, etc). It also continues with the supply of 2 dishes per day (vegetarian and either fish or meat) instead of 3 (before Covid-19). The CO_2e emissions from the catering at JRC Geel significantly increased in 2023 due to higher staff attendance (up to 80 menus/day versus 50 in 2022).

In **JRC Ispra**, OIB manages social infrastructures for staff: children's facilities, temporary lodgings for EC staff, a Clubhouse, as well as two canteens, a cafeteria, a Restaurant and the banqueting service for conferences and events. In 2017, the process of eliminating single use plastic and single-dose food started. Water dispensers were installed and water jugs provided to customers free of charge. In 2018, plastic was banned from take-aways and coffee breaks, containers and cutlery were replaced with compostable, biodegradable alternatives or reusable tableware where feasible. To reduce the impact of the whole catering services, there were some changes in the service set-up. At the same time, more plant-based meals was introduced to the canteens: in 2023 more than 40% of the daily food served at the canteens did not contain any meat.

JRC Karlsruhe operates a small cafeteria on its premises, but mainly uses the restaurant facilities of the surrounding research campus (KIT Campus Nord) whose catering practices it cannot influence directly.

Services at the **JRC Petten**'s restaurant are provided by the catering company Vitam. Vitam partners with MVO NETHERLANDS, a Dutch initiative promoting service providers' awareness on the impact of the catering business on people and the environment, the use of seasonal foods from sustainable origin, less meat, more vegetables, use of local producers for zero or almost zero kilometres products.

In **JRC Seville**, when setting up a catering service for events, service providers are systematically asked to include a declaration or statement on the sustainability of their services (see section 7.1.c).

8.2b Luxembourg

In Luxembourg, all canteens already hold the *SuperDrecksKëscht fir Betriber.*
In 2023, OIL catering continued its participation in ECOBOX, a multi purpose deposit-return scheme developed in Luxembourg for transporting meals (take-away, leftovers, etc.). This initiative reduces waste volume, by reducing not only the number of packages but also the quantity of food waste.
GPP criteria were included (packaging, end-of-life recyclability and energy consumption) in the new call for tender for vending machines.
The new contract for procurement (dynamic purchasing system), fosters the purchase of locally produced foodstuff to be used for catering in Luxembourg.

8.2d Grange

The contractor is yet to provide the 2023 figures for food consumption. In 2022 the contractor, for IT reasons, also provided no data, so consumption was therefore estimated reproportioning the 2019 food consumption according to the staff's average monthly site presence on site in 2022 (24%).

9 Staff participation and communication

9.1 Staff participation as EU Citizens - Setting a good example

Greening The Commission

- *For the Communication to succeed, staff engagement to implement the actions is key. This also goes hand in hand with adopting sustainable ways of working and behaviour, with which many are already familiar. The Commission recognises and encourages its staff to be innovative and embrace changes in ways of working with the ambition of setting a good example in implementing new innovative green solutions.*
- *Greening the Commission and achieving corporate climate neutrality by 2030 is intended to set a good example and raise awareness of the need for ambitious climate action at all levels. The Commission's green actions are also fully part of the Human Resources strategy as a key priority to increase further the attractiveness of the Commission as an employer.*

9.1a Leadership and commitment

During 2023 the Commission's senior management took an active role demonstrating leadership and commitment to the environmental management system and environmental issues in general. Examples of Commission support for Europe-wide and Commission initiatives are presented below.

EU Green Week 2022 (03-11/06): Delivering a net-zero world

Over 250 partner events focusing on skills for sustainable, resilient and socially fair communities were organised across Europe and beyond, allowing everyone to be part of the celebrations and debates. **Virginijus Sinkevičius, Commissioner for Environment, Oceans and Fisheries** noted ahead of the event: *"Green Week is about how to make the Green Deal happen for people, for businesses and for future generations of Europeans. Since the Green Deal was announced the Commission has proposed an impressive number of legislative proposals to safeguard biodiversity, advance the circular economy, and strive for zero pollution. This is the moment to push through and finish up what we have started. This is not a sprint but a marathon. We cannot win a medal for running 10 kilometres, but we*

EU Mobility Week (16-22/09): Save energy!

In 2023, EUROPEAN**MOBILITY**WEEK broke its record for campaign participation, with 3,351 towns and cities registering activities to raise awareness about sustainable and active mobility. Towns and cities from 45 countries in Europe, and beyond, participated during the main event week, including Argentina, Ecuador, Japan, Mexico, Peru and South Korea. As **Commissioner for Transport Adina Vălean** said: *"Cities may only occupy 4% of EU land area, but 75% of EU citizens call them home. By transitioning to more sustainable and efficient mobility solutions, the cities can make a difference for their inhabitants and those beyond - be it in terms of less pollution, and better connectivity for all. As many as 3,000 cities take part in European Mobility Week this year and they are living proof of their power to change things."* The Commission participated as usual with events during the week.

Fourth award ceremony rewards innovative, green Commission events

Following the success of the previous three editions, the award ceremony of the 4th corporate competition on sustainable conferences and events was held, in the presence of **Commissioner Hahn for Budget and Administration and the Directors General of DG Human Resources and Security (DG HR), Gertrud Ingestad and DG Interpretation (DG SCIC), Genoveva Ruiz Calavera,** with a record number of applications submitted (almost double than in 2022!) by DGs/services and EC Representations. Commissioner Hahn, in his motivational video, concluded with the words: *"Be inspired, be bold, be innovative, be enthusiastic in your quest for sustainability. I already look forward to next year's competition."*

9.1b Communication to staff

Corporate seasonal communication campaigns ...

The EMAS spring campaign 2023: Invest in our Planet..... This year's *EMAS Spring campaign (19-26/04)*, built around the International Earth Day (22/04) with the theme 'Invest In Our Planet', highlighted the importance of dedicating our time, resources, and energy to solving climate change and other environmental issues in order to pave a path towards a prosperous and climate neutral future.

Taking stock of valuable lessons learned and the experience gained one year following the adoption of the Greening the Commission Communication and action plan, we invited colleagues to participate in a wide variety of events and activities. The programme included: (a) a **Corporate Photo competition *#Invest in our Planet!***, (b) a **Beyond EMAS… game-based workshop on novel greening projects**: led by the **JRC Living Lab** for Testing Digital Energy Solutions, addressing main aspects of the selected new greening projects proposed by the newly created **GREEN Transition Multipliers Community**, (c) a webinar on "**What is the EC doing to further green itself?",** where the EMAS coordination team (HR.D.7) and the EMAS site coordinators for Brussels, Luxembourg, JRC-sites and EC Representations shared the main highlights and their success stories for the first year of the Greening the Commission ambitious project towards the 2030 climate neutrality target, (d) the award ceremony of the corporate sustainable events competition, (e) a webinar on **Greener Conferences and Events – Walking the talk on sustainability** and (f) the organisation of multiple "green' local actions in several DGs/services/sites/EC Representations such as: an Interinstitutional Repair Café in Luxembourg, a "Bioblitz day" and creation of wooden hiding places for small animals (amphibians) at JRC Geel, Plogging activities at Ispra: a mix of a sport and environmental activity, where colleagues will collect waste in collaboration with the municipality in Ispra and one NGO and **a** 'Clean-up' walk on the beach at Petten.

In Brussels, DG RTD organised a Knowledge for Sustainability talk on "Regrounding Humanity in the Anthropocene – Tackling the cultural drivers of the planetary emergency", in collaboration with the staff association EUStaff4Climate with the help of Active Seniors in the research area, ERCEA Greening Group organised a lunch conference for the Earth Day on "greening the city via nature based solutions and climate/biodiversity governance" and DG ENV & DG CLIMA set up a Plant and Seed Fair.

"Less Waste, More Action TOGETHER" 2023: Waste Reduction Campaign

The Commission's **Less waste, more action TOGETHER** annual campaign (18-26/11) focused on the lessons learned and success stories on circular economy across EC-sites, but also looked forward concerning future challenges in view of our 2030 climate neutrality target.

The main themes of the campaign were: **Corporate Waste Stories – Circular Economy Success stories** by the EMAS site coordinators; **Waste sorting quizzes and games** ("back to basics" local campaigns) by the EMAS Network; **Digital mindfulness tips and tricks & Paperless practices** by DIGIT; **Sustainable food choices/cooking with leftovers and cooking demonstrations** (by EMAS Correspondents & the Sustainable Eating Community).

Moreover, we **revamped the Greening the Commission Learning Challenge** with additional references and quiz games to put the knowledge into practice, as well as a new chapter of to how to further green our homeworking. The **Executive Agencies in Covent Garden organised a Green Week** including the flagship "Toys, toys, toys" action, an information session on Digital Frugality and a collection of small household appliances. Additional actions included: a Green Pills workshop, with DG DIGIT showing how to be more mindful about our digital waste, and corporate success stories such as using carpets to make window seats, and implementing New European Bauhaus principles at OIB. Also featured were the repairing of damaged office furniture and a textile collection in Seville, and plogging (picking up rubbish whilst jogging) in Ispra.

The week also saw 'Climate Fresk' workshops, others organised by the sustainable eating community and organisation of sustainable eating demonstrations by a TV celebrity chef and an interinstitutional repair café in Luxembourg.

9.1c Climate Fresk workshops in the Commission!

The Climate Fresk card-game, which aims to raise awareness about climate change challenges, is a world phenomenon, with more than 1.5 million people having participated since its creation in 2018. Its cards are based on the Intergovernmental Panel on Climate Change (IPCC) reports and it is widely recognised as a reliable and powerful educational tool.

The idea of setting-up Climate Fresk workshops in the Commission was initially proposed in the GREEN Transition Multipliers Community workshop in December 2022, and organised under the Greening the Commission action plan, and was broadly supported by participants. It became a corporate action, thanks to the practical support of the EMAS coordination team in HR.D.7 and associated funding, with a project manager in RTD.

Considering the size of the European Commission and the potential to deploy this tool inside the institution, it is worthwhile developing **an internal pool of Climate Fresk facilitators**, and to be able to train other facilitators internally, without the need to repeatedly engage the services of the Climate Fresk NGO. The Commission therefore signed a contract with the Climate Fresk Association, to train internal facilitators and certify one of them as internal trainer, who will be able to train other facilitators within the Commission in the future. Following a call for expressions of interest, more than 90 staff members volunteered to train as Climate Fresk Facilitators, of whom 30 were selected, starting their training in November 2023.

It was expected that there would be **35 internal facilitators** (including those trained externally) and **1 trainer** by the end of March 2024 available to organise workshops as standalone events or as part of team building activities.

The aim is to involve **2 000 participants** in Climate Fresk workshops in the next few years. The first large scale Climate Fresk workshops were scheduled to take place during the EMAS Spring campaign 2024 in late April – June 2024 in Brussels, Luxembourg and Ispra.

9.1d Dialogue with internal stakeholders

The Commission has a corporate register of internal questions and suggestions submitted via the EMAS in EC functional mailbox, Staff Fora and EMAS for all! Teams Channel, which recorded **1 169 entries** (compared to 1 066 in 2022, 537 in 2021, 158 in 2020, 328 in 2019, 185 in 2018, 188 in 2017 and an average of 40-60 entries during the previous years), all of which received responses. This tremendous increase demonstrates the effectiveness of the EMAS internal communication campaigns and the transparent and open staff dialogue.

Communication among EMAS correspondents and site: Overall, **36 of 47 EMAS teams** demonstrated a performance above average (with a score of 6 (or more) out of 10), representing **85%** of the total Commission population (compared to 75% in 2022). This is mainly the result of (i) the environmental awareness support by the local volunteer groups, currently active in 7 sites and in 20 DGs/services (in relation to 21 in 2022), (ii) the large number of local EMAS action plans in 8 sites and 20 DGs/services (compared to 22 in 2022), (iii) the setting up of local environmental actions in all 9 sites and 28 DGs/services (compared to 23 in 2022), (iv) EMAS team contacts with senior management currently in all 9 sites and 31 DGs/services (compared to 27 in 2022). This resulted once again in high average performances of **6.9 out of 10** for the EMAS teams in all DGs/services/sites and **8.3 out of 10** for the 6 Executive Agencies (REA, ERCEA, EISMEA, EACEA, HaDEA and CINEA).

9.1e Additional campaigns

The **corporate energy saving campaign**, as a contribution to European solidarity in times of energy scarcity, in alliance with the EU member states commitment to a voluntary 15% reduction in gas consumption across the bloc over the until March 2023. This included:

- **Buildings Energy Saving Together (BEST) actions** help further reduce the Commission's energy consumption and maintenance during a period of low office presence (during the summer and at the end of the year), through the closing of several buildings. Electricity, ventilation, and air conditioning are switched off in the closed buildings and colleagues are able to work from one of the designated building hubs.
- The **greening your summer** action
- **UN Biodiversity Day:** EU award-winning virtual reality experience *"Can you imagine a world without pollinators?"*
- Communication to staff on the **EMAS highlights** (via the **Great EMAS Online Quiz Game**)
- The **"Keep it Green this Christmas"** campaign

Other corporate actions:

- Six articles published in the Commission's on-line news portal "Commission en Direct";
- Four articles published on the new "People First" section on Commission's intranet (My IntraComm);
- Several announcements on the Commission's intranet under "Practical Information" and "Events";
- Revisions to the overall structure and further improvement of the internal EMAS webpages.
- The **Inter-institutional Green Public Procurement (GPP) helpdesk** event on 19/09 on sustainable goodies
- **VeloMai 2023:** The ever-popular interinstitutional Velomai challenge was bigger than ever in 2023- thanks to the participation of a record-breaking 19 EU institutions, agencies and bodies. The nearly 2 400 people who took part pedalled almost 485,000 kilometres in total, the equivalent of more than 12 times around the Earth!

Communication actions initiated by the EMAS Correspondents

EMAS Correspondents organised local environmental actions in the **28 DGs/services** (compared to 23 DGs/services in 2022) and in all **6 Executive Agencies**. Typical examples included:

(a) **Waste reduction actions:** including waste collection and recycling events, collection of textiles, household appliances, technical devices and bottle caps, collecting toys and all kinds of items for charity, book exchanges, plogging activities, installing waste sorting stations, anti-food waste trainings, internal campaigns to avoid paper cups (bring your cup and distribution of porcelain cups).

(b) **Sustainable mobility initiatives** (targeted communication and training actions on sustainable commuting during EU mobility week and VéloMai corporate events)

(d) Internal communication and training actions to raise **staff environmental awareness** and promote staff engagement related to various topics, such as: EMAS related corporate trainings, events, campaigns, and policy (reduction of missions…), digital waste, energy saving, biodiversity, and adopting a greener lifestyle (food, sustainable commuting).

Other actions across EC-sites coordinated by the EMAS site coordinators

In Brussels, the OIB participated in most of the activities promoted by DG HR and organised dedicated training sessions for specific targets, namely the EMAS Correspondents in the DGs, on subjects such as energy saving actions, waste and data collection.

In Luxembourg, OIL participated in Vélomai and produced a video on cycling and road safety. To promote soft mobility a video was in which local authorities explained how Shared space is put in place in Bertrange. A mobility conference was organized together with the Ministry of Environment and Mobility focusing on the new 'Mercier-Post' building and its features. During 'Waste week' a very successful culinary workshop was hosted by Anne Faber, known for her shows on RTL TV. She created 2 “Zero Waste” menus in front of staff, using food leftovers from the refrigerator. In addition, the OIL Communication team released the video of the cooking show. The OIL hosted the highly successful Interinstitutional Repair Café.

As for the **JRC's various sites**, colleagues in JRC Seville organised a very successful textile collection through a local charity and arranged two-day session bike workshops to promote commuting by bike, and which were popular. Geel saw a campaign to refresh knowledge on waste sorting. In Ispra, lunch-box delivery via the autonomous robot Yape, developed by an Italian start-up company, was pilot-tested for two weeks within the context of the Living Laboratories programme. The initiative is due to be replicated also in 2024 and 2025, this time for longer periods (2-3 months), potentially helping to reduce the number of colleagues driving their cars to the canteen at lunchtime.

9.2 Corporate level EMAS training organised during 2023 included:

EMAS training for all staff

The virtually delivered on-line *EMAS basics for all* course continued with great success in 2022, reaching out to a steadily high number of **729 participants** (in 8 sessions, compared to 935 in 2022 in relation to 517 in 2021) from all EC-sites. The training addressed for the first time the environmental impact of teleworking and how to be "greener" at home

Environmental Management System (EMS) Training

There have been: (i) three online introductory training sessions for new EMAS Correspondents (ECORs) and EMAS site coordination teams with a total of 34 participants (27/02, 110/03 and 08/09), ii) 3 online EMAS Regulation training courses (8 hours each, on 4-5/04, 16-17/05 and 20-21/09) with a total of 42 participants and 2 online “Preparing for EMAS Internal or External Audits” training courses (4 hours each, on 01/03 and 24/11) with a total of 20 participants, iii) three online training sessions on EMAS internal audits and external verification audits with a total of 11 participants (06/10, 18/10 and 24/05), also addressing the new EMAS teams in EC Representations and (iv) one info-session on the compilation of the *Sound Environmental Management* section in Management Plans 2024 with 40 participants. In total, **147 members of the EMAS teams** (compared to 91 in 2022) have attended an introductory and/or specialised EMAS training.

9.2 Trainings

Table 9.1 No. of different trainings on offer by EMAS site coordinators (for local staff with high environmental impact potential)

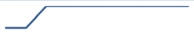
Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		3	3	3	3	3	2	2	2	5	3
Luxembourg		0	0	NR	3	4	3	4	6	2	3
JRC Petten		3	7	6	3	3	3	3	4	5	5
JRC Geel		3	3	3	9	6	11	10	8	20	29
JRC Karlsruhe		1	1	2	2	2	2	2	2	2	2
JRC Seville		5	5	27	30	35	15	15	16	2	2
JRC Ispra		2	1	3	4	6	5	2	7	7	5
Grange		NA	NA	NA	NA	NA	NA	NA	NA		
Commission		**17**	**20**	**44**	**54**	**59**	**41**	**38**	**45**	**43**	**49**

Table 9.2 No of training beneficiaries (among local staff with high environmental impact potential)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		1 648	1 648	1 648	1 648	1 648	1 648	1 648	100	50	196
Luxembourg				NR	100	85	56	50	45	61	68
JRC Petten		62	43	50	55	52	54	6	40	31	30
JRC Geel		49	49	28	31	42	54	26	85	178	143
JRC Karlsruhe		320	322	324	322	317	315	309	305	306	304
JRC Seville		36	54	54	117	150	76	107	94	64	41
JRC Ispra		340	243	350	347	349	378	66	76	190	179
Grange		NA	NA	NA	NA	NA	NA	NA	NA		
Commission		**2 455**	**2 359**	**2 454**	**2 620**	**2 643**	**2 581**	**2 212**	**745**	**880**	**961**

Table 9.3 Staff benefiting from training (%) offered by EMAS site coordinators

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		6,02	6,08	6,12	5,84	5,78	5,69	5,50	0,33	0,16	0,57
Luxembourg		0,00	0,00	NR	2,09	1,69	1,09	0,95	0,81	1,07	1,21
JRC Petten		22	15,47	18,12	21	21	22	2,43	17	13	13
JRC Geel		14,16	14,94	9,46	11,70	16,22	21	9,77	32	67	54
JRC Karlsruhe		100	100	100	100	100	100	100	100	100	100
JRC Seville		12,46	19,08	18,00	36	44	21	28	24	15,88	10,05
JRC Ispra		14,55	10,59	15,50	15,24	15,27	16,21	2,74	3,07	7,62	7,25
Grange		NA	NA	NA	NA	NA	NA	NA	NA	0,00	0,00
Commission		**169**	**166**	**167**	**192**	**204**	**186**	**149**	**177**	**206**	**186**

9.2a Brussels

Well trained EMAS staff: Two EMAS team members at OIB are Energy Building Performance (EBP) public buildings registered certifiers and EBP advisers. Another member of the team has successfully completed the IRCAAs in previous years, the EMAS team at OIB welcomed a trainee under the Blue Book Program in the European Commission with 27 training in ISO 14001 lead audits, while another completed a Master's degree in Environmental Sciences and Management at the Université Libre de Bruxelles (ULB).

9.2b Luxembourg

Training sessions for newcomers at the Commission are held by DG HR in full cooperation with OIL. There were 8 sessions with a total of 26 participants in 2023. 11 Commission drivers received EMAS training as usual every year. In addition, 31 new security agents received an 'EMAS in a nutshell' training during their induction training, organised by an external contractor. From next year it will be included in the continuous yearly training for all agents. In 2023, the 2 new members of the EMAS Team received 2 specific trainings: 'EMAS Regulation' and 'Internal and External Audits/Root Cause Analysis'.

9.2c JRC

Besides the *EMAS basics for newcomers* and the trainings organised for the EMAS Site Coordinators by the EMAS Corporate Team at DG HR, the JRC provides additional training to their staff in addition to several communication activities to raise awareness about EMAS (e.g. move to SharePoint online and redesign of the *JRC Environment* page in 2023).

JRC Geel organises a series of legally required courses relating to safety and emergency preparedness such as JRC Geel laboratory and chemical safety, biosafety and fire brigade training courses. In addition, JRC-Geel newcomers are recommended to follow the *EMAS basics* training" in addition to the newcomers site introduction that includes safety, security and of EMAS. JRC Geel also promotes communication/actions from DG HR.

The JRC Geel site Director continues to organise the monthly online "*What's up meetings*" during which awareness raising on different topics related to Geel, including EMAS, safety etc. is undertaken.

JRC Geel communicated internally to the staff and stakeholders relevant environmental actions (e.g. changes in legal requirements, biodiversity, waste, etc.).
responsibilities.

JRC Ispra also organised numerous trainings in 2023. Two environmental training courses (85 participants) were held for technical staff on waste management. Green Public Procurement (GPP) was also addressed in the procurement and contract management training (28 Ispra staff members). Moreover, an environmental training for *Environmental Figures* was held with 19 participants. Lastly, newcomers' sessions resumed, with three sessions attracting 47 participants.

JRC Karlsruhe developed an information sheet "Introduction to EMAS for newcomer at JRC Karlsruhe", which was included in the set of documents given to all newcomers to the site. Internal training partially includes also external staff working on the premises. There were no specific EMAS trainings in 2023 on site but several other training courses also included environmental aspects, for example *Newcomer training for hazardous substances and lab work* and *Annual radiation protection and safety instructions*. In addition, there is a yearly workshop "Legal updates Arbeitssicherheit und Umweltschutz" for staff in relevant functions.

JRC Petten regularly organises trainings for newcomers. In 2023, five newcomer sessions with a total of 30 participants were given. Occupational Health and Safety trainings are implemented on site and consist of a set of general and job-related training courses. Staff members receive the training depending on their roles and responsibilities.

JRC Seville encourages newcomers to attend the training on *First things you need to know about Security, Environment, Health and Safety and use of the infrastructure* as well as, to participate in the corporate *EMAS basics* training. The site put together a group of environmental volunteers in 2022.

9.2d Grange

Staff were informed, via email, of the new online EMAS basics training (suitable for all staff) and also invited to participate in different events organised centrally by DG HR (mainly EU Green Week and Events for European Week for Waste Reduction).

9.3 Communicating on green actions

Greening The Commission

- *Greening the Commission and achieving corporate climate neutrality by 2030 is intended to set a good example and raise awareness of the need for ambitious climate action at all levels. The Commission's green actions are also fully part of the Human Resources strategy as a key priority to increase further the attractiveness of the Commission as an employer.*

9.3a External communication

Environmental Statement and websites

This is the main reference document for responding to most questions. It contains information from all the EMAS sites and is subject to external verification. It is published on DG ENV's EMAS website under the **EMAS in EU Institutions sub-section**. Moreover, it is also accessible **via the "Greening the European Commission" webpage** under the New HR Strategy webpages on Europa, including the communication documents and factsheets.

Press announcements and Parliamentary questions

The highlights of the Commission's environmental performance, as well the Interinstitutional EMAS Days 2023, have all been promoted through the EMAS in EU Institutions section of the official EMAS website on Europa that is managed by DG ENV. The EMAS coordination team (HR.D.7) responded to **3 Parliamentary questions** in 2023, all related to the greenhouse gas (GHG) emissions of European Commission's/Commissioners' professional travel and responded with the support of the Paymasters Office (PMO).

Communication with external stakeholders

HR.D.7 responded to all **79 external queries** recorded during 2023 via the EMAS in EC functional mailbox and the GIME Teams Channel (compared to 78 in 2022, 69 in 2021 and typically 30 to 40 the previous years). The significant increase in the Commission's EMAS team outreach is due its more visible role as coordinator of the interinstitutional EMAS communication workgroup, in the framework of the *Group Interinstitutional de Management Environnemental* (GIME) and its highly appreciated supporting role to the Greening Network of Decentralised Agencies.

Interinstitutional Online EMAS Days 2023

The Interinstitutional EMAS Days 2023 were by far the most successful and inclusive collaboration event to date involving the EMAS teams of the EU Institutions and agencies. **Staff from 18 EU institutions and agencies** joined forces from 28 to 30 November by creating a platform for sharing their climate neutrality strategies and action plans, energy efficiency of EU buildings, mobilizing the EMAS networks and groups of volunteers, as well as setting up common projects and joint surveys.

From staff engagement brainstorms the topics also included Green Public Procurement, the Global Reporting Initiative, European Sustainability Reporting Standards and EMAS reports and how to prevent greenwashing. Senior managers and EMAScoordination teams from EMAS–registered EU Institutions and agencies also shared their commitment to support the European Green Deal to transform the EU into a modern, resource-efficient, and competitive economy in **common videos** inviting EU Institutions and bodies to "Let's get more sustainable together"!

In addition, the following external communication activities took place in 2023:

- Chairing the **Interinstitutional Group on Environmental Management (GIME)** (3 meetings)
- Setting up a **new interinstitutional group on greening and missions** in the frame of CCA (Collège des chefs d'administration)
- Collaborating with the **UN Sustainability Group** – *UN Greening the Blue*
- Participating in the virtual **Inter-agency Greening Network** and providing technical support
- Setting up a "greener" **EU Open Day 2023** and hosting the European Green Deal Village

Information for suppliers and sub-contractors

In 2023, the Commission continued to (i) disseminate information about its environmental management system (EMAS) and its climate neutrality objective to its main suppliers and sub-contractors; (ii) as well as promote and implement the main principles of Green Public Procurement (GPP) in its own tenders/contracts via the support of the **Inter-institutional Green Public Procurement Helpdesk** coordinated by the European Parliament.

Greening Government Initiative (GGI) and Net Zero Government Initiative (NZGI)

The Commission followed the activities initiated by the USA and Canada governments to create a global community of administrations to share information on greening. The Commission committed to joining the NZGI for which government administrations require a long term carbon reduction target and must publish the roadmap showing how they will achieve it.

9.3b Additional note-worthy external actions by the EMAS site coordinators

JRC Ispra organised an annual "EMAS Round Table" since 2020 with the objective of:

- enhancing the dialogue with key local, regional and national stakeholders over JRC Ispra's environmental performance and to follow-up over stakeholder's expectations;
- promoting JRC Ispra's ambitions to promote a more sustainable environment and lead by example;
- demonstrating the transparency that is required under the EMAS umbrella;
- granting to all stakeholders that there are no impediments towards JRC Ispra's EMAS registration.

Due to several circumstances, including Covid-19 pandemic, there was no event in 2021, 2022 and 2023. A new EMAS Round Table meeting is expected in 2024 focussing on biodiversity promotion and the signature of an agreement with the Ticino Val Grande Verbano Biosphere Reserve, one of the 20 Italian natural reserves recognised as Biosphere Reserve in the frame of the UNESCO Man and Biosphere (MAB) Programme. There is, however, a constant dialogue with external parties and, in particular, with national authorities such as the Region, the Province and neighbouring town halls.

JRC Karlsruhe operates the European Nuclear Security Training Centre (EUSECTRA) which was conceived to train front-line officers, trainers and experts on detecting and responding to illicit trafficking of nuclear or other radioactive materials. In 2023, there were 14 dedicated training sessions. Furthermore, during the open day celebrating the site's 60th anniversary, information about EMAS was presented at a dedicated booth.

Luxembourg OIL has regular contacts with the Luxembourgish authorities, particularly the Ministry of Environment, Climate and Sustainable Development and the Ministry of Mobility and Public Works. In addition there have been regular contacts with other associations (i.e. IMS) playing an important role in the field of waste management, energy efficiency, biodiversity and mobility. OIL maintains close working relationships with other EU Institutions in Luxembourg via the EcoNet Working Group. 6 EcoNet meetings were held in 2023.

10 Demonstrating legal compliance and emergency preparedness

10.1 Legal compliance

Overall: Under EMAS, the sites are each responsible for legal compliance, as described below. But the Corporate coordination team organises the internal and external audits that are required at the sites under EMAS including ensuring that there is adequate follow up and resolution of audit findings, particularly those related to legal compliance. The audit results show that the Commission complies with the environmental legislation applicable to its activities.

The status of legal compliance is reported to the EMAS Steering Committee twice yearly, including statistics generated by the workflow tool (JIRA) that is used for audit follow up. **Figure 10.1** shows a summary of audit findnigs.

The Commission adopts a **sampling method** for the verification audits of its premises in Brussels, Luxembourg, and for the Houses of Europe in Member States according to provisions of the EMAS Users Guide. Sampling is required at these sites because each building has its own environmental permit and are too many to audit annually.

The Commission has around 70 operational buildings in Brussels and Luxembourg. These are controlled and managed centrally by the Infrastructure Offices in Brussels (OIB) and Luxembourg (OIL) which ensure their compliance with environmental legislation and contacts with the national and regional authorities. The Offices manage the licences and permits needed for building operation. The Commission's real estate portfolio varies from year to year. The buildings are listed in Annex 9.

The environmental impacts of these buildings are generally similar and with no highly impacting environmental aspect requiring a specific approach. Therefore, all the buildings are subject to the sampling method for auditing.

The Commission uses sampling to select **5 to 6 buildings per year** (listed in Annex 9), more than required in the User's Guide, to provide greater confidence in audit results.
The sampling method ensures that each building entering in the scope is audited and that all buildings are audited in the same period. The audit sample is discussed and agreed with the verifier each year. In addition to audits carried out under the sampling method, additional visits (or audits) may be planned to buldings where a non-conformity was detected to verify

10.1a Brussels

In Brussels, each building has a licence called "permis environmental" containing the environmental legislation applicable to the building, including specificities when appropriate. In addition, general environmental legislation like the COBRACE are also implemented.

Several units within the OIB are registered users of the Regulation Monitoring contract REMO, launched by the European Parliament, for legislation relating to EMAS, technical equipment and persons with reduced mobility. This monitors new regulations, and enables the OIB (through emails and links to designated users) to be up-to-date on relevant legislation. The EMAS team at OIB performs an analysis of the new legislation and highlights its potential impacts, suggesting the course of action necessary to guarantee compliance.
As a consequence, the Brussels site complies with the relevant environmental legislation.

10.1b Luxembourg

Environmental Permits and legal watch:
In OIL, two procedures are used to follow the environmental requirements.

a) "OIL Bâtiments 04 Documentation OIL des authorisations d'exploitation des bâtiments – version 2023" which describes how OIL manages operating permits for its classified facilities (commodo/incommodo). The objective is to provide a central register of operating permits for buildings occupied by the European Commission in Luxembourg, and to meet their environmental requirements.
b) "Procédure OIL EMAS 01: Veille Réglementaire environnementale – version 2023" in order to ensure that the property management complies with the environmental legislation, thanks to the integration of new environmental legal provisions.

The regulatory monitoring in the field of the environment and health and safety at work for the European Commission in Luxembourg is currently carried out under framework contract HR/2023/LVP/0113 with Luxcontrol S.A. (valid until 25/05/2027). Every month the contractor sends OIL any useful environmental information and/or published legislation. Information pertaining to environmental legislation is regularly scrutinised on the various official sources available in Luxembourg.

Luxembourg mini audit procedure:
The procedure "OIL EMAS 05 "Documentation of mini internal audit of OIL regulatory compliance"- version 2022 initiated by OIL, describes how OIL manages additional internal audits of regulatory compliance, set up following documentary analysis of operating permits and recurring non-compliances. The procedure provides a register of operating permits for the Commission's buildings in order to ensure the legal compliance. In 2022 Laccolith and Ariane buildings were audited. In 2023, Bech and Mercier-Post buildings were audited. Therefore the Luxembourg site complies with the relevant environmental legislation.

10.1c JRC

JRC Geel is a class 1 nuclear facility subject to strict legislation from the federal (Federal Agency for Nuclear Control - FANC) and Flemish (*Openbare Afvalstoffen Maatschappij* - OVAM; *Vlaamse Milieu Maatschappij* - VMM) authorities. In order to operate, JRC Geel is registered with both a nuclear and an environmental license defining the legal framework of its activities. To comply with the legal requirements and be able to follow up the changes and updates of the legislation, the site has implemented a nuclear registry (PHARIUS) as well as an environmental registry (ARCALEX) managed by the Health and Physics service (HPS) and the EMAS Site Coordinator respectively. Each registry contains the legal requirements for the relevant activities of the site and is regularly updated. The environmental legal compliance is managed by the procedure I*MS-GEE-S6.6-PRO-0007 Management of Environmental Legal Compliance JRC-Geel*. Changes in legislation are communicated to the different stakeholders (staff, contractors, etc.) before their implementation. Environmental control measures are implemented to assess and ensure that the JRC Geel site complies with the legislation through inspections and internal and external audits.

According to the Site Agreement, Italian Law 906/1960, **JRC Ispra** is fully implementing the Italian legislation regarding nuclear prescriptions and is applying under a voluntary basis (and under its own responsibility) environmental prescriptions to its other activities. JRC Ispra has developed a dedicated strategy to issue internal environmental authorisations that are technically equivalent to those issued by Italian Authorities (e.g., water treatment plant, trigeneration plant, geothermal wells with groundwater withdraw). This approach has been shared with the Italian EMAS Competent Body. The site maintains a transparent official communication with all relevant stakeholders, for example regarding tri-generation emissions' threshold values, which was ensured by means of the overall emission in terms of mass flow for CO and NOx, assuming the continuous operation of the plant for the entire year. Several actions were carried out to limit the trigeneration plant emissions and the replacement of the existing trigeneration plant with a new one is foreseen for the end of 2024. Several tools are currently in place to ensure appropriate legal compliance; checks are performed continuously throughout the Ispra site.

The EMAS team on site performs an annual analysis of the new legislations and highlights its potential impacts, suggesting the course of action necessary to guarantee compliance. In addition, in 2017, JRC Ispra signed a Convention with ARPA Lombardia for legal and technical support on environmental matters. As a consequence, JRC Ispra complies with the environmental legislation applicable to its activities. In addition, in 2017, JRC Ispra signed a Convention with ARPA Lombardia for legal and technical support on environmental matters. As a consequence, JRC Ispra complies with the environmental legislation applicable to its activities.

JRC Karlsruhe is a nuclear installation under the German legislation and as such is bound by a tight regulatory framework under the Atomic Energy Act (*Atomgesetz*, last updated in July 2018), the Radiation Protection Act (*Strahlenschutzgesetz*, last updated in December 2019) and the respective Radiation Protection Ordinance (*Strahlenschutzverordnung,* latest version December 2018).

The nuclear licences and amendments governing JRC Karlsruhe's operations are publicly available on the internet pages of the *Ministerium für Umwelt, Klima und Energiewirtschaft Baden Württemberg* (Ministry of the Environment, Climate Protection and Energy Sector). Applicable regulations are listed and assessed in the Legal Register IMS-KRU-S6.5-RGS-0007-DE, which was created in cooperation with an external company, who also provide an update twice a year (most recently in December 2022). In order to assess legal compliance, the site commissioned an external company to undertake legal compliance audits annually. The latest internal audit, encompassing legal compliance took place in November 2023. Due to this, and also due to the constant surveillance by the authorities, JRC Karlsruhe is compliant to all relevant legislations. There have been no legal proceedings against the site and consequently neither penalties nor fines since operations started.

JRC Petten is complying with the dutch Activities Decree (*Activiteitenbesluit*) and the Activities Regulations (*Activiteitenregeling*) containing environmental regulations. The Activities Decree has different rules for different types of businesses and makes a distinction between companies of types A, B and C. JRC Petten is a type C business, requiring an All-in-one Permit for Physical Aspects. The Environmental Permit/License was obtained on 24 June 2016. The Compliance of the Permit is checked annually. The site has a contract with an external legal consultancy filtering the applicable legislation in an online tool. JRC Petten is compliant with the relevant environmental legislation.

JRC Seville legal compliance is regularly checked against a legal register fed by a specialised Company. Based on this register, the activity of the JRC Seville is excluded from the obligation of obtaining an environmental permit according to the relevant regulation "Ordenanza Reguladora de Obras y Actividades del Ayuntamiento de Sevilla. Nevertheless, the Seville site is compliant with all the relevant environmental legislation such as the "Real Decreto 390/2021" about energy labelling for buildings or the "Ley 7/2022" on waste management.

Through the above measures, the JRC sites comply with the environmental legislation.

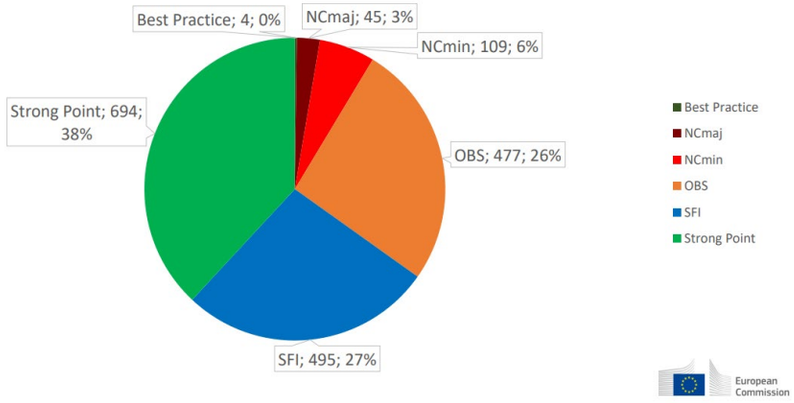
10.1d Grange

As Grange operates as a simple office there are no specific licences/permits required (see more information at http://www.pointofsinglecontact.ie/licensing/licences%20-%20permits/)

A procedure for maintaining the legal register has been in place since late 2014. The Register of Environmental Legislation is reviewed and updated continually by an external consultancy. The responsible SANTE personnel receive automatic email updates relating to new or changing legislation and ensure that there is appropriate follow up.

As a consequence, the Grange site complies with the relevant environmental legislation.

Figure 10.1 - Audit findings by type for 2020-3



10.2 Prevention and risk management

10.2a Brussels

OIB records statistics relating to the findings of buildings inspections for health, safety and environment. These audits and inspections are based on permits and legal requirements for each building and technical installation.

Out of 1 481 reports issued in 2023, 614 (41%) had no remarks, while 512 (35%) stated minor and 355 (24%) major non-conformities.

10.2c JRC

At **JRC Geel**, prevention and risk management is managed by the HPS. JRC Geel implements an Occupational Health & Safety Management System, which is certified according to ISO45001. In order to meet the legal requirement of a class 1 nuclear facility, the site has a voluntary fire brigade team for first intervention supported by the local fire brigade. The fire brigade team trains monthly on site and receives annual training in a professional firefighting centre. The site has preventive and risk management actions as well as a full maintenance and inspection plan to ensure that all critical installations/equipment function properly. To assess the legal compliance, nuclear and EMAS inspections take place regularly.

In **JRC Ispra**, the emergency procedures were reviewed in 2018. The site's Emergency and Business Continuity Plan and associated procedures and instructions, providing the framework for both nuclear and conventional emergencies, including incidents that could have a negative impact on the environment (on and off site), were approved and finally issued in 2019. The procedure for the management of emergency exercises and the planning of emergency exercises and drills has been updated to account for all the applicable environmental scenarios, including spillage and release of dangerous substances and finally issued in 2021.

In 2013, **JRC Ispra** detected the presence of fuel oil in the ground close to Via Esperia during one of its periodical checks. This was from a leak from two old underground storage tanks that had been used to store fuel oil for heating the residences within the JRC social area. The tanks and surrounding layers of the soil were removed. However, a minor presence of fuel oil was detected in the neighbouring areas both under Via Esperia, and in the premises of a JRC Ispra car park.

The Italian authorities were informed about this legacy and regularly updated, including through the JRC Ispra EMAS Round Table meetings. Although JRC Ispra's risk analysis indicated that the residual presence of fuel oil was under the mandatory intervention threshold, the site opted for the best environmental approach and initiated the corresponding soil removal procedure in 2022, including supplying preliminary information to the competent authorities. At the end of 2023 the Municipality of Ispra called a *Conferenza dei Servizi* to approve the remediation plan.

10.2b Luxembourg

The procedure OIL.01 EMAS 04 “Accidents et incidents environnementaux” - version 2022 describes how the EC identifies potential emergency situations and accidents that may have one or more impacts on the environment and how to respond to them.
The objective is to ensure that the appropriate measures have been taken and investigate any possible negative impact on the environment.
OIL drafted “Instruction OIL SST 23 Vigilance et alerte météorologiques" concerning the risk of flooding (still under analysis).

In **JRC Karlsruhe**, as an installation subject to German nuclear legislation, the entire site and its activities are conceived and operated with a focus on prevention, risk management and emergency preparedness. The applicable legislation requires these topics explicitly. Procedures are therefore based on and tailored to this legislation. Significant procedures have to be approved by the supervising authority (Ministry of the Environment, Climate Protection and Energy Sector of Baden-Württemberg) before becoming effective. The supervisor undertakes inspection visits regularly, usually monthly.

JRC Petten applies risk-based management for safety and environmental aspects, work place assessments, general risk inventories and risk assessments for specific tasks.

Since 2010, **JRC Seville** has not recorded any health, safety or environmental incidents. An external prevention service maintains an occupational safety and health (OHS) register.

10.2d Grange

The site implements a programme of environmental incident prevention based on its evaluation of environmental aspects and impacts, and on the identification of potential emergency conditions or abnormal incidents related to each aspect.

10.3 Emergency preparedness

10.3a Brussels

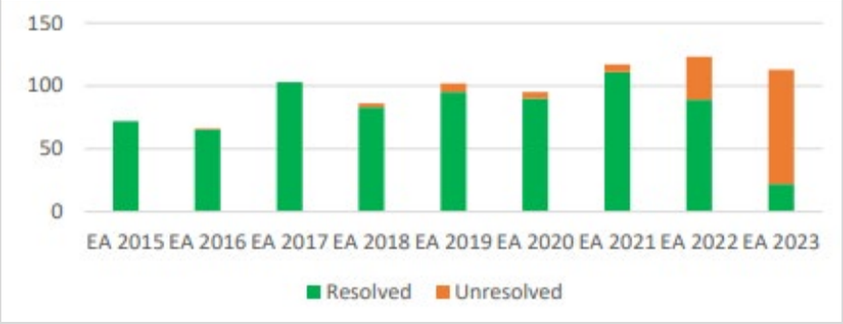
Beyond the procedures and services in place at the European Commission concerning emergency preparedness and response related to health, safety and security incidents at work (24/7 helpdesk line 22222), the OIB monitors the application of the legislation on well-being at work, in particular the evaluation of risks and corrective measures with an impact on the environment. Summary data for 2023 includes:

- number of evacuation exercises: 47
- training and recycling SIN: 732
- training and recycling ECI: 207

Case study 10.1 Workflow software for managing audit findings

The EMAS staff have been tracking and presenting to management the status of audit findings in the EMAS Steering Committee meetings. The graphics below show separately the status of internal audit and external audit findings as presented in February 2024.

The greater number of unresolved findings in the external audit in 2023 was due to slightly later than usual auditing schedule in 2023.



10.3b Luxembourg

Summary data for 2023 includes:

- 19 evacuation exercises were carried out on all buildings in Luxembourg.
- 38 sessions (20 theory + 18 practice) of EPI and ECI training for 317 (164 theory + 153 practice) participants.
- 9 sessions of fire prevention training for 62 participants.
- 6 sessions of first aid training for 60 participants.

10.3c JRC

In **JRC Geel**, emergency preparedness and response is managed by HPS according to the procedure *IMS-GEE-S6.5-MAN-0002 JRC-Geel Site Internal Emergency Plan* and the JRC Geel incident response plan. As a class 1 nuclear facility, JRC Geel has, besides its fire brigade team, 24 hour on call teams (TIG and NIG: Technical and Nuclear Intervention Groups) who answer and act in case of alarms on potential incidents.

In **JRC Ispra** in 2023, mandatory nuclear emergency exercises and building evacuation tests were carried out. Additionally, a drill for the scenarios of leakage of caustic soda during tank refilling was carried out in the yard of the Cogeneration plant (Building 59). In order to test the preparedness of the JRC and the Italian authorities to respond to nuclear emergencies, the annual nuclear full-scale emergency exercise was held in February 2023 in the presence of local and national authorities. In parallel, an emergency exercise was held to test the emergency preparedness in Area 40. There was a positive outcome of both exercises.

In **JRC Karlsruhe**, some practical examples demonstrating the rigour with which legal compliance and emergency preparedness are addressed:
- All safety and security relevant equipment and installations are subject to stringent recurring check programs, which are also under the supervision of the commissioned experts of the supervising authority;
- The site operates its own semi-professional firefighting team and cooperates with the professional fire brigade of the surrounding research site (KIT);
- Firefighting and evacuation exercises are regularly carried out, partially in cooperation with the fire brigade of the KIT;
- Most technical works are subject to a working permit procedure;
- The admission to the site is strictly limited.

In **JRC Petten,** the organisation's emergency plans were revised in 2022 based on 51 identified emergency scenarios. They are based on risk management methodologies and also cover environmental risks. In 2023, 10 Emergency Drill exercises took place in order to practice and test all elements of the emergency plans. Contacts with the local quick response team (QRT, formerly fire brigade, operated by the neighbour organisation NRG) have been established in order to identify environmental risks.

In **JRC Seville,** the site has a specific emergency procedure describing the methodology used at local level to identify and respond to potential accidents and emergencies that could affect staff, facilities and the environment. A fire drill is organised every year.

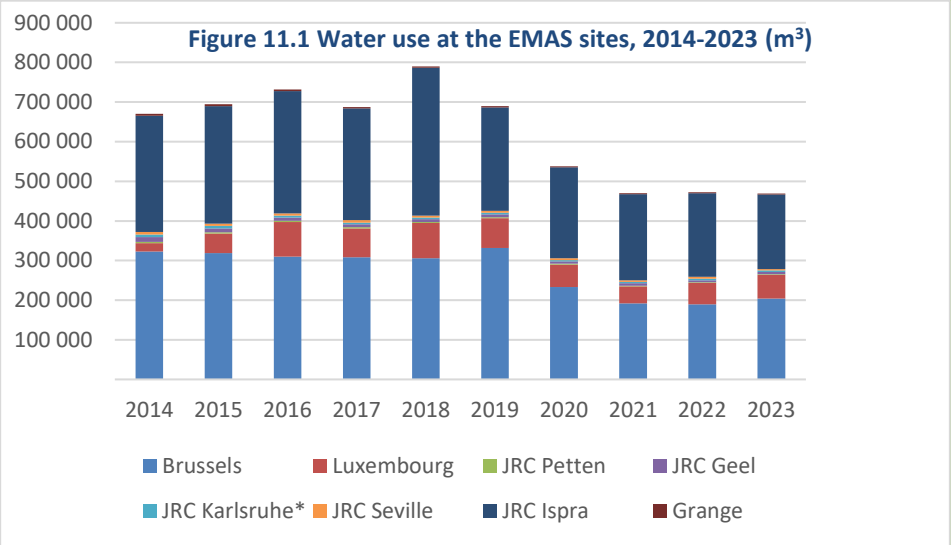
10.3d Grange

The Emergency Plan was not updated in 2022, but a fire drill took place in March 2022.

11 Water, paper consumption and costs

11.1 Water use

Figure 11.1 shows that Brussels and JRC Ispra account for most of the water used. the Commission has reduced its total water consumption by 3% since 2022, and 32% since 2019. The reduction in water use is partly a by-product of some actions to reduce energy consumption, for example prolonged office closures when humidification of air is not required.



11.1a Brussels

Water saving measures undertaken since 2015 include more proactive water management, installation of leak detection systems and loss prevention. Water saving devices (tap aerators) have been installed in most of the remaining buildings. Warmer temperatures during summer months may require more water for cooling and humidification.

11.1b Luxembourg

Data from 2018-2022 were corrected to incorporate improperly excluded data due to very late invoicing or bad estimations. Data for 2023 includes estimations based on 2022 data as some invoices are not yet available (BECH and MERP bldgs), while in DRB there are several broken counters managed by the owner.

Water consumption shows significant reduction compared to 2019 values (-20%) and a justified increase after 2021 when returning to the office - new normal. The alternative, to record water consumption directly from water meters in order to have more reliable data, is not a feasible, due to the complexity of current real estate situation. The move to JMO2 will address this problem.

Measures to save drinking water include smart taps installed in most buildings while BECH and the new Mercier Post building have a rainwater collection system connected to sanitary infrastructure for flushing toilets etc.

11.1c JRC

JRC Geel increased its water consumption by around 12 % in 2023 compared to 2022 due to technical issues and Mol fire brigade's request to connect to the JRC Geel hydrant to extinguish a fire in the vicinity of the site.

In JRC Ispra, the use of "drinking water" decreased by about 36% between 2014 and 2023 (-11% between 2022 and 2023). This was mainly due to the improved water management (installation of new water consumption metering devices) modifications due to miss-use of drinking water for cooling purposes and to the identification and repair of various leaks in the network**.**

In JRC Karlsruhe, a significant part of the water is used for the humidifying incoming air in the laboratory wings and the quantity depends on weather conditions. Cold and dry weather requires more humidification whereas other weather conditions may not require humidification at all.
Weather conditions since autumn 2019 often did not require significant humidification, which might be a result of climate change. Floor space is the main indicator for water use, which is largely determined by technical requirements and scientific activities.

At **JRC Petten**, the water usage decreased by 10% in 2023 compared to 2022. The water usage in Petten is dependent on the scientific activities on site.

In **JRC Seville**, the water saving in 2023 can be partly attributed to a reduction in demand from the HVAC facility, which had its temperature set points adjusted to be more environmentally-friendly. Additionally, the building was not operational for approximately four days while major electrical infrastructure was replaced.

Table 11.1 Total water use (m^3/p, and l/m^2)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target 2019-30
Brussels		322 527	318 692	310 234	308 439	305 889	331 577	232 891	192 045	189 178	203 795	
m^3/p		**12,57**	**12,40**	**11,68**	**11,36**	**11,22**	**11,53**	**7,78**	**6,28**	**6,12**	**6,26**	9,22
l/m^2		**300**	**299**	**290**	**286**	**294**	**301**	**212**	**176**	**187**	**198**	256
Luxembourg		21 604	49 016	86 589	72 669	89 175	75 446	56 877	42 941	54 682	60 313	
m^3/p		**5,34**	**10,50**	**18,61**	**15,18**	**17,78**	**14,68**	**10,85**	**7,72**	**9,60**	**10,69**	**10,22**
l/m^2		**108,67**	**218,82**	**359,25**	**301,50**	**492,89**	**415,40**	**313,19**	**236,45**	**302,65**	**314,80**	**323**
JRC Petten		3 141	3 250	3 877	2 950	1 984	2 449	2 221	1 343	1 499	1 345	
m^3/p		**11,14**	**11,69**	**14,05**	**11,22**	**8,00**	**9,83**	**8,99**	**5,60**	**6,52**	**5,90**	8,85
l/m^2		**161**	**152**	**189**	**142**	**99**	**122**	**111**	**67**	**75**	**67**	110
JRC Geel		12 023	9 861	7 950	7 142	7 503	7 495	6 049	6 143	5 039	5 630	
m^3/p		**34,7**	**30,1**	**26,9**	**27,0**	**29,0**	**28,6**	**22,7**	**23,4**	**19,1**	**21,3**	**26**
l/m^2		**246**	**195**	**157**	**142**	**149**	**148**	**119**	**121**	**99**	**111**	**136**
JRC Karlsruhe*		6 730	6 717	4 838	4 570	4 176	3 289	2 765	3 370	3 669	3 965	
m^3/p		**21,0**	**20,9**	**14,93**	**14,19**	**13,17**	**10,44**	**8,95**	**11,05**	**11,99**	**13,04**	10,02
l/m^2		**161**	**161**	**112**	**106**	**97**	**76**	**64**	**78**	**84**	**91**	72,4
JRC Seville		6 281	5 963	5 356	6 474	5 013	4 849	4 981	4 603	5 017	3 568	
m^3/p		**22**	**21**	**17,85**	**20**	**14,66**	**13,18**	**13,04**	**11,80**	**12,45**	**8,75**	**10**
l/m^2		**895**	**832**	**748**	**854**	**661**	**630**	**642**	**573**	**624**	**444**	**488**
JRC Ispra		292 866	295 838	309 077	282 182	373 192	261 344	229 855	217 181	211 027	188 014	
m^3/p		**125**	**129**	**137**	**124**	**163**	**112**	**95**	**88**	**85**	**76**	80
l/m^2		**1 144**	**1 167**	**1 215**	**1 086**	**1 426**	**1 011**	**889**	**818**	**795**	**708**	718
Grange		4 956	5 069	3 754	3 219	3 241	2 870	1 989	2 296	2 266	2 480	
m^3/p		**28**	**28**	**19,76**	**17,12**	**18,11**	**16,31**	**11,50**	**12,90**	**12,45**	**14,67**	**8**
l/m^2		**400**	**409**	**303**	**260**	**261**	**231**	**160**	**185**	**183**	**200**	**120**
Commission		**670 128**	**694 406**	**731 675**	**687 645**	**790 173**	**689 319**	**537 628**	**469 921**	**472 376**	**469 109**	
m^3/p		**20**	**20**	**21**	**19,33**	**22**	**18,33**	**13,81**	**11,74**	**11,66**	**11,16**	**14**
l/m^2		**439**	**447**	**458**	**425**	**498**	**419**	**326**	**286**	**301**	**297**	**336**

**values since 2016 revised in 2024 following internal procedural review*

11.2 Drainage and wastewater disposal

The sites comprising offices are in urban locations have regular drainage and connection to the municipal sewerage system. There are challenges for the more rural sites and particularly the research sites where some wastewaters are very strictly controlled.

11.2a Brussels

Drainage and wastewater is managed within the urban collection and treatment facilities of the Brussels region.

11.2b Luxembourg

DG ENER manages a radiation protection laboratory, requiring particular attention to wastewater disposal. But DG ENER did not discharge any wastewater in 2023. Otherwise, drainage and wastewater for the Luxembourg buildings is managed by the urban collection and treatment facilities of the Luxembourg region. The installation of a green roof in the new Mercier Post building improves water management and reduces flood risk.

11.2c JRC

JRC Geel is legally required to monitor its wastewater for both quantity and quality. Samples are analysed twice per year to ensure that concentrations of special parameters (lead, etc.) do not exceed the legally defined thresholds. Potentially nuclear-contaminated water is treated and disposed as hazardous waste. The update of the site's environmental license resulted in stricter thresholds for special parameters (for example, it is ten times lower for mercury) .

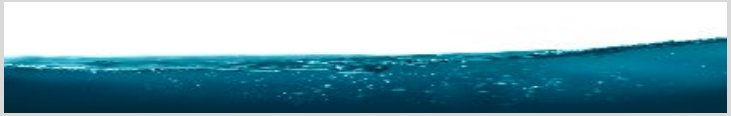
JRC Ispra wastewaters include discharges produced by flush toilets (both from the internal JRC area and the social areas outside the fence) and discharges produced by the canteens, laboratory sinks, etc. On top of this, the JRC Ispra's wastewater treatment plant receives part of the urban wastewater from the Municipality of Ispra (about 16% of the overall amount in 2023). The treatment process includes a primary sedimentation phase followed by biological biodisc, secondary sedimentation and treatment by Ultra Violet (UV) rays. Treated wastewater is monitored to ensure compliance with the Italian threshold limits for water quality (during 2023 all the parameters are well below the Italian threshold limits and is finally discharged in the Novellino stream (about 3,2 million cubic meters in 2023). A secondary sewer discharging system collects only rainwater and soil drainage and conveys them to the Acquanegra torrent, without the need for any preventive treatment processes.

In **JRC Karlsruhe**, all wastewater is treated in the wastewater treatment plant belonging to the KIT Campus Nord before release to the public system.

In **JRC Petten**, wastewater discharge and quality is measured yearly during a week determined by the authorities and during which the discharge volume is measured along with concentration of heavy metals, organic solvents and chlorides. The data collected is used as a basis for taxation.

Case-study 11.1: Water use in JRC Ispra

The water used at the site comes entirely from Lake Maggiore. It then undergoes a series of treatments such as disinfection and filtration and is finally distributed either as "cooling water" (for cooling buildings, facilities and other technical purposes) or, after a second filtration and disinfection, as "drinking water" (toilets, water dispensers, canteens, social and sport areas, etc.).



The site's objective is to maximise the use of cooling water since it is a renewable resource, while reducing the water used for “drinking purposes”. In 2023, a study was prepared for the implementation of numerous improvements to the water system, some of which will be carried out in 2024. Following a period of low water level at Lake Maggiore, the pumping station experienced problems caused by cavitation which led to increased use of the pumps for both drinking water and cooling water. Consequently water consumption was estimated for this period (August). The improvements included in the study also aim to address the cavitation problem.

For monitoring purposes, the site carries out two separate sampling campaigns a year at four emission points, each located in different laboratories. The results give an indication of whether concentrations comply with legal limits for end of pipe discharge for the site. JRC Petten discharges comply with the legal discharge limits.

JRC Seville is hosted in a rented office building in an urban area. The wastewater installation is managed by the landlord in accordance with local legislation.

11.2d Grange

Until 2010 the site had its own sewage treatment plant, but due to technical issues it was decided to connect to the local sewage scheme.

Discharges to water: Polluted discharges to ground and surface water are prevented by primary and secondary containment of all hazardous wastes and materials and substances on site. Discharges to sewer are from sanitary and cooking facilities. The kitchen sinks drain through a grease trap which is regularly serviced and emptied. Cleaning chemicals are low or non-hazardous and are diluted when applied.

11.3 Paper consumption

The Commission measures the consumption of paper in the office, and also in the printshops. Currently printshops are present only in Brussels, Luxembourg, Seville and Ispra. Total paper consumptions has reduced considerably as shown below as a result of campaigns over the years including the introduction of digital signature circuits, the removal of individual printers, the ability to work together on electronic documents.

A new digital strategy was launched in 2022. Mass printing of poster scale calendars has reduced and circulation of paper publicity materials is almost phased out. Nonetheless an increase in total paper consumption was observed in 2022 (**Figure 11.2**, **Table 11.2**) accounted for by higher printshop consumption, as office paper consumption continued to fall (**Figure 11.3**). Office paper consumption was 4 sheets/person/day in 2022, down from 5 in 2021. Emissions due to paper consumption are presented in **Figure 11.4**.

Figure 11.2 Evolution of total paper consumption (tonnes)

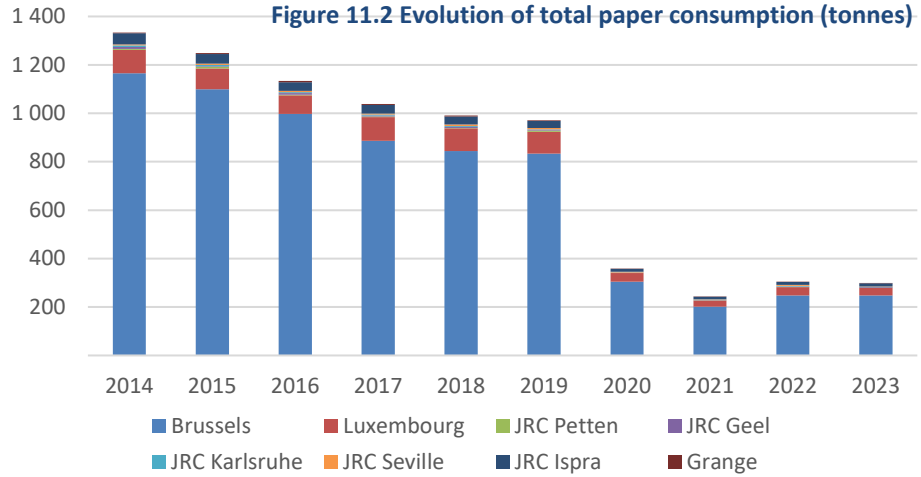


Figure 11.3 Evolution of printshop paper consumption (tonnes/person)

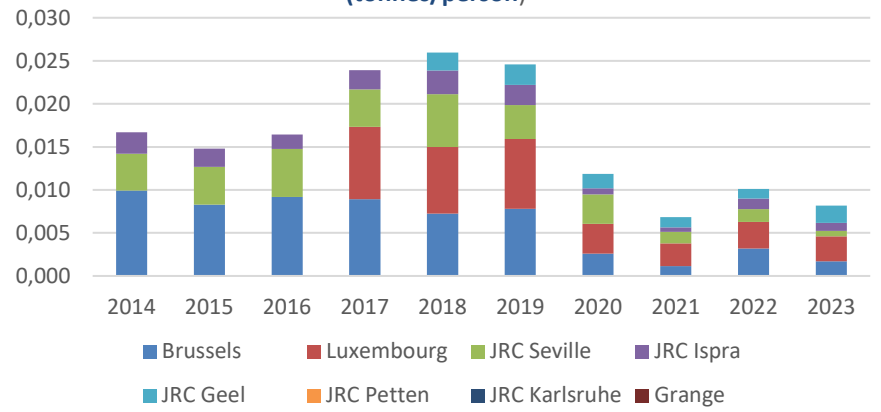


Figure 11.4 Emissions from total paper consumption (tonnes CO_2e)

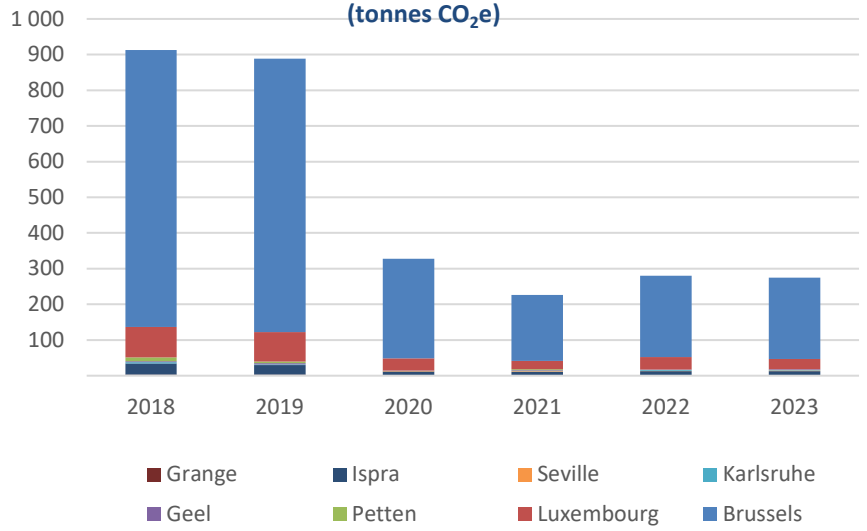


Table 11.2 Total paper consumption (tonnes)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		1 166	1 100	998	886	845	834	304	201	248	247
Luxembourg		96	86	77	99	93	90	37	26	33	32
JRC Petten		4,71	5,76	2,42	3,03	2,35	4,76	1,15	1,07	1,48	0,95
JRC Geel		7,44	3,57	5,93	3,15	3,62	4,04	1,39	1,68	1,81	1,64
JRC Karlsruhe		6,00	4,80	4,80	3,60	3,60	2,10	0,00	1,05	2,24	2,10
JRC Seville		4,82	5,00	4,96	5,13	6,41	4,96	2,51	1,45	3,70	1,49
JRC Ispra		47	41	35	36	34	29	11,52	10,99	13,05	12,73
Grange		1,84	3,54	6,25	3,74	3,30	2,87	1,16	1,06	0,94	0,90
Commission		**1 333**	**1 249**	**1 134**	**1 039**	**991**	**972**	**359**	**244**	**305**	**299**

Table 11.3 Office paper consumption (sheets/person/day)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target 2019-30
Brussels		33	33	28	23	23	21	7,67	5,50	4,91	5,53	9
Luxembourg		24,06	18,60	16,77	12,35	10,91	9,55	3,58	2,02	2,77	2,77	4
JRC Petten		15,85	21	8,88	11,67	9,60	19,36	4,73	4,53	6,54	4,21	10
JRC Geel		20	10,33	19,04	11,30	11,32	12,39	3,62	5,27	5,79	4,26	4
JRC Karlsruhe		17,81	14,16	14,07	10,62	10,79	7,22	0,00	3,74	7,42	7,00	6
JRC Seville		12,55	13,48	11,11	11,74	12,77	9,67	3,21	2,39	7,79	3,03	8
JRC Ispra		16,55	15,84	14,15	13,55	12,22	11,02	4,39	4,26	4,37	4,59	2
Grange		9,93	20	33	20	19	17	6,8	6,0	5,2	5,4	12
Commission		**29**	**29**	**25**	**20**	**20**	**18,68**	**6,75**	**4,87**	**4,63**	**5,08**	**7**

11.4 EMAS system costs (staff and contracts)

The EMAS coordination team has for several years monitored the cost of implementing EMAS in terms of staff time and the costs of related contracts for example for audits, and for expertise (Table 11.4).

The overall cost for the Commission has usually fluctuated between 67 and 91 EUR per staff member since the calculations were initiated. The cost is higher at smaller sites and very low in Brussels, where most staff are based.

Table 11.4 EMAS system costs (staff and contracts)

Total Direct EMAS Cost (EUR)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
HR COORD + ECOR Network	1 007 252	1 021 252	1 021 252	1 049 252	1 119 252	1 133 252	1 147 252	1 182 252	1 366 480	1 961 000
EUR/employee	**29**	**29**	**29**	**29**	**30**	**30**	**29**	**30**	**34**	**44**
Brussels	132.000	134.000	134.000	138.000	148.000	150.000	152.000	157.000	342.000	284.800
EUR/employee	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**11**	**8**
Luxembourg	462 000	469 000	469 000	483 000	370 000	375 000	380 000	392 500	427 500	445 000
EUR/employee	**114**	**100**	**101**	**101**	**74**	**73**	**73**	**71**	**75**	**79**
JRC Petten	66 000	67 000	67 000	69 000	74 000	75 000	76 000	78 500	171 000	178 000
EUR/employee	**234**	**241**	**243**	**262**	**298**	**301**	**308**	**327**	**743**	**781**
JRC Geel	66 000	67 000	67 000	69 000	74 000	75 000	76 000	78 500	85 500	89 000
EUR/employee	**191**	**204**	**226**	**260**	**286**	**286**	**286**	**298**	**324**	**337**
JRC Karlsruhe	71 000	72 000	72 000	74 000	79 000	80 000	81 000	83 500	90 500	94 000
EUR/employee	**222**	**224**	**222**	**230**	**249**	**254**	**262**	**274**	**296**	**309**
JRC Seville	132 000	134 000	134 000	138 000	148 000	150 000	152 000	157 000	171 000	178 000
EUR/employee	**457**	**473**	**447**	**429**	**433**	**408**	**398**	**403**	**424**	**436**
JRC Ispra	383 760	368 168	446 200	486 945	491 928	473 595	476 515	475 175	484 605	667 320
EUR/employee	**164**	**160**	**198**	**214**	**215**	**203**	**198**	**192**	**194**	**270**
Grange	47 400	47 900	48 356	49 356	51 856	56 100	56 600	57 850	42 750	121 063
EUR/employee	**265**	**266**	**255**	**263**	**290**	**319**	**327**	**325**	**235**	**716**
Commission	**2 367 411**	**2 380 319**	**2 458 808**	**2 556 553**	**2 556 035**	**2 567 947**	**2 597 367**	**2 662 277**	**3 181 335**	**4 018 183**
EUR/employee	**67**	**67**	**70**	**70**	**69**	**68**	**67**	**67**	**79**	**91**

11.5 Resource costs - energy

Under EMAS, the cost of energy, water, and waste disposal have been monitored at all the sites. Energy is by far the most expensive on a per capita basis. **Table 11.5**.

Total buildings' energy costs almost doubled in 2022 following Russia's illegal invasion of Ukraine, and they remained high in 2023, despite a small decrease to be noticed.

Table 11.5 Resource costs (energy) at EMAS sites (EUR; EUR/person)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total buildings energy cost (Eur)	**22 042 873**	**22 106 105**	**20 102 952**	**19 735 558**	**19 801 345**	**21 419 416**	**18 317 252**	**25 928 909**	**50 509 724**	**46 619 208**
Total buildings energy costs/pers	**626**	**624**	**571**	**539**	**533**	**567**	**470**	**648**	**1247**	**1058**

12 Lessons learned and the way forward

12.1 Lessons learned

System Development

a) This report summarises the Commission's overall performance using data from the eight largest Commission sites, and in the HoE annex, seven of the Commission's representations in Member States. The report therefore represents further expansion of an EMAS system that started with Brussels in 2005, incorporated Luxembourg in 2012, and then the five experimental JRC sites and DG SANTE at Grange in Ireland by 2014. It started incorporating EC Representations in Member States in 2021 (Vienna, Valletta), continued in 2022 with Nicosia and Budapest and in 2023 with the Hague, Copenhagen and Sofia. The 6 Executive Agencies, located in Brussels, are also included within the registration.

b) This report has been presented in a streamlined format since 2022 comprising a single volume to which all the main sites have contributed.

c) Following specialist advice, the Commission recently developed some aspects of the carbon footprint to be more fully aligned with the Greenhouse Gas (GHG) Protocol, and address site specificity. This included considering the emissions from furniture production and including additional food categories.

d) Development continues on the carbon footprint particularly to ensure that any methodological changes are incorporated back to 2019, an important baseline. This applies for example to, i) calculation of professional travel emissions, ii) the estimation of experts' travel emissions using centralised data from a new dashboard tool, and iii) estimation of emissions from teleworking

Incorporating a more political focus for reducing a carbon emissions target

e) In April 2022 the Commission adopted, along with a new HR Strategy, its Communication on Greening. Its main focus is to ensure that the Commission becomes carbon neutral in its operations by 2030. It will reduce emissions as much as possible (and by at least 38% from its 2019 baseline (60% from 2005)) and will apply carbon removals to the unavoidable emissions in order to achieve net zero GHG emissions by 2030

Main results achieved

f) The Commission reduced the carbon footprint in 2023 by **30%** since 2019. It is therefore progressing towards its 2030 objective, even as it continues to experience a rebound in emissions since the COVID pandemic when, in 2020, they were 40% lower than in 2019. The rebound nonethless slowed in 2023 compared with 2022.

g) Emissions from staff professional travel continue to be a very significant proportion of the carbon footprint, and have risen substantially since 2022, reflecting the "return to normal" since the COVID pandemic. However, in 2023 they were still 22% lower than in 2019. 50 of 51 DGs and services signed a pledge to reduce their professional travel emissions, and therefore support the challenging Greening Communication objective of reducing professional travel emissions by 50% from 2019 to 2024. A new Guide to Missions is under finalisation

h) Mobility related emissions including those from staff missions, experts travel, and staff commuting have reduced by over 40% over since 2019. In 2023, buildings related emissions accounted for about half the carbon footprint, comprising roughly equal parts from i) ongoing energy use, and ii) fixed asset (embodied energy) from construction.

i) Core EMAS parameters measuring environmental impact, and that have been reported at Commission level for several years, continue to fall. These relate, inter alia, to buildings' energy consumption, water use, non hazardous waste generation, buildings' energy emissions, and office paper consumption. A majority of the 2019-30 targets have already been achieved in 2023 (see **Table 2.2**).

j) The Commission slightly reduced the number of buildings it occupied in 2023, with two fewer in both Ispra and Luxembourg. Brussels added one building to the EMAS registration, but still had six fewer buildings than in 2021. Despite a slight increase in overall surface area since 2022, the environmental performance improved, particularly with respect to energy consumption. This is the fruit of efforts to implement the energy saving measures by management at the sites, and the staff.

k) Three soft mobility hubs have become operational in Brussels, greatly improving access to safe parking facilities for bikes, along with showering and locker facilities. This complements efforts also in Brussels and other sites to improve biodiversity through a number of projects.

Staff communication and participation

l) Numerous communication campaigns continue to spread the message to staff about the need to engage in environmentally responsible behaviour. Increasingly active networks

develop a local focus of activity and interact with, and support, the efforts of EMAS correspondents in DGs and Services across the Commission, including Executive Agencies and EC Representations in Member States.

m) Joining forces with other "greening" networks beyond internal EMAS practitioners (e.g. Green Transition Multipliers Community), as well as promoting the Commission's effective leading position among EU Institutions and Agencies on issues of environmental excellence (e.g. Interinstutional EMAS Days), have proven the most efficient ways to enhance outreach and establish fruitful collaborations towards a climate-neutral Commission by 2030.

12.2 Way forward: The Commission will:

a) carry out a greening progress review to consider the status of actions and targets taking into account the new context. The review should:
- consult services on adaptations needed, including updated or new targets and actions;
- consider the approach to future carbon removals, and their scope;
- take into account new Commission priorities, and assess progress up to and including 2024, the target year for reducing staff and experts' professional emissions;
- be adopted in the second half of 2025

b) continue to develop its management system to incorporate and deliver the actions of the Greening Communication with particular focus on reducing the carbon footprint. Special attention will be given in 2024 to two important mobility related actions:
- a new guide to missions that seeks to green professional travel, and
- a green mobility plan to encourage more sustainable commuting.

c) encourage more DGs/Services to develop quantitative targets for reducing emissions from professional travel.

d) develop its carbon footprint, and in particular, consider methodological improvements to ensure consistency of approach between sites on certain scope 3 emissions

e) continue to work with the European Parliament to implement EMAS in the Houses of Europe

f) seek to adopt an IT tool to facilitate data collection and reporting

g) seek to improve online accessibility of the environmental statement in order to reach a greater audience.

h) continue to rationalise its use of real estate by moving to new more energy efficient buildings when necessary to replace older ones, and reduce the overall footprint. More specifically

- In Brussels, the clustering of related services will help achieve the greening objectives by reducing mobility needs.
- In Luxembourg, the completion of the JMO2 building in 2026 will also help contribute to the greening objectives.
- The implementation of dynamic collaborative space layout will reduce office space requirement.

i) ensure that engaging and involving staff at all levels remains a high priority to deliver on the "Greening the Commission" commitments. Opening up to a larger audience by joining internal greening networks through the Green transition Multipliers Community and the new Climate Fresk group of facilitators will help mainstream greening practices across all Commission sites.

j) continue to play a leading role among other EU Institutions and bodies on environmental and climate neutrality topics by participating in interinstitutional and international networks such as the US led international Net Zero Government Initiative, the EU inter-institutional environment group meetings (GIME), the Greening Network of Decentralised Agencies, and the PACE programme managed by DG REFORM (2023).

ANNEXES

Environmental Statement 2024
(data to 2023)

Annex 1 - Buildings energy consumption and emissions

Table 1 Electricity supplied to sites (MWh)

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		110 435	109 782	108 165	105 949	105 816	105 375	90 523	81 079	74 053	68 926
Luxembourg		20 620	38 958	41 727	33 058	30 847	31 574	30 543	28 776	29 412	26 124
JRC Petten		3 020	2 910	2 850	2 802	2 906	2 724	2 444	2 345	2 227	2 163
JRC Geel		11 730	10 343	10 833	10 301	9 809	9 202	8 096	8 015	7 581	6 692
JRC Karlsruhe		11 650	12 236	11 897	11 670	12 260	12 300	10 650	11 360	11 632	11250
JRC Seville		2 252	2 169	2 059	2 177	1 822	1 943	1 798	2 106	2 292	2 092
JRC Ispra		2 228	2 488	3 027	4 029	4 480	2 165	5 390	5 163	10 953	13 418
Grange		881	850	832	815	795	852	641	565	560	568
Commission		**162 818**	**179 737**	**181 390**	**170 801**	**168 734**	**166 136**	**150 085**	**139 409**	**138 711**	**131 232**
Electricity (% of total electricity supply covered by 'renewable certificates')											
BX		95	95	98	98	99	99	99	99	99	99
LX		89	97	95	93	89	90	89	90	97	97
PE						100	100	100	100	100	100
GE		0,00	0,00	0,00	0,00	95	100	100	100	100	100
KA		32	40	39	42	46	51	53	35	31	32
SE		27	20	19	20	27	16,10	100	100	100	100
IS		44	40	24	30	44	100	100	100	100	100
GR		19,40	25	29	32	38	35	38	38	65	77
Commission		**79**	**83**	**84**	**83**	**90**	**92**	**93**	**92**	**93**	**93**

Table 2 Non electricity supplied fuel (MWh), *and emissions (tCO2e)*

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Mains supplied gas											
Brussels		70 881	80 556	81 180	79 510	78 024	78 309	71 465	80 276	58.705	50.341
emissions (combustion)		***12 773***	***14 516***	***14 629***	***14 328***	***14 060***	***14 464***	***13 221***	***14 851***	***10 860***	***9 286***
emissions (upstream)		***2 555***	***2 903***	***2 926***	***2 866***	***2 812***	***2 752***	***2 509***	***2 818***	***2 061***	***1 763***
Luxembourg		3 361	27 161	36 670	27 875	13 345	13 710	14 406	15 438	13.262	10.758
emissions (combustion)		***606***	***4 894***	***6 608***	***5 023***	***2 405***	***2 532***	***2 665***	***2 856***	***2 454***	***1 984***
emissions (upstream)		***121***	***979***	***1 322***	***1 005***	***481***	***482***	***506***	***542***	***466***	***377***
JRC Petten		3 598	3 795	3 543	3 255	3 427	3 105	2 271	2 482	1.904	1.852
emissions (combustion)		***648***	***684***	***638***	***587***	***618***	***574***	***420***	***459***	***352***	***342***
emissions (upstream)		***130***	***137***	***128***	***117***	***124***	***109***	***80***	***87***	***67***	***65***
JRC Geel		1 673	1 963	1 860	1 791	1 718	1 827	1 812	2 007	1.403	1.033
emissions (combustion)		***301***	***354***	***335***	***323***	***310***	***337***	***335***	***371***	***260***	***191***
emissions (upstream)		***60***	***71***	***67***	***65***	***62***	***64***	***64***	***70***	***49***	***36***
JRC Seville		387	373	344	435	529	372	461	449	394	180
emissions (combustion)		***70***	***67***	***62***	***78***	***95***	***69***	***85***	***83***	***73***	***33***
emissions (upstream)		***14***	***13***	***12***	***16***	***19***	***13***	***16***	***16***	***14***	***6***
JRC Ispra		97 427	95 227	90 147	88 623	87 071	89 895	78 010	85 012	60.675	48.324
emissions (combustion)		***19 578***	***19 136***	***18 115***	***17 834***	***17 533***	***18 101***	***14 432***	***15 727***	***11 225***	***8 914***
emissions (upstream)		***3 511***	***3 432***	***3 249***	***3 194***	***3 138***	***3 159***	***2 739***	***2 984***	***2 130***	***1 692***
Commission (MWh)		**177 327**	**209 075**	**213 744**	**201 489**	**184 115**	**187 218**	**168 424**	**185 665**	**136 344**	**112 489**
Commission (tCO2e)		***40 367***	***47 187***	***48 091***	***45 434***	***41 656***	***42 656***	***37 071***	***40 866***	***30 010***	***24 688***
Tank supplied gas											
Grange		6,87	6,53	2,68	1,68	40,55	51,20	26,80	2,28	4,08	5,54
emissions (combustion)		***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***6,16***	***0,52***	***0,94***	***1,27***
emissions (upstream)		***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***1,07***	***0,09***	***0,16***	***0,19***
Commission (MWh)		**6,87**	**6,53**	**2,68**	**1,68**	**40,55**	**51,20**	**26,80**	**2,28**	**4,08**	**5,54**
Commission (tCO2e)		***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***7,24***	***0,62***	***1,10***	***1,47***
Diesel (used at all sites to check emergency generators)											
Brussels		2 570	1 617	993	0,00	0,00	0,00	0,00	0,00	97,41	252,33
emissions (combustion)		***694***	***437***	***268***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***25,91***	***67,09***
emissions (upstream)		***154***	***97***	***60***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***5,65***	***14,62***
Luxembourg		0,00	0,00	0,00	3,62	1,50	6,12	6,12	6,12	0,00	75,00
emissions (combustion)		***0,00***	***0,00***	***0,00***	***0,98***	***0,41***	***1,63***	***1,63***	***1,63***	***0,00***	***19,94***
emissions (upstream)		***0,00***	***0,00***	***0,00***	***0,22***	***0,09***	***0,35***	***0,35***	***0,35***	***0,00***	***4,35***
JRC Petten		0,00	0,00	0,00	13,72	0,00	0,00	0,00	0,00	0,00	8,57
emissions (combustion)		***0,00***	***0,00***	***0,00***	***3,70***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***2,28***
emissions (upstream)		***0,00***	***0,00***	***0,00***	***0,82***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,50***
JRC Geel		78	26	27	31,71	35,61	33,35	8,60	27,74	27,70	25,71
emissions (combustion)		***21,2***	***6,9***	***7,3***	***8,56***	***9,61***	***8,87***	***2,29***	***7,38***	***7,37***	***6,84***
emissions (upstream)		***4,7***	***1,5***	***1,6***	***1,90***	***2,14***	***1,93***	***0,50***	***1,61***	***1,61***	***1,49***

JRC Karlsruhe		10,45	10,45	10,45	10,45	10,45	10,45	10,45	10,45	10,00	10,37
emissions (combustion)		***2,82***	***2,82***	***2,82***	***2,82***	***2,82***	***2,78***	***2,78***	***2,78***	***2,66***	***2,76***
emissions (upstream)		***0,63***	***0,63***	***0,63***	***0,63***	***0,63***	***0,61***	***0,61***	***0,61***	***0,58***	***0,60***
JRC Seville		0,00	0,00	10,70	0,00	0,00	0,00	0,00	0,00	4,82	3,20
emissions (combustion)		***0,00***	***0,00***	***2,89***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***1,28***	***0,85***
emissions (upstream)		***0,00***	***0,00***	***0,64***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,28***	***0,19***
JRC Ispra		52	44	102	78	91	115	88	77	45	55
emissions (combustion)		***13,98***	***11,96***	***28***	***21***	***25***	***31***	***23***	***20***	***12***	***15***
emissions (upstream)		***3,11***	***2,66***	***6,13***	***4,71***	***5,48***	***6,67***	***5,10***	***4,47***	***2,61***	***3,19***
Grange		1 383	1 568	1 543	1 360	1 089	1 131	1 041	958	938	841
emissions (combustion)		***373***	***423***	***417***	***367***	***294***	***301***	***277***	***255***	***249***	***224***
emissions (upstream)		***83***	***94***	***93***	***82***	***65***	***66***	***60***	***56***	***54***	***49***
Commission, (MWh)		***4 094***	***3 265***	***2 686***	***1 498***	***1 228***	***1 296***	***1 154***	***1 079***	***1 123***	***1 271***
Commission (tCO2e)		***1 351***	***1 077***	***887***	***494***	***405***	***420***	***374***	***350***	***364***	***412***
District heating and cooling (MWh)											
Luxembourg		1 603	10 244	8 929	9 867	16 445	14 585	13 770	10 465	9087	7709
emissions (combustion)		***69***	***441***	***384***	***424***	***1 283***	***1 181***	***1 267***	***2 145***	***1 899***	***1 611***
emissions (upstream + heat dist'n)		***11***	***70***	***61***	***67***	***203***	***187***	***200***	***339***	***368***	***334***
JRC Geel		4 153	3 837	2 937	2 579	2 113	1 913	1 779	2 414	921	371
emissions (combustion)		***1 109***	***1 024***	***784***	***689***	***564***	***511***	***475***	***644***	***246***	***99***
emissions (upstream + heat dist'n)		***175***	***162***	***124***	***109***	***89***	***81***	***75***	***102***	***48***	***20***
JRC Karlsruhe		8 839	10 540	9 982	10 423	10 888	11 912	9 826	11 607	9.724	7.354
emissions (combustion)		***1 883***	***2 245***	***2 126***	***2 220***	***2 319***	***2 537***	***2 093***	***2 472***	***2 071***	***1 566***
emissions (upstream + heat dist'n)		***297***	***355***	***336***	***351***	***366***	***401***	***331***	***391***	***402***	***324***
Commission, (MWh)		***14 595***	***24 621***	***21 848***	***22 868***	***29 446***	***28 410***	***25 375***	***24 486***	***19 732***	***15 434***
Commission (tCO2e)		***3 544***	***4 296***	***3 815***	***3 859***	***4 824***	***4 898***	***4 441***	***6 093***	***5 034***	***3 955***

(District heating not currently contributing to renewable energy at the above sites)

Table 3 Site generated renewable energy (MWh), *and emissions tCO2e*

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Site geothermal pumps											
JRC Petten		0,00	0,00	0,00	0,00	0,50	1,10	1,30	1,33	0,00	0,00
emissions (upstream)		***0,00***	***0,00***	***0,00***	***0,00***	***0,02***	***0,05***	***0,06***	***0,06***	***0,00***	***0,00***
JRC Geel		84	75	79	74	74	74	101	86	30	39
emissions (upstream)		***3,77***	***3,37***	***3,57***	***3,33***	***3,33***	***3,33***	***4,55***	***3,89***	***1,37***	***1,75***
JRC Ispra		0,00	0,00	0,00	0,00	0,00	0,00	0,00	688	0,00	0,00
emissions (upstream)		***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***31***	***0,00***	***0,00***
Commission (MWh)		***84***	***75***	***79***	***74***	***75***	***75***	***102***	***776***	***30***	***39***
Commission (tCO2e)		***3,77***	***3,37***	***3,57***	***3,33***	***3,35***	***3,38***	***4,61***	***35***	***1,37***	***1,75***
Site biomass											
Luxembourg		404	317	469	429	267	264	519	528	591	573
emissions (combustion)		***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***8,01***	***8,15***	***6,22***	***6,16***
emissions (upstream)		***0,00***	***0,00***	***0,00***	***0,00***	***5,07***	***5,01***	***9,85***	***10,23***	***11,44***	***11,11***
Commission, MWh		***404***	***317***	***469***	***429***	***267***	***264***	***519***	***528***	***591***	***573***
Commission (tCO2e)		***0,00***	***0,00***	***0,00***	***0,00***	***5,07***	***5,01***	***17,86***	***18,38***	***17,66***	***17,27***
Site photovoltaique panels (PVs) (production)											
Brussels		9,80	26	27	26	28	23	23	26	24	103
emissions (upstream)		***0,54***	***1,45***	***1,46***	***1,40***	***1,55***	***1,26***	***1,27***	***1,45***	***1,05***	***4,51***
JRC Petten		148	208	230	227	217	205	201	186	240	190
emissions (upstream)		***8,12***	***11,45***	***12,63***	***12,49***	***11,94***	***11,28***	***11,07***	***10,23***	***10,54***	***8,35***
JRC Ispra		52	391	430	591	541	713	727	824	974	1.266
emissions (upstream)		***2,86***	***21,49***	***23,65***	***32,51***	***30***	***39***	***40***	***45***	***43***	***56***
Commission, MWh		***209***	***625***	***686***	***844***	***786***	***941***	***951***	***1 036***	***1 238***	***1 559***
Commission, (tCO2e)		***11,52***	***34,38***	***37,74***	***46,39***	***43***	***52***	***52***	***57***	***54***	***68***
Lake water heat exchange											
JRC Ispra		3 603	4 791	3 892	3 695	3 616	2 917	2 372	2 474	2.591	3.816
emissions (upstream)		***162***	***216***	***175***	***166***	***163***	***131***	***107***	***111***	***117***	***172***
Commission, MWh		***3 603***	***4 791***	***3 892***	***3 695***	***3 616***	***2 917***	***2 372***	***2 474***	***2 591***	***3 816***
Commission, (tCO2e)		***162***	***216***	***175***	***166***	***163***	***131***	***107***	***111***	***117***	***172***
Cooling energy produced by heat pump in bld. 59x											
JRC Ispra						2 819	1 440	1 527	2 608	2.155	3.843
emissions (upstream)						***127***	***65***	***69***	***117***	***97***	***173***
Commission, MWh		***0,00***	***0,00***	***0,00***	***0,00***	***2 819***	***1 440***	***1 527***	***2 608***	***2 155***	***3 843***
Commission, (tCO2e)		***0,00***	***0,00***	***0,00***	***0,00***	***127***	***65***	***69***	***117***	***97***	***173***
+											
JRC Ispra						4 304	2 605	2 370	3 919	2.842	4.577

emissions (upstream)		*0,00*	*0,00*	*0,00*	*194*	*117*	*107*	*176*	*128*	*206*
Commission, MWh	*0,00*	*0,00*	*0,00*	*0,00*	*4 304*	*2 605*	*2 370*	*3 919*	*2 842*	*4 577*
Commission, (tCO2e)	*0,00*	*0,00*	*0,00*	*0,00*	*194*	*117*	*107*	*176*	*128*	*206*
Solar panel (for heating water)										
JRC Ispra	0,00	0,00	10,85	8,10	0,00	0,00	0,00	0,00	0,00	0,00
emissions (upstream)	*0,00*	*0,00*	*0,60*	*0,45*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
Commission, MWh	0,00	0,00	10,85	8,10	0,00	0,00	0,00	0,00	0,00	0,00
Commission, (tCO2e)	*0,00*	*0,00*	*0,60*	*0,45*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
Total site generated, MWh	*4 300*	*5 808*	*5 137*	*5 050*	*9 047*	*6 802*	*6 314*	*8 732*	*7 292*	*10 564*
Total site generated, (tCO2e)	*177*	*253*	*217*	*216*	*408*	*309*	*288*	*398*	*318*	*465*

Table 4a Electricity emissions (market based, using supplier emission factor, Scope 2 only) plus line losses, tCO_2e

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels	*1 532*	*1 522*	*482*	*566*	*434*	*406*	*349*	*313*	*286*	*266*
Line losses	*130*	*129*	*41*	*48*	*37*	*17*	*17*	*12*	*11*	*9*
Luxembourg	*1 522*	*680*	*519*	*589*	*900*	*807*	*856*	*732*	*240*	*0*
Line losses	*129*	*58*	*44*	*50*	*77*	*55*	*44*	*27*	*9*	*0*
JRC Petten	*2 026*	*1 953*	*1 671*	*1 643*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
Line losses	*172*	*166*	*142*	*140*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
JRC Geel	*3 343*	*2 948*	*3 087*	*2 936*	*140*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
Line losses	*284*	*251*	*262*	*250*	*11,88*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
JRC Karlsruhe	*3 670*	*3 536*	*3 343*	*4 038*	*3 837*	*3 260*	*2 556*	*2 454*	*2 920*	*3 071*
Line losses	*312*	*301*	*284*	*343*	*326*	*347*	*243*	*186*	*216*	*255*
JRC Seville	*546*	*662*	*571*	*594*	*454*	*440*	*0,00*	*0,00*	*0,00*	*0,00*
Line losses	*46*	*56*	*49*	*51*	*39*	*46*	*0,00*	*0,00*	*0,00*	*0,00*
JRC Ispra	*253*	*327*	*624*	*717*	*511*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
Line losses	*22*	*28*	*53*	*61*	*43*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*
Grange	*313*	*305*	*241*	*200*	*168*	*165*	*120*	*106*	*35*	*13*
Line losses	*27*	*26*	*20*	*17,03*	*14,31*	*18,44*	*10,70*	*7,59*	*2,51*	*1,16*
Total	*14 328*	*12 947*	*11 435*	*12 243*	*6 993*	*5 561*	*4 196*	*3 838*	*3 720*	*3 616*

Table 4b Electricity emissions (location based, using national emission factor) plus line losses, tCO_2e

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels	*0,00*	*0,00*	*0,00*	*23 923*	*18 200*	*18 125*	*18 087*	*13 078*	*12 145*	*9 395*
Line losses	*0,00*	*0,00*	*0,00*	*2 033*	*1 547*	*759*	*880*	*514*	*485*	*312*
Luxembourg	*0,00*	*0,00*	*0,00*	*9 296*	*6 324*	*6 473*	*4 704*	*3 160*	*3 177*	*2 652*
Line losses	*0,00*	*0,00*	*0,00*	*790*	*538*	*444*	*243*	*116*	*115*	*90*
JRC Petten	*0,00*	*0,00*	*0,00*	*1 370*	*1 348*	*1 264*	*1 017*	*720*	*673*	*676*
Line losses	*0,00*	*0,00*	*0,00*	*116*	*115*	*124*	*90*	*47*	*43*	*45*
JRC Geel	*0,00*	*0,00*	*0,00*	*2 326*	*1 687*	*1 583*	*1 618*	*1 293*	*1 243*	*912*
Line losses	*0,00*	*0,00*	*0,00*	*198*	*143*	*66*	*79*	*51*	*50*	*30*
JRC Karlsruhe	*0,00*	*0,00*	*0,00*	*5 253*	*5 480*	*5 498*	*4 249*	*3 625*	*3 618*	*3 926*
Line losses	*0,00*	*0,00*	*0,00*	*446*	*466*	*585*	*404*	*275*	*268*	*326*
JRC Seville	*0,00*	*0,00*	*0,00*	*638*	*448*	*602*	*464*	*323*	*351*	*315*
Line losses	*0,00*	*0,00*	*0,00*	*54*	*38*	*63*	*41*	*17*	*18*	*16*
JRC Ispra	*0,00*	*0,00*	*0,00*	*1 813*	*1 505*	*717*	*1 655*	*1 371*	*2 903*	*3 792*
Line losses	*0,00*	*0,00*	*0,00*	*154*	*128*	*63*	*136*	*97*	*205*	*286*
Grange	*0,00*	*0,00*	*0,00*	*34 034*	*32 834*	*35 179*	*21 153*	*14 995*	*14 896*	*18 000*
Line losses	*0,00*	*0,00*	*0,00*	*2 893*	*2 791*	*3 934*	*1 890*	*1 077*	*1 073*	*1 544*
Total	*0,00*	*0,00*	*0,00*	*85 339*	*73 592*	*75 481*	*56 707*	*40 759*	*41 261*	*42 317*

Table 4c Reduction in Commission electricity emissions owing to contracting approach (%)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Reduction tCO2e				73 096	65 403	68 610	51 322	35 257	35 532	36 902
Reduction due to contracting approach (%)				86	89	91	91	86	86	87
Reduction as % of reported buildings emissions (Table 4.4)				119	119	124	108	66	86	106

Source - Annex 1 tables 4a, 4b, 5i; Chapter 4 Table 4.4

Tables 5a to 5h Electricity from 'renewable energy' contracts, sources of electricity (fraction), and emissions (tCO_2e)

5a

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels										
Offshore wind	0,00	0,00	0,00	0,00	0,07	0,07	0,07	0,07	0,25	0,35
as tCO_2e	***0,00***	***0,00***	***0,00***	***0,00***	***117***	***118***	***94***	***84***	***304***	***381***

Onshore wind	0,00	0,00	0,00	0,00	0,07	0,07	0,07	0,07	0,25	0,46
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***101***	***102***	***80***	***72***	***275***	***453***
Hydro	0,00	0,00	0,00	0,00	0,85	0,85	0,85	0,85	0,49	0,13
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***577***	***583***	***496***	***444***	***234***	***54***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,01	0,01	0,02	0,02	0,02	0,07
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***62***	***63***	***107***	***96***	***70***	***210***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Biomass	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e										
Total proportion	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***857***	***866***	***776***	***695***	***883***	***1097***

5b

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Luxembourg										
Offshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Onshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Hydro	0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,43	0,46	0,54
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***178***	***188***	***178***	***73***	***85,69***	***84,09***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,002
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***2,77***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Biomass	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,57	0,54	0,46
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***560,30***	***501,42***	***362,14***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		0,00
as tCO $_2$ e										
Total proportion	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***178***	***188***	***178***	***633***	***587***	***449***

5c

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
JRC Petten										
Offshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,50	0,50
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***18,94***	***17,99***
Onshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,50	0,50
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***17,12***	***16,26***
Hydro	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***15,32***	***0,00***	***0,00***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Biomass	0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***60***	***57***	***92***	***0,00***	***0,00***	***0,00***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e										
Total proportion	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***60***	***57***	***92***	***15***	***36***	***34***

5d

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
JRC Geel										
Offshore wind	0,00	0,00	0,00	0,00	0,01	0,01	0,00	0,23	0,15	0,12
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***1,11***	***1,11***	***0,55***	***30***	***19***	***13,12***
Onshore wind	0,00	0,00	0,00	0,00	0,04	0,04	0,01	0,16	0,16	0,27
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***5,39***	***5,40***	***1,59***	***18***	***19***	***26,51***
Hydro	0,00	0,00	0,00	0,00	0,83	0,83	0,81	0,52	0,50	0,38
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***50***	***50***	***43***	***27***	***25***	***15,87***

Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0	0	0,00	0,00	0,00	0,01
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,24***	***0,86***	***0,36***	***2,34***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,001
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,34***
Biomass	0,00	0,00	0,00	0,00	0,10	0,10	0,17	0,08	0,19	0,21
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***18,58***	***18,60***	***50,27***	***25,23***	***46,73***	***44,65***
Other	0,00	0,00	0,00	0,00	0,03	0,03	0,00	0,01	0,00	0,0007
as tCO $_2$ e									*	*
Total proportion	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***75***	***75***	***96***	***101***	***110***	***103***

* to be evaluated in the next CO_2 review

5e

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
JRC Karlsruhe										
Offshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Onshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Hydro	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Biomass	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e										
Total proportion	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***

5f

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
JRC Seville										
Offshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Onshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,04	0,84	0,92	1,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,90***	***24***	***32***	***31***
Hydro	0,00	0,00	0,00	0,00	0,00	0,00	0,96	0,16	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***11,33***	***2,22***	***0,00***	***0,00***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,05***	***0,00***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Biomass	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,08	0,00
as tCO $_2$ e									*	*
Total proportion	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***12,22***	***27***	***33***	***31***

* to be evaluated in the next CO2 review

5g

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
JRC Ispra										
Offshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Onshore wind	0,00	0,00	0,00	0,00	0,97	0,00	0,00	0,00		0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***26***	***0,00***	***0,00***	***0,00***	***0,00***	***0,24***
Hydro	0,00	0,00	0,00	0,00	0,03	0,05	1,00	0,02		0,92
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,36***	***0,76***	***35***	***0,64***	***0,00***	***79,66***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,00	0,94	0,00	0,00	0,02	0,01
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***122***	***0,00***	***0,00***	***12,58***	***5,70***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***

Biomass	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,98	0,98	
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,54***	***0,00***	***192***	***349***	***0***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		0,07
as tCO $_2$ e										
Total proportion	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***27***	***124***	***35***	***193***	***361***	***86***

5h

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Grange										
Offshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Onshore wind	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Hydro	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Photovoltaics (PVs)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Geothermal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Biomass	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***
Other	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
as tCO $_2$ e										
Total proportion	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total tCO $_2$ e	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***	***0,00***

5i

Total upstream emissions for renewable electricity supply, (sum tables 5a to 5h) tCO2e

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Commission				0	1196	1309	1189	1664	2010	1799

Annex 2 - Waste production and emissions

WASTE PRODUCTION (tonnes)

Brussels waste (tonnes)

i) Non hazardous	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Residual waste (20 03 01)		**2 545**	**2 594**	**2 577**	**2 449**	**2 351**	**2 407**	**787**	**670**	**698**	**929**
Paper and card (20 01 01)		2 675	2 274	2 349	2 212	2 167	2 398	1 266	1 299	1 218	1 207
PMC (15 01 06)		116	123	142	147	144	152	60	31	62	119
Organic waste (20 01 08)		311	289	261	243	213	244	79	1,40	145	372
Glass (20 01 02)		29	26	26	23	28	41	13,80	6,69	16,47	22,70
Furniture		404	349	528	506	256	49	32	38	26	46
Green waste buildings		0,00	0,00	0,00	0,00	0,00	18,51	23	13,88	4,22	3,14
Wood waste buildings		0,00	0,00	0,00	0,00	0,00	167	79	341	138	66
Metal waste buildings		0,00	0,00	0,00	0,00	0,00	57	46	114	33	44
Contractor/supplier non haz waste (tonnes)		0,00	0,00	0,00	0,00	0,00	570	425	601	380	195
Total		**6 081**	**5 654**	**5 882**	**5 580**	**5 158**	**6 103**	**2 810**	**3 116**	**2 722**	**3 004**
ii) Hazardous											
Maintenance of buildings/lifts (13 05)		64	45	122	68	76	123	2,30	96	9	2
Microfiches		0,00	0,00	0,00	0,00	0,00	4,50	4,50	4,50	0,35	0,00
Chemical-fixer-developing agents		0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,05	0,00	0,00
Chemical batteries (20 01 33)		2,35	3,24	6,19	4,39	1,81	0,82	0,79	0,19	0,00	0,00
Paint - toner		0,00	0,00	0,00	0,00	0,00	0,01	0,01	0,16	0,00	0,52
Cartriges laserjet-inkjet (08 03 17)		7,35	10,21	10,54	10,65	10,13	8,01	6,83	5,25	3,09	3,18
Oil and fat (20 01 25)		1,65	1,12	44,10	234	316	156	2,43	4,77	4,28	5,70
Mineral Oil		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	11,70
Diverse chemical waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,56	1,50	0,47
WEEE (20 01 35)		76	72	45	68	56	216	151	153	132	7
Medical waste (18 01 03)		0,00	0,00	2,44	1,73	1,94	2,55	1,88	2,08	3,47	2,52
Contractor/supplier haz waste (tonnes)		0,00	0,00	0,00	0,00	0,00	1,30	2,00	5,60	1,93	1,69
Total		**152**	**132**	**230**	**386**	**461**	**512**	**171**	**277**	**156**	**35**

Luxembourg waste (tonnes)

i) Non hazardous	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Residual waste		**85,81**	**455,53**	**399,84**	**357,67**	**302,61**	**303,97**	**272,54**	**146,41**	**145,80**	**162,61**
Paper and cardboard (20 01 01)		48,63	300,60	298,48	232,72	225,86	179,85	97,58	83,20	87,85	205,27
Plastic (20 01 39)		1,68	4,23	8,91	1,31	2,07	3,36	1,35	3,00	1,86	3,29
Metals (17045)		0,41	19,77	109,25	84,02	0,43	10,07	1,98	14,05	1,22	2,34
Glass (15 01 07)		3,19	10,77	27,32	21,23	25,47	24,28	17,45	2,19	5,36	9,44
Storage tins (boîte de conserve) (see Valorlux)		0,43	0,07	1,50	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Wood (20 01 38)		0,84	13,80	67,56	51,84	6,59	10,62	8,11	13,62	3,78	7,23
Metal drinks cans (see Valorlux)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Valorlux (15 01 02)		2,49	7,14	6,71	13,68	11,45	11,21	5,13	3,73	6,66	7,72
Kitchen waste (20 01 08)		9,52	91,72	112,40	93,66	102,17	109,66	104,20	51,05	60,47	78,23
Dechets peinture		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,02	0,06
Data support		0,00	0,00	0,00	0,27	0,07	0,12	0,00	0,00	0,13	0,01
Plastic wrap (15 01 02)		0,00	0,00	0,00	2,20	1,90	1,68	1,60	1,72	1,61	2,09
Styropor (polysterene) (15 01 02)		0,00	0,00	0,00	1,52	1,81	1,88	0,87	0,88	1,04	1,50
Ceramic waste (17 01 03)		0,00	0,00	0,00	0,30	0,32	0,31	0,25	0,06	0,07	0,07
Oil and fat (20 01 25, 19 08 09)		1,25	3,67	10,66	15,33	21,04	173,15	98,15	130,17	166,86	165,48
Contractor/supplier non haz waste		0,00	0,00	0,00	0,00	0,00	13,80	9,65	16,23	43,05	79,70
Total		**154,24**	**907,29**	**1.042,63**	**875,73**	**701,80**	**843,96**	**618,87**	**466,31**	**525,78**	**725,02**
ii) Hazardous											
Medical waste (18 01 03)		0,38	0,70	0,62	0,53	0,63	0,59	1,17	1,34	1,47	1,52
Used batteries (20 01 33)		0,36	0,02	0,48	0,12	0,42	0,24	0,00	0,00	0,62	0,34
Used containers (bidons souillés) (15 01 10)		0,04	0,34	1,78	0,97	0,45	0,48	0,27	0,19	0,22	0,25
Cartridges (80312)		0,00	0,38	1,69	1,31	0,72	0,20	0,15	0,18	0,42	0,27
Electric and electronicwaste, cables etc (20 01 35)		0,14	0,69	0,00	0,00	0,02	3,06	1,62	0,10	1,13	1,64
Chemical products (16 01 07)		0,00	0,00	0,00	0,00	0,00	0,06	0,00	0,00	0,21	0,19
Oil filters		0,00	0,14	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Empty fire extinguishers		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,60	0,00
Contractor/supplier haz waste		0,000	0,000	0,000	0,000	0,000	0,761	0,107	0,150	0,046	0,483
Total		**0,92**	**2,27**	**4,56**	**2,93**	**2,23**	**5,40**	**3,31**	**1,96**	**4,71**	**4,70**

JRC Petten waste (tonnes)

i) Non hazardous	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Residual waste		**11,90**	**9,72**	**14,00**	**18,88**	**15,05**	**12,10**	**7,44**	**6,02**	**4,82**	**1,86**
Paper and cardboard		12,90	8,73	10,70	10,20	7,13	6,16	3,67	4,44	3,77	2,63
Wood		1,08	3,06	1,20	1,74	1,00	1,76	3,04	0,92	0,00	0,00
Glass		0,01	0,27	0,90	0,00	0,71	0,00	0,00	0,00	0,00	0,00
Metal (scrap)		3,67	6,02	5,40	5,06	4,54	2,68	2,16	22	0,00	0,00
Grit (from shredder)		0,00	0,00	0,00	0,00	0,00	1,47	0,00	0,00	0,00	0,00
PMD		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,05	0,15	0,09
other (waste from birds, ...)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	51	0,00	0,00
Contractor/supplier non haz waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Total		**30**	**28**	**32**	**36**	**28**	**24**	**16,31**	**84**	**8,74**	**4,57**
ii) Hazardous											

Batteries		0,05	0,14	0,00	0,18	0,13	0,03	0,00	0,35	0,00	0,600
Laboratory mixed waste		0,10	0,41	0,00	0,06	0,05	0,37	0,00	0,32	0,00	
Electrical equipment (WEEE)		4,00	4,58	0,00	5,05	0,00	2,06	0,00	0,00	0,00	
Waste oil		0,20	0,20	0,00	0,57	0,09	0,03	0,00	0,38	0,00	1,500
Filters		0,16	0,23	0,00	0,21	0,20	0,00	0,00	0,00	0,00	
Paint		0,01	0,03	0,00	0,00	0,01	0,00	0,00	0,30	0,00	0,100
Solvent		0,05	0,08	0,00	0,03	0,17	0,04	0,00	0,02	0,00	0,100
Spray cans		0,04	0,01	0,00	0,00	0,01	0,00	0,00	0,00	0,00	0,115
Medical waste		0,00	0,04	0,00	0,01	0,03	0,01	0,00	0,04	0,00	0,020
Flourescent lamps		0,00	0,06	0,00	0,09	0,05	0,02	0,00	0,07	0,00	
Fire extinguisher		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Lead-acid battery		0,13	0,90	0,00	0,11	0,17	0,07	0,00	1,48	0,00	
Mercury containing objects		0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,300
Asbestos material		0,00	0,02	0,00	0,00	0,00	0,07	0,00	0,05	0,00	0,100
Developer		0,20	0,74	0,00	0,24	0,00	0,00	0,00	0,00	0,00	
Adhesives, resins and sealants		0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,100
Metal containing waste		0,00	0,00	0,00	0,00	0,00	0,09	0,00	0,04	0,00	
Packaged waste											0,280
Waste water (161001)		1,50	2,00	4,00	2,86	2,96	5,76	4,30	5,00	4,32	5,740
Contractor/supplier haz waste		4,96	7,47	0,00	0,00	0,90	0,73	0,00	3,05	0,00	0,100
Total		**11,41**	**16,94**	**4,00**	**9,41**	**4,77**	**9,29**	**4,30**	**11,10**	**4,32**	**9,055**

JRC Geel waste (tonnes)

i) Non hazardous	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Residual; mixed (070299, 080318, 191210, 191212, 200301, 200307)		**56**	**47**	**42**	**32**	**27**	**22**	**15**	**20**	**15**	**14**
Building, brick and stone (170102, 170301) + 170107		22	0,00	4,50	4,26	4,26	0,00	0,00	4,90	2,72	40,32
Paper and cardboard (200101)		33	14,64	14,84	21	20	16,41	9,50	10,50	9,16	14,79
Metal (191202, 200140)		38	33	22	22	15	11,28	6,30	9,50	11,46	19,20
Wood (170201, 200138)		16,28	11,88	15,46	8,22	4,74	7,20	2,70	6,90	3,42	3,50
Glass (200102, 150107)		0,04	7,83	2,14	1,19	0,98	0,89	0,30	0,40	0,19	0,57
Packaging waste: PMD (150106)		1,16	0,54	0,69	0,95	0,67	0,89	0,70	1,20	0,79	1,03
Swill (200108)		0,00	0,00	0,76	5,49	3,57	6,40	5,00	4,80	4,07	6,34
Wine samples (020304)		0,00	0,00	4,45	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Plastics (200139)		0,00	0,00	0,05	0,06	0,00	0,23	0,04	0,42	0,28	0,18
Contractor/supplier non haz waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Non Dangerous sox lamps (Eural code 160216)					0,00	0,01	0,01	0,00	0,00	0,00	0,03
Non Dangerous frying oil cat 3. (Eural code 200125)					0,00	0,36	0,34	0,34	0,17	0,30	0,44
Total		**166**	**115**	**108**	**95**	**76**	**65**	**40**	**59**	**48**	**100**
ii) Hazardous											
Biological waste (180103)		6,36	3,60	4,46	4,27	2,48	2,32	0,98	1,98	1,02	2,69
Electric & electronic, AEEA (160213,160214, 200136)		7,34	9,34	5,92	3,12	6,20	3,54	0,00	9,24	4,14	12,24
Asbestos (170605)		0,02	0,00	0,25	0,24	0,08	0,73	0,02	0,03	0,00	0,00
Waste from inorganic chemical processes (060106, 060205, 060399)		1,14	1,32	0,26	0,22	1,25	0,32	0,09	0,18	0,22	0,81
Waste from organic chemical processes (070101, 070103, 070104, 070701, 070704)		3,86	1,46	0,41	0,58	1,36	0,64	0,08	0,13	0,35	0,70
Paint, ink, glue, resin containing hazardous substances (080111, 080317, 200127)		0,09	1,36	0,03	0,00	0,37	0,00	0,02	0,02	0,02	0,29
Waste from thermal processes (100804)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Waste oil (130205, 130301, 130802)		1,27	1,29	0,03	0,05	0,62	0,12	0,06	0,07	1,83	0,73
Cooling gasses (140601)		0,03	0,07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Packaging waste, absorbents, cleaning cloth, filters (150110, 150202)		1,31	1,12	3,43	0,62	0,74	0,45	0,25	0,54	0,56	0,67
Antifreeze, PCB (160114, 160209)		0,00	7,36	1,93	0,00	0,00	5,03	0,00	0,13	0,00	1,98
Pressurised gasses and lab chemicals (160504, 160506, 200119)		1,41	1,03	5,57	0,58	0,74	2,39	0,14	0,07	0,23	0,62
Batteries and accumulators (160601, 200133)		0,06	0,96	0,01	0,03	0,66	0,80	0,07	0,34	0,07	0,29
Waste from production of water for industrial use including resins (190905)		0,05	0,04	0,07	0,07	0,12	0,11	0,03	0,16	0,07	0,16
Waste from mechanical processes (191211)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Fluorescent lamps and mercury containing objects (200121, 160307, 060404)		0,00	0,08	0,11	0,31	0,11	0,11	0,01	0,10	0,01	0,07
Contractor/supplier haz waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Hazardous medical waste (Eural code 170903)					0,00	0,46	0,00	0,00	0,00	0,00	0,00
Expired medicines, dangerous (Eural code 070513)					0,00	0,65	0,00	0,00	0,00	0,00	0,00
Total		**22,96**	**29,02**	**22,47**	**10,09**	**15,81**	**16,57**	**1,76**	**12,99**	**8,51**	**21,24**

JRC Karlsruhe waste (tonnes)

i) Non hazardous	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Residual waste (200301)		**36**	**30**	**26**	**22**	**26**	**31**	**22**	**18,40**	**24**	**27**
Paper and cardboard (150101)		18,00	21	18,00	19,31	27	27	18,00	18,60	27	23
Wood (170201)		15,38	14,42	5,60	8,26	3,80	5,92	3,50	6,20	4,10	4,00
Glass		0,00	0,82	0,82	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Metal (scrap; 170407, 170411)		33	33	30	27	23	10,74	13,70	11,60	23	20
Plastic (150102, 200139)		4,10	3,32	1,63	3,89	3,89	1,75	2,00	1,80	1,52	2,24
Green waste (200201)		0,00	0,00	0,00	0,00	1,25	0,50	1,00	0,50	0,20	0,00
Contractor/supplier non haz waste		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total		**107**	**102**	**82**	**80**	**85**	**78**	**60**	**57**	**81**	**76**

ii) Hazardous										
Batteries (200133*)	0,00	0,00	0,00	0,00	0,94	0,00	0,40	0,00	0,00	0,00
Mixed chemical waste (e.g. 120109*, 130205*)	0,70	0,00	0,00	0,14	1,71	0,20	0,00	0,00	0,00	0,00
Filters (150202*)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,40	0,80	0,00	0,00
Medical waste	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Flourescent lamps (200121*)	0,21	0,17	0,12	0,11	0,09	0,11	0,00	0,11	0,00	0,00
Fire extinguisher	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,00	0,00
Lead-acid battery (160601*)	0,90	0,70	0,91	1,79	1,79	0,00	1,14	1,08	0,61	1,00
Mercury containing objects	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,00	0,06
Asbestos from dismantling works (170605*)	3,32	1,84	0,00	0,00	0,25	0,14	0,00	0,00	0,20	0,06
Insulating glass fibre (170603*)	0,18	0,30	4,88	0,00	0,46	0,76	1,21	2,98	0,00	0,00
Electrical equipment (WEEE; 200135*)	5,20	7,25	2,32	3,03	1,72	1,38	4,64	1,59	3,96	2,52
Other hazardous waste	0,00	0,00	0,00	0,00	0,00	0,00	3,58	1,00	0,40	3,29
Contractor/supplier haz waste	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,00	0,00
Total	**10,51**	**10,26**	**8,23**	**5,07**	**6,96**	**2,59**	**11,37**	**7,56**	**5,17**	**6,87**

JRC Seville waste (tonnes)

i) Non hazardous	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Residual waste (20 01 08)		**2,20**	**0,74**	**1,61**	**4,49**	**4,96**	**6,59**	**1,46**	**1,77**	**4,07**	**4,70**
20 01 01 Paper and cardboard		1,54	0,89	6,81	5,23	3,27	4,61	1,61	1,34	2,16	1,84
20 01 38 Wood		0,81	0,76	2,78	0,44	1,43	0,54	0,50	0,00	1,80	1,72
20 01 02 Glass		0,13	0,14	0,08	0,16	0,05	0,05	0,01	0,03	0,08	0,16
20 01 40 Metal		1,73	2,60	6,42	0,22	0,09	1,80	0,60	0,00	1,42	0,46
20 01 39 Plastic		0,00	0,35	0,37	0,48	0,62	1,88	0,86	0,52	1,14	0,74
Nespresso capsules		0,00	NR	0,08	0,24	0,26	0,58	0,11	0,08	0,16	0,11
20 01 11 Textiles		0,00	0,00	0,00	0,00	0,00	0,00	0,08	0,00	0,00	0,00
Contractor/supplier non haz waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
20 01 08 Bio-waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,05
Total		**6,41**	**5,48**	**18,15**	**11,27**	**10,67**	**16,05**	**5,23**	**3,74**	**10,83**	**9,78**
ii) Hazardous											
16 06 02 Batteries		0,06	0,05	0,05	0,00	0,07	0,04	0,01	0,00	0,03	0,00
Laboratory mixed waste		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Waste oil		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Filters		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Paint		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Solvent		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Spray cans		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
18 01 03 Medical waste		0,00	0,00	0,00	0,00	0,01	0,01	0,04	0,00	0,00	0,00
20 01 21 Flourescent lamps		0,11	0,07	0,06	0,06	0,08	0,22	0,27	0,46	0,06	0,33
Fire extinguisher		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead-acid battery		NR	NR	0,06	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Mercury containing objects		NR	NR	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Asbestos material		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Developer		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
08 03 18 Inks and toner		0,04	0,04	0,18	0,17	0,08	0,09	0,00	0,02	0,00	0,00
20 01 35 Electrical equipment (WEEE)		3,16	2,52	2,05	0,89	1,07	2,08	0,76	1,81	0,93	0,00
18 01 09 Medicaments		0,00	0,00	0,00	0,00	0,00	0,00	0,02	0,00	0,02	0,00
Contractor/supplier haz waste		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total		**3,37**	**2,68**	**2,41**	**1,13**	**1,31**	**2,43**	**1,10**	**2,29**	**1,04**	**0,34**

JRC Ispra waste (tonnes)

i) Non hazardous	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Mixed urban waste		**222**	**214**	**196**	**228**	**184**	**163**	**97**	**115**	**107**	**164**
Paper and cardboard		138	114	90	138	83	96	50	72	54	87
Wood		50	85	57	138	77	40	37	46	34	39
Glass		31	21	24	31	23	22	17	16	9	9
Metal (scrap)		371	416	196	271	527	567	114	447	186	253
Plastic		33	27	26	29	27	26	13	11	12	11
Organic waste		44	48	52	59	69	87	33	38	62	71
Street cleaning		151	137	135	128	124	88	76	106	76	70
Other		108	173	102	133	134	97	87	106	84	112
Contractor/supplier non haz waste		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	
Total		**888**	**925**	**641**	**895**	**989**	**1.001**	**362**	**958**	**624**	**814**
ii) Hazardous											
Batteries		0,00	0,38	0,22	0,42	0,19	0,79	0,11	0,41	0,74	0,14
Laboratory mixed waste (tonnes)		5,83	5,36	10,02	6,00	5,17	5,93	4,47	7,38	3,88	3,73
Waste oil		2,63	9,28	6,33	5,46	17,63	11,32	4,20	12,96	13,24	11,68
Filters		0,24	2,92	2,52	4,20	4,48	2,68	1,33	3,10	1,45	0,32
Paint		0,31	0,32	1,39	0,54	1,23	0,18	1,75	1,31	1,83	0,95
Solvent		1,19	0,00	0,00	0,88	0,00	0,00	0,00	0,00	0,00	0,00
Spray cans		0,04	0,00	0,08	0,06	0,26	0,00	0,05	0,07	0,19	0,10
Medical waste		3,02	2,60	1,55	1,97	1,87	1,51	1,50	1,57	1,45	1,44
Flourescent lamps		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,00
Fire extinguisher		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,00
Lead-acid battery		7,63	11,10	9,58	8,83	5,34	3,78	0,50	1,59	3,05	0,55
Mercury containing objects		0,01	0,00	0,02	0,05	0,00	0,00	0,00	0,00	0,00	0,00

Asbestos material		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Waste belonging from buindings and streets maintenance		0,17	0,11	7,39	19,92	5,36	7,24	4,75	2,70	0,29	9,97
Waste containing PCB		0,87	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Electrical equipment WEEE		27,96	25	21,60	14,19	4,45	7,96	4,70	7,54	4,38	10,78
Other hazardous waste		0,24	0,09	0,21	0,08	2,29	1,92	0,80	0,30	0,59	0,00
Contractor/supplier haz waste		n.a	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Total		**50**	**57**	**61**	**63**	**48**	**43**	**24**	**39**	**31**	**39,65**

SANTE at Grange waste (tonnes)

i) Non hazardous	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Residual waste, landfill (20.03.01)		**2,31**	**1,51**	**2,01**	**2,25**	**2,84**	**3,65**	**0,65**	**1,53**	**1,04**	**0,50**
Recyclables (20.01.39-40)		3,10	3,17	1,95	2,32	2,61	4,03	2,17	1,01	1,92	1,29
Cardboard (20.01.01)		2,44	3,75	1,29	1,36	1,03	2,36	0,00	1,04	0,30	0,05
Paper (20.01.01)		11,95	5,08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Shredding (20.01.01)		0,33	0,00	16,66	6,47	6,37	6,79	3,54	2,56	4,57	3,07
Compost (20.01.08)		10,30	10,31	8,96	5,96	7,08	8,91	2,87	0,73	2,09	4,74
Recovery*		14,57	16,62	18,79	20,08	24,66	14,22	5,92	11,10	7,67	6,06
Glass (20.01.02)		0,00	0,07	0,13	0,00	0,07	0,00	0,00	0,00	0,00	0,00
Mixed WEEE (16.02.16)		0,00	0,00	0,43	0,19	0,52	0,35	0,50	0,20	0,00	0,27
Recycling base units (16.02.14)		0,00	0,00	0,00	0,04	0,04	0,04	0,00	0,00	0,00	0,00
Contractor/supplier non haz waste		45	41	50	38	45	40	15	18	18	16
Total		**45**	**41**	**50**	**38**	**45**	**40**	**15**	**36**	**35**	**32**
ii) Hazardous											
Fridges & Freezers (20.01.23*)		NA	NA	0,09	0,07	0,00	0,00	0,03	0,00	0,00	0,00
Large household appliances (20.01.35*)		NA	NA	NA	0,05	0,00	0,00	0,08	0,00	0,00	0,10
CRT Monitors /Televisions (16.02.13*)		NA	NA	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,15
Fluorescent tubes (20.01.21*)		NA	NA	NA	NA	0,04	0,05	0,08	0,00	0,05	0,00
Oily water from oil/water separators (13.05.07*)		NA	NA	NA	NA	8,94	8,92	0,00	11,86	16,46	0,00
Batteries (20.01.33*)		NA	NA	NA	NA	NA	0,08	0,12	0,01	0,14	0,02
Toner (08.03.17*)		NA	NA	NA	NA	NA	0,08	0,03	0,01	0,13	0,02
Other discarded containing hazardous (16.02.13*)		NA	NA	NA	NA	NA	0,02	0,00	0,22	0,48	0,00
Contractor/supplier haz waste		NA	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,79	0,00
Total		**0,00**	**0,04**	**0,15**	**0,16**	**9,02**	**9,19**	**0,37**	**12,14**	**18,04**	**0,30**

EMISSIONS FROM WASTE MANAGEMENT (waste (tonnes), emissions (tonnes t CO2e))

Brussels

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	2 351	2 407	787	670	698	929
t CO2e of incinerated domestic	**851**	**871**	**285**	**243**	**261**	**347**
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	
t CO2e of incinerated food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iii) Methanisation - food	213	244	79	1,40	145	372
t CO2e of methanisation food	**18,49**	**21**	**6,87**	**0,12**	**12,59**	**64,41**
iv) Composting - food						45,62
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**3,96**
v) Recycled/reused - paper	2 167	2 398	1 266	1298,88	1 218	1 207
t CO2e of recycled paper	**71,51**	**79**	**45,59**	**46,76**	**43,85**	**43,45**
vi) Recycled/reused - cardboard	0,00	0,00	0,00	0,00	0,00	
t CO2e of recycled cardboard	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Recycled/reused - wood		167	79	341,08	138	66
t CO2e of recycled wood	**0,00**	**6**	**2,83**	**12,28**	**4,98**	**2,38**
viii) Recycled/reused - glass	27,68	40,55	13,80	6,69	16,47	
t CO2e of recycled glass	**0,91**	**1,34**	**0,50**	**0,24**	**0,59**	**0,00**
ix) Recycled/reused - plastic PMC	144	152	60	31,46	62	119
t CO2e of recycled PMC	**127,05**	**133**	**52,36**	**27,59**	**54,64**	**4,28**
x) Recycled/reused - others…	0,00	694,09	525,67	766,67	443,54	310,38
t CO2e of recycled other	**0,00**	**247,79**	**18,92**	**27,60**	**15,97**	**11,17**
xi) Hazardous waste - all types	461	512	171	276,70	156	35
t CO2e of hazardous waste	**325,30**	**361**	**121,01**	**195,44**	**110,26**	**29,46**
xii) Landfill (probably mostly projects)	0,00	0,00	0,00	0,00	0,00	
t CO2e of landfill	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL (tonnes CO2e)	**1 394**	**1 721**	**533**	**553**	**504**	**503**

Luxembourg

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	303	304	273	146	146	163
t CO2e of incinerated domestic	**110**	**110**	**99**	**53**	**55**	**61**
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iii) Methanisation - food	102,17	109,66	104,20	51,05	60,47	78,23
t CO2e of methanisation food	**8,89**	**9,54**	**9,04**	**4,43**	**5,25**	**13,53**
iv) Composting - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Recycled/reused - paper	225, 86	179, 85	97, 58	83, 2	87, 85	205, 27
t CO2e of recycled paper	**7,45**	**5,94**	**3,51**	**3,00**	**3,16**	**7,39**
vi) Recycled/reused - cardboard	0,00	0,00	0,00	0,00	0,00	0,00

t CO2e of recycled cardboard	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Recycled/reused - wood	6, 59	10, 62	8, 11	13, 62	3, 78	7, 23
t CO2e of recycled wood	**0,22**	**0,35**	**0,29**	**0,49**	**0,14**	**0,26**
viii) Recycled/reused - glass	25,47	24,28	17,45	2,19	5,36	9,44
t CO2e of recycled glass	**0,84**	**0,80**	**0,63**	**0,08**	**0,19**	**0,34**
ix) Recycled/reused - plastic PMC	15, 42	16, 26	8, 08	8, 45	10, 13	13, 09
t CO2e of recycled PMC	**13,57**	**14,31**	**7,09**	**7,41**	**8,89**	**0,47**
x) Recycled/reused - others…	23,67	199,33	110,91	161,38	212,39	249,15
t CO2e of recycled other	**8,45**	**71,16**	**3,99**	**5,81**	**7,65**	**8,97**
xi) Hazardous waste - all types	2, 23	5, 4	3, 31	1, 96	4, 71	4, 7
t CO2e of hazardous waste	**1,58**	**3,81**	**2,34**	**1,39**	**3,33**	**3,97**
xii) Landfill (probably mostly projects)	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of landfill	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL (tonnes CO2e)	**151**	**216**	**126**	**76**	**83**	**96**

JRC Petten

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	15,00	15,00	7,40	6,02	4,82	1,86
t CO2e of incinerated domestic	**5,43**	**5,43**	**2,68**	**2,18**	**1,80**	**0,69**
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**,00**	**,00**	**,00**	**,00**	**,00**	**,00**
iii) Methanisation - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Composting - food						0,00
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Recycled/reused - paper	5,00	5,00	1,85	4,44	3,77	2,63
t CO2e of recycled paper	**0,17**		**0,07**	**0,16**	**0,14**	**0,09**
vi) Recycled/reused - cardboard	2,13	2,13	1,85	1,85	0,00	0,00
t CO2e of recycled cardboard	**0,07**	**0,07**	**0,07**	**0,07**	**0,00**	**0,00**
vii) Recycled/reused - wood	1,00	1,00	3,00	1,56	0,00	0,00
t CO2e of recycled wood	**0,03**	**0,03**	**0,11**	**0,06**	**0,00**	**0,00**
viii) Recycled/reused - glass	0,70	0,70	0,00	0,00	0,00	0,00
t CO2e of recycled glass	**0,02**	**0,02**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Recycled/reused - plastic PMC				0,05	0,15	0,09
t CO2e of recycled PMC	**0,00**		**0,00**	**0,05**	**0,13**	**0,00**
x) Recycled/reused - others…	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of recycled other	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Hazardous waste - all types	0,90	0,90		3,05	0,00	9,06
t CO2e of hazardous waste	**0,64**	**0,64**	**0,00**	**2,16**	**0,00**	**7,64**
xii) Landfill (probably mostly projects)	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of landfill	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL (tonnes CO2e)	**6,36**	**6,36**	**2,92**	**4,66**	**2,07**	**8,43**

JRC Geel

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	26,65	21,52	15,35	20,38	15,15	13,56
t CO2e of incinerated domestic	**10**	**8**	**6**	**7**	**6**	**5**
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**,00**	**,00**	**,00**	**,00**	**,00**	**,00**
iii) Methanisation - food	3,57	6,40	4,84	4,84	4,07	6,34
t CO2e of methanisation food	**0,31**	**0,56**	**0,42**	**0,42**	**0,35**	**1,10**
iv) Composting - food						
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Recycled/reused - paper	8,93	8,79	3,92	2,89	1,99	4,65
t CO2e of recycled paper	**0,29**		**0,14**	**0,10**	**0,07**	**0,17**
vi) Recycled/reused - cardboard	10,58	7,62	5,55	7,59	7,18	10,15
t CO2e of recycled cardboard	**0,35**	**0,25**	**0,20**	**0,27**	**0,26**	**0,37**
vii) Recycled/reused - wood	4,74	7,20	2,72	6,90	3,42	3,50
t CO2e of recycled wood	**0,16**		**0,10**	**0,25**	**0,12**	**0,13**
viii) Recycled/reused - glass	0,98	0,89	0,26	0,37	0,19	0,57
t CO2e of recycled glass	**0,03**	**0,03**	**0,01**	**0,01**	**0,01**	**0,02**
ix) Recycled/reused - plastic PMC	0,67	0,89	0,70	1,19	0,79	1,03
t CO2e of recycled PMC	**0,59**	**1**	**0,61**	**1,04**	**0,69**	**0,04**
x) Recycled/reused - others…	19,64	11,86	6,72	14,99	14,75	60,13
t CO2e of recycled other	**7,01**	**4,23**	**0,24**	**0,54**	**0,53**	**2,16**
xi) Hazardous waste - all types	17	21	5,23	14,71	8,51	21
t CO2e of hazardous waste	**12,21**	**15**	**3,70**	**10,39**	**6,01**	**17,90**
xii) Landfill (probably mostly projects)	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of landfill	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL (tonnes CO2e)	**31**	**29**	**10,98**	**20**	**13,72**	**26,95**

JRC Karlsruhe

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	0,00	0,00	0,00	0,00	0,00	21,02
t CO2e of incinerated domestic						**8**
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**,00**	**,00**	**,00**	**,00**	**,00**	**,00**

iii) Methanisation - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Composting - food						4,74
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,41**
v) Recycled/reused - paper				0,00		23
t CO2e of recycled paper	**0,00**		**0,00**	**0,00**	**0,00**	**0,83**
vi) Recycled/reused - cardboard	0,00	0,00	0,00	0,00	0,00	
t CO2e of recycled cardboard	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Recycled/reused - wood				0,00		4,00
t CO2e of recycled wood	**0,00**		**0,00**	**0,00**	**0,00**	**0,14**
viii) Recycled/reused - glass	0,00	0,00	0,00	0,00	0,00	
t CO2e of recycled glass	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Recycled/reused - plastic PMC				0,00		
t CO2e of recycled PMC	**0,00**		**0,00**	**0,00**	**0,00**	**0,00**
x) Recycled/reused - others…	0,00	0,00	0,00	0,00	0,00	
t CO2e of recycled other	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Hazardous waste - all types				0,00		6,87
t CO2e of hazardous waste	**0,00**		**0,00**	**0,00**	**0,00**	**5,80**
xii) Landfill (probably mostly projects)	0,00	0,00	0,00	0,00	0,00	
t CO2e of landfill	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL (tonnes CO2e)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**14,63**

JRC Seville

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated domestic						
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**,00**	**,00**	**,00**	**,00**	**,00**	**,00**
iii) Methanisation - food	0,00	0,00	0,00	0,00	0,00	0,05
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,01**
iv) Composting - food						0,00
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Recycled/reused - paper				0,10	2,16	1,84
t CO2e of recycled paper	**0,00**		**0,00**	**0,00**	**0,08**	**0,07**
vi) Recycled/reused - cardboard	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of recycled cardboard	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Recycled/reused - wood			0,50	0,50	1,80	1,72
t CO2e of recycled wood	**0,00**		**0,02**	**0,02**	**0,06**	**0,06**
viii) Recycled/reused - glass	0,00	0,00	0,00	0,00	0,08	0,16
t CO2e of recycled glass	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,01**
ix) Recycled/reused - plastic PMC			0,50	0,50	1,14	0,74
t CO2e of recycled PMC	**0,00**		**0,44**	**0,44**	**1,00**	**0,03**
x) Recycled/reused - others…	0,00	0,00	0,60	0,60	1,58	0,57
t CO2e of recycled other	**0,00**	**0,00**	**0,02**	**0,02**	**0,06**	**0,02**
xi) Hazardous waste - all types			1,09	1,09	0,20	0,35
t CO2e of hazardous waste	**0,00**		**0,77**	**0,77**	**0,14**	**0,30**
xii) Landfill (probably mostly projects)	0,00	0,00	0,00	0,00	4,07	4,70
t CO2e of landfill	**0,00**	**0,00**	**0,00**	**0,00**	**0,13**	**0,12**
TOTAL (tonnes CO2e)	**0,00**	**0,00**	**1,25**	**1,25**	**1,48**	**0,61**

JRC Ispra

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	13,54	10,00	0,00	0,00	0,00	0,00
t CO2e of incinerated domestic	**5**	**4**				
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**,00**	**,00**	**,00**	**,00**	**,00**	**,00**
iii) Methanisation - food	68,95	87,01	33,84	38,48	61,87	49,52
t CO2e of methanisation food	**6,00**	**7,57**	**2,94**	**3,34**	**5,37**	**8,57**
iv) Composting - food						21,00
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**1,82**
v) Recycled/reused - paper	83	96	50	72,04	54	61
t CO2e of recycled paper	**2,74**	**3**	**1,81**	**2,59**	**1,94**	**2,20**
vi) Recycled/reused - cardboard	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of recycled cardboard	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Recycled/reused - wood	77	40	37	46,40	34	39
t CO2e of recycled wood	**2,53**	**1**	**1,33**	**1,67**	**1,22**	**1,39**
viii) Recycled/reused - glass	23,23	21,86	17,20	15,80	9,30	9,06
t CO2e of recycled glass	**0,77**	**0,72**	**0,62**	**0,57**	**0,33**	**0,33**
ix) Recycled/reused - plastic PMC	27	26	13	11,38	12	11
t CO2e of recycled PMC	**23,48**	**23**	**11,03**	**9,98**	**10,19**	**0,38**
x) Recycled/reused - others…	923,92	881,90	360,03	752,37	440,15	602,57
t CO2e of recycled other	**329,84**	**314,84**	**12,96**	**27,09**	**15,85**	**21,69**

xi) Hazardous waste - all types	48	43	24	38,91	31	40
t CO2e of hazardous waste	**34,08**	**31**	**17,05**	**27,48**	**21,94**	**33,47**
xii) Landfill (probably mostly projects)	31,40	23,14	13,91	21,19	12,31	21,60
t CO2e of landfill	**1,04**	**0,76**	**0,46**	**0,70**	**0,41**	**0,57**
TOTAL (tonnes CO2e)	**405**	**385**	**48**	**73**	**57**	**69**

Grange

C) Waste disposal categories (tonnes)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Incinerated waste - domestic waste	24,66	14,22	14,22	14,22	7,67	6,06
t CO2e of incinerated domestic	**8,93**	**5,15**	**5,15**	**5,15**	**2,87**	**2,27**
ii) Incinerated waste - food	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of incinerated food	**,00**	**,00**	**,00**	**,00**	**,00**	**,00**
iii) Methanisation - food	7,08	8,91	8,91	8,91	2,09	4,74
t CO2e of methanisation food	**0,62**	**0,78**	**0,77**	**0,77**	**0,18**	**0,82**
iv) Composting - food						112,36
t CO2e of methanisation food	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**9,75**
v) Recycled/reused - paper	6,37	6,79	6,79	6,79	4,57	3,07
t CO2e of recycled paper	**0,21**		**0,24**	**0,24**	**0,16**	**0,11**
vi) Recycled/reused - cardboard	1,03	2,36	2,36	2,36	0,30	0,05
t CO2e of recycled cardboard	**0,03**	**0,08**	**0,08**	**0,08**	**0,01**	**0,00**
vii) Recycled/reused - wood				0,00		
t CO2e of recycled wood	**0,00**		**0,00**	**0,00**	**0,00**	**0,00**
viii) Recycled/reused - glass	0,07	0,00	0,00	0,00	0,00	0,00
t CO2e of recycled glass	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Recycled/reused - plastic PMC	2,61	4,03	4,03	4,03	1,92	1,29
t CO2e of recycled PMC	**2,30**	**4**	**3,54**	**3,54**	**1,68**	**0,05**
x) Recycled/reused - others…	0,00	0,00	0,00	0,00	0,00	0,00
t CO2e of recycled other	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Hazardous waste - all types	0,52	9,55	9,55	9,55	17,17	0,31
t CO2e of hazardous waste	**0,37**	**7**	**6,75**	**6,75**	**12,13**	**0,26**
xii) Landfill (probably mostly projects)	2,84	3,65	3,65	3,65	1,04	0,50
t CO2e of landfill	**0,09**	**0,12**	**0,12**	**0,12**	**0,03**	**0,01**
TOTAL (tonnes CO2e)	**12,55**	**16,64**	**16,65**	**16,65**	**17,07**	**3,52**

Radioactive waste and waste water

JRC Karlsruhe

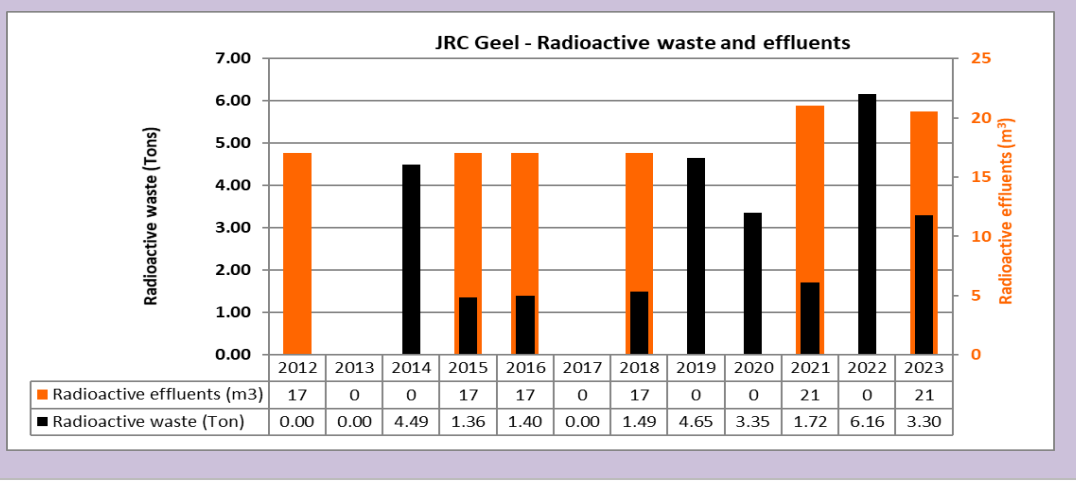
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Nuclear waste volume (m3)	179	152	108	127	127	74	44	31,9	71	55	56
Evolution (%)		*-15,08*	*-29*	*17,59*	*0,00*	*-42*	*-41*	*-28*	*123*	*-23*	*2*
Activity (TBq)	13	2	10	9	5	7	2	0,25	0,45	0,62	3,64
Evolution (%)		*-85*	*400*	*-10,00*	*-44*	*40*	*-71*	*-88*	*80*	*38*	*487*

Nuclear waste management includes the disposal of radioactive waste as well as the unrestricted disposal of non-contaminated waste from the controlled area. The amounts of nuclear waste since 2011 are shown in the table above. A trend cannot be determined as the amount of disposed nuclear waste is caused by changing parameters, e.g., the research activities, glove box disassembling and also the capacity of KTE (the official collecting facility for low and middle radioactive waste in Baden-Württemberg).
In addition to the usual handling of nuclear waste, non-contaminated waste from the controlled area can be cleared acc. to §33 and §35 StrlSchV (new version since 2019) respectively acc. to § 29 StrlSchV (old version until 2019) by respective measuring for unrestricted disposal. This waste is registered under “normal waste”.
Waste water coming from the Hot Cells and the decontamination processes in Wing B is collected separately and disposed by KTE as radioactive waste. Due to construction works at the collection facility in wing B, nothing was disposed 2020 to 2022.

JRC Ispra - Radioactive Waste Management System (RWMS)
The RWMS set up at the JRC Ispra site includes clearance materials and radioactive waste according to Italian Law (mainly Legislative Decree 101/2020). It includes elements related to planning, quality assurance and activity recording. JRC Ispra's waste management policy is based on three main rules according to Italian law and international guidelines:
- Minimise the amount of unused nuclear materials by recycling them within industry.
- Maximise the quantity of clearable waste that can be removed from regulatory control.
- Reduce the volume of remaining radioactive waste for temporary storage on the Ispra site (ISF).

Part of waste can be processed by internal and specific procedures as conventional waste; as a result of this iter and after necessary authorisations these waste can be managed according to Italian Law (Legislative Decree 152/2006). During 2023 about 10 tonnes were processed and released as conventional waste.

JRC Geel radioactive waste
JRC Geel was initially reporting the nuclear waste within the category hazardous waste. To express the data in an harmonised way with the other JRC sites, the sitel will report its nuclear waste separatly. It is also more appropriate considering that nuclear waste disposal is not periodical.



Annex 3 - Fixed assets (IT, Buildings, Furniture)

Brussels

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)	**1 031 971**	**1 056 659**	**1 056 659**	**1 065 711**	**992 390**	**973 473**
Not specified - offices (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**19 198**	**19 594**	**19 288**	**18 592**	**18 388**	**18 059**
ii) Steel - industrial building (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Steel - industrial building (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iii) Steel - parking underground (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Steel - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Steel - restaurants (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Steel - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Concrete - industrial buildings (total, m^2)	0,00	0,00	0,00	0,00	0,00	**43 729**
Concrete - industrial buildings (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**1203,00**
vi) Concrete - parking underground (total, m^2)	**477 720**	**484 328**	**484 328**	**484 678**	**417 466**	**416 662**
Concrete - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**9 079**	**9 137**	**8 893**	**8 372**	**7 708**	**7 692**
vii) Concrete - restaurants (total, m^2)	**12 449**	**12 449**	**12 449**	**12 449**	**10 315**	**10 272**
Concrete - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	**189**	**189**	**200**	**190**	**168**	**167**
Total annualised emissions (tonnes CO2e)	**28 466**	**28 920**	**28 381**	**27 154**	**26 264**	**27 121**

B) Fixed assets IT	2018	2019	2020	2021	2022	2023
i) Desktop PC (Total No.)		**393**	**319**	**58**	**42**	**19**
Annualised emissions (tonnes CO2e)		**50**	**13**	**2**	**2**	**1**
ii) Docking stations (Total No)		**15 307**	**3 494**	**5 924**	**2 420**	**3 341**
Annualised emissions (tonnes CO2e)		**631**	**129**	**219**	**90**	**124**
iii) Flat screens (Total No)		**6 726**	**2 498**	**4 641**	**3 439**	**6 033**
Annualised emissions (tonnes CO2e)		**1 290**	**147**	**272**	**202**	**354**
iv) Laptop (Total No)		**1 024**	**5 097**	**4 896**	**6 858**	**7 555**
Annualised emissions (tonnes CO2e)		**40**	**199**	**191**	**268**	**295**
v) individual printers (Total No)		**139**	**0**	**9**	**0**	**5**
Annualised emissions (tonnes CO2e)		**4,32**	**0,00**	**0,28**	**0,00**	**0,16**
vi) Network printers and copiers (Total No)		**306**	**26**	**70**	**36**	**6**
Annualised emissions (tonnes CO2e)		**225**	**19**	**51**	**26**	**4**
vii) Fax machines (Total No)		**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
viii) Scanners (Total No)		**8**	**13**	**40**	**29**	**2**
Annualised emissions (tonnes CO2e)		**3**	**5**	**15**	**11**	**1**
ix) Telephones (simple) (No)		**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
x) Telephones (smartphones and iphones, Total No)		**984**	**918**	**641**	**1 241**	**1 210**
Annualised emissions (tonnes CO2e)		**7**	**7**	**5**	**9**	**9**
xi) Fixed telephones (Total No)		**0**	**0**	**0**	**577**	**110**
Annualised emissions (tonnes CO2e)		**0**	**0**	**0**	**2**	**0**
xii) Informatics server (Total No)		**43**	**57**	**31**	**48**	**6**
Annualised emissions (tonnes CO2e)		**6**	**9**	**5**	**7**	**1**
xiii) Projectors (Total No)		**2**	**1**	**0**	0	2
Annualised emissions (tonnes CO2e)		**0,05**	**0,02**	**0,00**	**0,00**	**0,07**
xiv) Videoconference installations (Total No)		**74**	**38**	**13**	13	5
Annualised emissions (tonnes CO2e)		**9**	**5**	**2**	**2**	**1**
xv) Televisions (Total No)		**3**	**0**	**16**	0	6
Annualised emissions (tonnes CO2e)		**0,38**	**0,00**	**2,00**	**0,00**	**0,75**
xvi) Firewall router switch (from 2019), Total No		**152**	**169**	**166**	5	117
Annualised emissions (tonnes CO2e)		**3,07**	**3,41**	**3,35**	**0,10**	**2,36**
xvii) Tablet, classical 9 to 11 inch, (Total No)		**249**	**195**	**128**	171	127
Annualised emissions (tonnes CO2e)		**3,93**	**3,08**	**2,02**	**2,70**	**2,01**
Total annualised emissions (tonnes CO2e)		**2 274**	**539**	**770**	**621**	**795**

C) Fixed assets Furniture	2018	2019	2020	2021	2022	2023
i) Chairs (Units)	6318	7 678	12 160	203	8	2 777
CO2 emissions (tonnes CO2e)	163,85	199,12	315,35	5,26	0,21	72,02
ii) Desks (Units)	545	913	2 070	984	501	1209
CO2 emissions (tonnes CO2e)	38,23	64,05	145,21	69,03	35,15	84,81
iii) Tables (Units)	1218	1 222	1649	1 156	559	1 638

CO2 emissions (tonnes CO2e)		85,44	85,72	115,68	81,09	39,21	114,91
iv) Cupboards (Units)		650	819	1766	936	659	1968
CO2 emissions (tonnes CO2e)		589,55	742,83	1601,76	848,95	597,71	1784,98
v) Fridges (Units)		123	58	104	39	8	50
CO2 emissions (tonnes CO2e)		31,61	14,91	26,73	10,02	2,06	12,85
vi) Coffee machines (Units)		10	19	44	3	5	0
CO2 emissions (tonnes CO2e)		0,34	0,65	1,50	0,10	0,17	0,00
Total annualised emissions (tonnes CO2e)		909,02	1107,27	2206,22	1014,46	674,51	2069,56

Luxembourg

A) Fixed assets buildings, construction type		**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Not specified - offices (total, m^2)		**177 507**	**177 507**	**177 490**	**177 490**	**176 561**	**187 728**
Not specified - offices (amortised, m^2)		26 117	26 117	26 117	26 117	25 188	25 188
Annualised emissions (tonnes CO2e)		**3 280**	**3 280**	**3 280**	**3 280**	**3 280**	**3 522**
ii) Steel - industrial building (total, m^2)							
Steel - industrial building (amortised, m^2)							
Annualised emissions (tonnes CO2e)							
iii) Steel - parking underground (total, m^2)							
Steel - parking underground (amortised, m^2)							
Annualised emissions (tonnes CO2e)							
iv) Steel - restaurants (total, m^2)							
Steel - restaurants (amortised, m^2)							
Annualised emissions (tonnes CO2e)							
v) Concrete - industrial buildings (total, m^2)		**3 416**	**4 116**	**4 116**	**4 116**	**4 116**	**3 864**
Concrete - industrial buildings (amortised, m^2)							
Annualised emissions (tonnes CO2e)		**94**	**113**	**113**	**113**	**113**	**106**
vi) Concrete - parking underground (total, m^2)		**50 121**	**50 121**	**50 121**	**50 121**	**50 121**	**52 706**
Concrete - parking underground (amortised, m^2)		8 753	8 753	8 753	8 753	8 753	8 753
Annualised emissions (tonnes CO2e)		**905**	**905**	**905**	**905**	**905**	**961**
vii) Concrete - restaurants (total, m^2)							
Concrete - restaurants (amortised, m^2)							
Annualised emissions (tonnes CO2e)							
Total annualised emissions (tonnes CO2e)		**4 279**	**4 298**	**4 298**	**4 298**	**4 298**	**4 589**

B) Fixed assets IT		**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Desktop PC (Total No.)			**132**	**48**	**6**	**5**	**0**
Annualised emissions (tonnes CO2e)			**17**	**2**	**0,25**	**0,21**	**0,00**
ii) Docking stations (Total No)			**2 481**	**809**	**897**	**888**	**509**
Annualised emissions (tonnes CO2e)			**102**	**30**	**33**	**33**	**19**
iii) Flat screens (Total No)			**859**	**831**	**495**	**664**	**1 093**
Annualised emissions (tonnes CO2e)			**165**	**49**	**29**	**39**	**64**
iv) Laptop (Total No)			**95**	**741**	**891**	**1 385**	**1 180**
Annualised emissions (tonnes CO2e)			**4**	**29**	**35**	**54**	**46**
v) individual printers (Total No)			**1**	**0**	**1**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,03**	**0,00**	**0,03**	**0,00**	**0,00**
vi) Network printers and copiers (Total No)			**26**	**0**	**7**	**0**	**0**
Annualised emissions (tonnes CO2e)			**19**	**0**	**5**	**0**	**0**
vii) Fax machines (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
viii) Scanners (Total No)			**3**	**2**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**1,10**	**0,74**	**0,00**	**0,00**	**0,00**
ix) Telephones (simple) (No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
x) Telephones (smartphones and iphones, Total No)			**168**	**131**	**93**	**45**	**150**
Annualised emissions (tonnes CO2e)		**0,00**	**1,22**	**0,95**	**0,67**	**0,33**	**1,09**
xi) Fixed telephones (Total No)			**0**	**0**	**0**	**117**	**14**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,50**	**0,06**
xii) Informatics server (Total No)			**949**	**403**	**244**	**409**	**244**
Annualised emissions (tonnes CO2e)			**142**	**60**	**37**	**61**	**37**
xiii) Projectors (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiv) Videoconference installations (Total No)			**12**	**3**	**4**	**0**	**0**
Annualised emissions (tonnes CO2e)			**2**	**0**	**1**	**0**	**0**
xv) Televisions (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xvi) Firewall router switch (from 2019), Total No			**187**	**443**	**27**	**97**	**136**
Annualised emissions (tonnes CO2e)		**0,00**	**3,77**	**8,94**	**0,54**	**1,96**	**2,74**
xvii) Tablet, classical 9 to 11 inch, (Total No)			**24**	**48**	**28**	**22**	**13**
Annualised emissions (tonnes CO2e)		**0,00**	**0,38**	**0,76**	**0,44**	**0,35**	**0,21**

Total annualised emissions (tonnes CO2e)						
		457	182	141	191	170

C) Fixed assets Furniture	2018	2019	2020	2021	2022	2023
i) Chairs (Units)	330	512	1 963	406	731	357
CO2 emissions (tonnes CO2e)	8,56	13,28	50,91	10,53	18,96	9,26
ii) Desks (Units)	141	70	449	221	10	134
CO2 emissions (tonnes CO2e)	9,89	4,91	31,50	15,50	0,70	9,40
iii) Tables (Units)	49	48	58	12	28	47
CO2 emissions (tonnes CO2e)	3,44	3,37	4,07	0,84	1,96	3,30
iv) Cupboards (Units)	160	91	438	9	13	227
CO2 emissions (tonnes CO2e)	145,12	82,54	397,27	8,16	11,79	205,89
v) Fridges (Units)	2	16	2	2	3	2
CO2 emissions (tonnes CO2e)	0,51	4,11	0,51	0,51	0,77	0,51
vi) Coffee machines (Units)		5	0	1	1	0
CO2 emissions (tonnes CO2e)	0,00	0,17	0,00	0,03	0,03	0,00
Total annualised emissions (tonnes CO2e)	167,52	108,37	484,25	35,58	34,22	228,36

JRC Petten

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)	7 539	7 539	7 539	7 539	7 539	7 539
Not specified - offices (amortised, m^2)						
Annualised emissions (tonnes CO2e)	82	82	82	82	82	82
ii) Steel - industrial building (total, m^2)	4 246	4 246	4 246	4 246	4 246	4 246
Steel - industrial building (amortised, m^2)						
Annualised emissions (tonnes CO2e)	39	39	39	39	39	39
iii) Steel - parking underground (total, m^2)						
Steel - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iv) Steel - restaurants (total, m^2)						
Steel - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
v) Concrete - industrial buildings (total, m^2)	719	719	719	719	719	719
Concrete - industrial buildings (amortised, m^2)						
Annualised emissions (tonnes CO2e)	16,95	16,95	9,89	9,89	9,89	9,89
vi) Concrete - parking underground (total, m^2)						
Concrete - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vii) Concrete - restaurants (total, m^2)						
Concrete - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	138	138	130	130	130	130

B) Fixed assets IT	2018	2019	2020	2021	2022	2023
i) Desktop PC (Total No.)			2		6	
Annualised emissions (tonnes CO2e)	0	0	0	0	0	0
ii) Docking stations (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iii) Flat screens (Total No)						
Annualised emissions (tonnes CO2e)	0	0	0	0	0	0
iv) Laptop (Total No)			95	32	72	33
Annualised emissions (tonnes CO2e)	0	0	4	1	3	1
v) individual printers (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vi) Network printers and copiers (Total No)						
Annualised emissions (tonnes CO2e)	0	0	0	0	0	0
vii) Fax machines (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
viii) Scanners (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
ix) Telephones (simple) (No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
x) Telephones (smartphones and iphones, Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xi) Fixed telephones (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xii) Informatics server (Total No)						
Annualised emissions (tonnes CO2e)	0	0	0	0	0	0
xiii) Projectors (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00

xiv) Videoconference installations (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xv) Televisions (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xvi) Firewall router switch (from 2019), Total No						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xvii) Tablet, classical 9 to 11 inch, (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	0	0	4	1	3,07	1,29

C) Fixed assets Furniture	2018	2019	2020	2021	2022	2023
i) Chairs (Units)		26	18	0	5	6
CO2 emissions (tonnes CO2e)	0,00	0,67	0,47	0,00	0,13	0,16
ii) Desks (Units)		11	1	0	0	0
CO2 emissions (tonnes CO2e)	0,00	0,77	0,07	0,00	0,00	0,00
iii) Tables (Units)		1	0	6	0	1
CO2 emissions (tonnes CO2e)	0,00	0,07	0,00	0,42	0,00	0,07
iv) Cupboards (Units)		0	1	1	0	0
CO2 emissions (tonnes CO2e)	0,00	0,00	0,91	0,91	0,00	0,00
v) Fridges (Units)		0	0	0	0	0
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vi) Coffee machines (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	0,00	1,52	1,44	1,33	0,13	0,23

Note fixed assets furniture : For the displayed categories, only items with unitary value above 420 EUR are inventoried in the JRC. Moreover, the displayed categories do not take into acc

JRC Geel

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)	9 964	9 964	9 964	9 964	9 964	9 964
Not specified - offices (amortised, m^2)						
Annualised emissions (tonnes CO2e)	108	90	90	90	85	73
ii) Steel - industrial building (total, m^2)	1 630	1 632	1 633	1 632	1 632	1 632
Steel - industrial building (amortised, m^2)						
Annualised emissions (tonnes CO2e)	7,47	7,48	7,48	7,48	3,08	1,32
iii) Steel - parking underground (total, m^2)						
Steel - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iv) Steel - restaurants (total, m^2)						
Steel - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)						
v) Concrete - industrial buildings (total, m^2)	38 241	38 264	38 390	38 390	38 390	38 390
Concrete - industrial buildings (amortised, m^2)						
Annualised emissions (tonnes CO2e)	526	434	436	436	409	315
vi) Concrete - parking underground (total, m^2)						
Concrete - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)						
vii) Concrete - restaurants (total, m^2)	665	665	665	665	665	665
Concrete - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	6,09	6,09	6,09	6,09	6,09	6,09
Total annualised emissions (tonnes CO2e)	647	538	540	540	504	396

B) Fixed assets IT	2018	2019	2020	2021	2022	2023
i) Desktop PC (Total No.)	584	570	557	617	677	461
Annualised emissions (tonnes CO2e)	75	73	24	26	29	19
ii) Docking stations (Total No)	0	0	405	445	557	589
Annualised emissions (tonnes CO2e)	0,00	0,00	14,99	16,47	20,61	21,79
iii) Flat screens (Total No)	785	891	1000	1078	1154	1187
Annualised emissions (tonnes CO2e)	151	171	59	63	68	70
iv) Laptop (Total No)	172	174	386	342	687	408
Annualised emissions (tonnes CO2e)	55	7	15	13	27	16
v) individual printers (Total No)	70	59	65	17	20	19
Annualised emissions (tonnes CO2e)	1,93	1,83	2,02	0,53	0,62	0,59
vi) Network printers and copiers (Total No)	68	73	72	75	73	71
Annualised emissions (tonnes CO2e)	50	54	53	55	54	52
vii) Fax machines (Total No)	0,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
viii) Scanners (Total No)	3,00	3,00	2,00	2,00	3,00	2,00
Annualised emissions (tonnes CO2e)	1,10	1,10	0,74	0,74	1,10	0,73
ix) Telephones (simple) (No)	44	45	49	16,00	22,00	15,00
Annualised emissions (tonnes CO2e)	0,22	0,23	0,20	0,07	0,09	0,06

x) Telephones (smartphones and iphones, Total No)	22	22	45	45	50	49
Annualised emissions (tonnes CO2e)	0,17	0,16	0,33	0,33	0,36	0,36
xi) Fixed telephones (Total No)	762	762	762	785	791	801
Annualised emissions (tonnes CO2e)	3,24	3,24	3,24	3,34	3,36	3,40
xii) Informatics server (Total No)	130	74	44	43	43	41
Annualised emissions (tonnes CO2e)	83	11	7	6	6	6
xiii) Projectors (Total No)	27	29	30	30	30	29
Annualised emissions (tonnes CO2e)	0,63	0,68	0,71	0,71	1,09	1,05
xiv) Videoconference installations (Total No)	12,00	12,00	13,00	14,00	14,00	14,00
Annualised emissions (tonnes CO2e)	4,40	1,50	1,63	1,75	1,75	1,75
xv) Televisions (Total No)	60	60	63	60	65	62
Annualised emissions (tonnes CO2e)	22,00	7,50	7,89	7,51	8,14	7,77
xvi) Firewall router switch (from 2019), Total No	1 307	1 374	1 461	1 856	1 959	2 422
Annualised emissions (tonnes CO2e)	26,37	27,72	29,48	37,44	39,52	48,86
xvii) Tablet, classical 9 to 11 inches	0,00	0,00	10,00	10,00	6,00	15,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,16	0,16	0,09	0,24
Total annualised emissions (tonnes CO2e)	474	359	218	233	260	250

C) Fixed assets Furniture	2018	2019	2020	2021	2022	2023
i) Chairs (Units)	2			4		
CO2 emissions (tonnes CO2e)	0,05	0,00	0,00	0,10	0,00	0,00
ii) Desks (Units)	5	6	2		11	5
CO2 emissions (tonnes CO2e)	0,35	0,42	0,14	0,00	0,77	0,35
iii) Tables (Units)	2	3		1	3	
CO2 emissions (tonnes CO2e)	0,14	0,21	0,00	0,07	0,21	0,00
iv) Cupboards (Units)	4	1	2		5	
CO2 emissions (tonnes CO2e)	3,63	0,91	1,81	0,00	4,54	0,00
v) Fridges (Units)	1				1	
CO2 emissions (tonnes CO2e)	0,26	0,00	0,00	0,00	0,26	0,00
vi) Coffee machines (Units)					10	
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,34	0,00
Total annualised emissions (tonnes CO2e)	4,43	1,54	1,95	0,17	6,11	0,35

Note fixed assets furniture: For the displayed categories, only items with unitary value above 420 EUR are inventoried in the JRC. Moreover, the displayed categories do not take into acc

JRC Karlsruhe

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)	8 500	8 500	8 500	8 500	8 500	8 500
Not specified - offices (amortised, m^2)						
Annualised emissions (tonnes CO2e)	111	111	111	111	111	111
ii) Steel - industrial building (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Steel - industrial building (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iii) Steel - parking underground (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Steel - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iv) Steel - restaurants (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Steel - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
v) Concrete - industrial buildings (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Concrete - industrial buildings (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vi) Concrete - parking underground (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Concrete - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vii) Concrete - restaurants (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Concrete - restaurants (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	111	111	111	111	111	111

B) Fixed assets IT	2018	2019	2020	2021	2022	2023
i) Desktop PC (Total No.)	33	59	60		1	
Annualised emissions (tonnes CO2e)	4	8	3			
ii) Docking stations (Total No)						
Annualised emissions (tonnes CO2e)						
iii) Flat screens (Total No)						
Annualised emissions (tonnes CO2e)						
iv) Laptop (Total No)	15	33	139	59	49	
Annualised emissions (tonnes CO2e)	4,80	1,29	5,43	2,30	1,91	0,00
v) individual printers (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00

vi) Network printers and copiers (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vii) Fax machines (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
viii) Scanners (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
ix) Telephones (simple) (No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
x) Telephones (smartphones and iphones, Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xi) Fixed telephones (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xii) Informatics server (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xiii) Projectors (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xiv) Videoconference installations (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xv) Televisions (Total No)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xvi) Firewall router switch (from 2019), Total No						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
xvii) Tablet, classical 9 to 11 inches						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	9,03	8,85	8	2	2	0

C) Fixed assets Furniture	2018	2019	2020	2021	2022	2023
i) Chairs (Units)		2			5	1
CO2 emissions (tonnes CO2e)	0,00	0,05	0,00	0,00	0,13	0,03
ii) Desks (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iii) Tables (Units)						6
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,42
iv) Cupboards (Units)		3			21	5
CO2 emissions (tonnes CO2e)	0,00	2,72	0,00	0,00	19,05	4,54
v) Fridges (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vi) Coffee machines (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	0,00	2,77	0,00	0,00	19,18	4,98

Note fixed assets furniture : For the displayed categories, only items with unitary value above 420 EUR are inventoried in the JRC. Moreover, the displayed categories do not take into acc

JRC Seville

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)	0,00	0,00	5 898	5 926	5 926	5 926
Not specified - offices (amortised, m^2)					0,00	5.926
Annualised emissions (tonnes CO2e)	0,00	0,00	77	77	77	0
ii) Steel - industrial building (total, m^2)	0,00	0,00	424	424	424	424
Steel - industrial building (amortised, m^2)					0,00	424
Annualised emissions (tonnes CO2e)	0,00	0,00	3,89	3,89	3,89	0,00
iii) Steel - parking underground (total, m^2)	0,00	0,00	1 376	1 376	1 376	1 376
Steel - parking underground (amortised, m^2)					0,00	1.376
Annualised emissions (tonnes CO2e)	0,00	0,00	6,05	6,05	6,05	0,00
iv) Steel - restaurants (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Steel - restaurants (amortised, m^2)					0,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
v) Concrete - industrial buildings (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Concrete - industrial buildings (amortised, m^2)					0,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vi) Concrete - parking underground (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Concrete - parking underground (amortised, m^2)					0,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vii) Concrete - restaurants (total, m^2)	0,00	0,00	0,00	0,00	0,00	0,00
Concrete - restaurants (amortised, m^2)					0,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	0,00	0,00	87	87	87	0

B) Fixed assets IT	2018	2019	2020	2021	2022	2023
i) Desktop PC (Total No.)	0,00	0,00	0,00	0,00	1,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,04	0,00

ii) Docking stations (Total No)		0,00	0,00	0,00	0,00	228,00	124,00
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	8,44	4,59
iii) Flat screens (Total No)		123,00	0,00	98,00	50,00	139,00	249,00
Annualised emissions (tonnes CO2e)		23,59	0,00	5,75	2,93	8,16	14,61
iv) Laptop (Total No)		134,00	137,00	147,00	25,00	230,00	137,00
Annualised emissions (tonnes CO2e)		42,88	5,34	5,74	0,98	8,98	5,35
v) individual printers (Total No)		2,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,06	0,00	0,00	0,00	0,00	0,00
vi) Network printers and copiers (Total No)		18,00	1,00	0,00	0,00	1,00	0,00
Annualised emissions (tonnes CO2e)		13,23	0,74	0,00	0,00	0,73	0,00
vii) Fax machines (Total No)		0,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
viii) Scanners (Total No)		0,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
ix) Telephones (simple) (No)		0,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
x) Telephones (smartphones and iphones, Total No)		44,00	8,00	1,00	1,00	2,00	15,00
Annualised emissions (tonnes CO2e)		0,33	0,06	0,01	0,01	0,01	0,11
xi) Fixed telephones (Total No)		0,00	0,00	8,00	8,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,00	0,03	0,03	0,00	0,00
xii) Informatics server (Total No)		1,00	2,00	0,00	5,00	3,00	8,00
Annualised emissions (tonnes CO2e)		0,64	0,30	0,00	0,75	0,45	1,20
xiii) Projectors (Total No)		3,00	1,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,07	0,02	0,00	0,00	0,00	0,00
xiv) Videoconference installations (Total No)		0,00	1,00	4,00	0,00	16,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,13	0,50	0,00	2,00	0,00
xv) Televisions (Total No)		0,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
xvi) Firewall router switch (from 2019), Total No		0,00	35,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)		0,00	0,71	0,00	0,00	0,00	0,00
xvii) Tablet, classical 9 to 11 inches		0,00	5,00	0,00	4,00	1,00	7,00
Annualised emissions (tonnes CO2e)		0,00	0,08	0,00	0,06	0,02	0,11
Total annualised emissions (tonnes CO2e)		80,79	7,37	12	5	29	26

C) Fixed assets Furniture		2018	2019	2020	2021	2022	2023
i) Chairs (Units)					163	36	
CO2 emissions (tonnes CO2e)		0,00	0,00	0,00	4,23	0,93	0,00
ii) Desks (Units)							
CO2 emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
iii) Tables (Units)						3	
CO2 emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,21	0,00
iv) Cupboards (Units)							
CO2 emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
v) Fridges (Units)							
CO2 emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
vi) Coffee machines (Units)							
CO2 emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)		0,00	0,00	0,00	4,23	1,14	0,00

Note fixed assets furniture : For the displayed categories, only items with unitary value above 420 EUR are inventoried in the JRC. Moreover, the displayed categories do not take into acc

JRC Ispra

A) Fixed assets buildings, construction type		2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)		156 736	137 763	138 989	143 712	164 565	164 655
Not specified - offices (amortised, m^2)						15 586	16 085
Annualised emissions (tonnes CO2e)		2 038	1 791	1 807	1 868	1 937	1 931
ii) Steel - industrial building (total, m^2)		634	2 536	2 536	2 536	2 536	2 536
Steel - industrial building (amortised, m^2)						0	0
Annualised emissions (tonnes CO2e)		5,81	23,25	23,25	23,25	23,25	23,25
iii) Steel - parking underground (total, m^2)		0,00	0,00	0,00	0,00	0,00	0,00
Steel - parking underground (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
iv) Steel - restaurants (total, m^2)		0,00	0,00	0,00	0,00	0,00	0,00
Steel - restaurants (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
v) Concrete - industrial buildings (total, m^2)		98 547	83 582	84 757	53 898	92 438	92 473
Concrete - industrial buildings (amortised, m^2)						43 481	43 516
Annualised emissions (tonnes CO2e)		1 626	1 379	1 398	889	808	808
vi) Concrete - parking underground (total, m^2)		0,00	0,00	0,00	0,00	0,00	0,00
Concrete - parking underground (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00

vii) Concrete - restaurants (total, m^2)	5 796	5 796	5 796	5 737	5 796	5 796
Concrete - restaurants (amortised, m^2)					59	59
Annualised emissions (tonnes CO2e)	64	64	64	63	63	63
Total annualised emissions (tonnes CO2e)	3 733	3 257	3 292	2 844	2 831	2 826

B) Fixed assets IT	2018	2019	2020	2021	2022	2023
i) Desktop PC (Total No.)	242	246	378	47	102	42
Annualised emissions (tonnes CO2e)	31	32	16	2	4	2
ii) Docking stations (Total No)	191	362	273	415	1 298	1 008
Annualised emissions (tonnes CO2e)	8	15	10	15	48	37
iii) Flat screens (Total No)	428	243	848	84	676	1 052
Annualised emissions (tonnes CO2e)	82	47	50	5	40	62
iv) Laptop (Total No)	137	295	975	782	1 484	331
Annualised emissions (tonnes CO2e)	44	12	38	31	58	13
v) individual printers (Total No)	3	6			2	
Annualised emissions (tonnes CO2e)	0	0	0	0	0	0
vi) Network printers and copiers (Total No)	7	210	12	5	5	0
Annualised emissions (tonnes CO2e)	5	154	9	4	4	0
vii) Fax machines (Total No)	0	0	0	0	0	0
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
viii) Scanners (Total No)	3	3	2	0	2	0
Annualised emissions (tonnes CO2e)	1,10	1,10	0,74	0,00	0,73	0,00
ix) Telephones (simple) (No)	0,00	0,00	0,00	0,00	0,00	0,00
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
x) Telephones (smartphones and iphones, Total No)	21	17	57	5	18	27
Annualised emissions (tonnes CO2e)	0,16	0,12	0,41	0,04	0,13	0,20
xi) Fixed telephones (Total No)	3	0	0	2	0	0
Annualised emissions (tonnes CO2e)	0,01	0,00	0,00	0,01	0,00	0,00
xii) Informatics server (Total No)	132	140	115	135	64	71
Annualised emissions (tonnes CO2e)	85	21	17	20	10	11
xiii) Projectors (Total No)	11	14	10			1
Annualised emissions (tonnes CO2e)	0,26	0,33	0,24	0,00	0,00	0,04
xiv) Videoconference installations (Total No)	0	17	76	11	0	3
Annualised emissions (tonnes CO2e)	0	2	10	1	0	0
xv) Televisions (Total No)	17	101	63	4	4	12
Annualised emissions (tonnes CO2e)	6	13	8	1	1	2
xvi) Firewall router switch (from 2019), Total No	75	35	68	28	26	51
Annualised emissions (tonnes CO2e)	1,51	0,71	1,37	0,56	0,52	1,03
xvii) Tablet, classical 9 to 11 inches	2,00	20,00	3	29	8	26
Annualised emissions (tonnes CO2e)	0,00	0,32	0,05	0,46	0,13	0,41
Total annualised emissions (tonnes CO2e)	264	297	160	80	165	128

C) Fixed assets Furniture	2018	2019	2020	2021	2022	2023
i) Chairs (Units)		40	79	32	89	1
CO2 emissions (tonnes CO2e)	0,00	1,04	2,05	0,83	2,31	0,03
ii) Desks (Units)		4	10			1
CO2 emissions (tonnes CO2e)	0,00	0,28	0,70	0,00	0,00	0,07
iii) Tables (Units)		105	72	19	54	1
CO2 emissions (tonnes CO2e)	0,00	7,37	5,05	1,33	3,79	0,07
iv) Cupboards (Units)		14	27	99	5	57
CO2 emissions (tonnes CO2e)	0,00	12,70	24,49	89,79	4,54	51,70
v) Fridges (Units)		1	3	2	2	2
CO2 emissions (tonnes CO2e)	0,00	0,26	0,77	0,51	0,51	0,51
vi) Coffee machines (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	0,00	21,64	33,06	92,47	11,15	52,38

Note fixed assets furniture : For the displayed categories, only items with unitary value above 420 EUR are inventoried in the JRC. Moreover, the displayed categories do not take into acc

Grange

	2018	2019	2020	2021	2022	2023
i) Not specified - offices (total, m^2)	9 910	9 910	9 910	9 910	9 910	9 910
Not specified - offices (amortised, m^2)						
Annualised emissions (tonnes CO2e)	215	215	215	215	215	184
ii) Steel - industrial building (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Steel - industrial building (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iii) Steel - parking underground (total, m^2)	0,00	0,00	0,00	0,00	0,00	
Steel - parking underground (amortised, m^2)						
Annualised emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iv) Steel - restaurants (total, m^2)	100	100	100	100	100	

Steel - restaurants (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,61	0,61	0,61	0,61	0,61	0,00
v) Concrete - industrial buildings (total, m^2)		0,00	0,00	0,00	0,00	0,00	
Concrete - industrial buildings (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
vi) Concrete - parking underground (total, m^2)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	
Concrete - parking underground (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
vii) Concrete - restaurants (total, m^2)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	
Concrete - restaurants (amortised, m^2)							
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)		**215**	**215**	**215**	**215**	**215**	**184**

B) Fixed assets IT		**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Desktop PC (Total No.)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0	0	0	0	0	0
ii) Docking stations (Total No)			**145**	**0**	**48**	**34**	**10**
Annualised emissions (tonnes CO2e)		0,00	5,98	0,00	1,78	1,26	0,37
iii) Flat screens (Total No)			**46**	**50**	**3**	**31**	**0**
Annualised emissions (tonnes CO2e)		0,00	8,82	2,93	0,18	1,82	0,00
iv) Laptop (Total No)			**0**	**21**	**25**	**19**	**68**
Annualised emissions (tonnes CO2e)		0	0	1	1	1	3
v) individual printers (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
vi) Network printers and copiers (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
vii) Fax machines (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
viii) Scanners (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
ix) Telephones (simple) (No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
x) Telephones (smartphones and iphones, Total No)			**6**	**1**	**0**	**1**	**4**
Annualised emissions (tonnes CO2e)		0,00	0,04	0,01	0,00	0,01	0,03
xi) Fixed telephones (Total No)			**0**	**0**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
xii) Informatics server (Total No)			**1**	**2**	**0**	**0**	**0**
Annualised emissions (tonnes CO2e)		0,00	0,15	0,30	0,00	0,00	0,00
xiii) Projectors (Total No)			**0**	**0**	**0**	0	0
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
xiv) Videoconference installations (Total No)			**0**	**0**	**1**	0	0
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,13	0,00	0,00
xv) Televisions (Total No)			**0**	**0**	**0**	0	0
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
xvi) Firewall router switch (from 2019), Total No			**0**	**0**	**0**	0	0
Annualised emissions (tonnes CO2e)		0,00	0,00	0,00	0,00	0,00	0,00
xvii) Tablet, classical 9 to 11 inches			**1**	**0**	**0**	0	1
Annualised emissions (tonnes CO2e)		0,00	0,02	0,00	0,00	0,00	0,02
Total annualised emissions (tonnes CO2e)		**0**	**15**	**4**	**3**	**4**	**3**

C) Fixed assets Furniture	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Chairs (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
ii) Desks (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iii) Tables (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
iv) Cupboards (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
v) Fridges (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
vi) Coffee machines (Units)						
CO2 emissions (tonnes CO2e)	0,00	0,00	0,00	0,00	0,00	0,00
Total annualised emissions (tonnes CO2e)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

Annex 4 - Emissions from Refrigerant loss

Brussels refrigerant loss

Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R410A		99	129	126	25	105	153	80	136	95	56
as t CO2e		**190**	**248**	**241**	**47**	**202**	**293**	**153**	**261**	**181**	**108**
R134A		65	80	407	254	145	18	294	581	218	216
as t CO2e		**85**	**104**	**529**	**330**	**189**	**23**	**382**	**755**	**283**	**281**
R407C		181	176	310	108	226	153	211	91	166	124
as t CO2e		**293**	**285**	**501**	**175**	**366**	**248**	**342**	**148**	**269**	**201**
R417A		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**11,50**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ISCEON 89		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**19,03**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R407D		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**8,14**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R404A		64	32	11	50	13	29,00	0,00	0,00	9,60	25,80
as t CO2e		**253**	**126**	**43**	**197**	**52**	**114,26**	**0,00**	**0,00**	**37,82**	**101,65**
R452A		0,00	0,00	0,00	0,00	0,00	3,20	31,80	0,00	2,80	3,50
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**71,20**	**0,00**	**5,99**	**7,49**
R449A		0,00	0,00	0,00	0,00	0,00	0,00	0,00	21,10	14,10	9,10
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**29,48**	**19,70**	**12,71**
Total (t CO2e)		**821**	**763**	**1 315**	**749**	**847**	**677**	**876**	**1 163**	**771**	**711**

Note GHGs R417a, R32, R1234ze and R513a are used but no losses reported

Luxembourg refrigerant loss

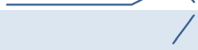
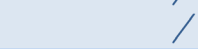
Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R410A		0,00	11,95	6,25	13,65	13,50	1,50	0,00	2,75	0,00	0,00
as t CO2e		**0,00**	**22,94**	**12,00**	**26,21**	**25,92**	**2,88**	**0,00**	**5,28**	**0,00**	**0,00**
R134A		0,00	234,40	14,52	4,21	87,33	56,27	137,70	201,00	15,50	128,50
as t CO2e		**0,00**	**304,72**	**18,88**	**5,47**	**113,53**	**73,15**	**179,01**	**261,30**	**20,15**	**167,05**
R404A		0,00	17,66	12,70	18,40	13,00	3,20	8,00	17,57	13,30	2,87
as t CO2e		**0,00**	**69,58**	**50,04**	**72,50**	**51,22**	**12,61**	**31,52**	**69,24**	**52,40**	**11,31**
R407C		0,00	5,85	2,50	2,60	0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**9,48**	**4,05**	**4,21**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ISCEON 89		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**19,03**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R407D		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**8,14**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R449A								0,00	0,00	4,80	0,00
as t CO2e								**0,00**	**0,00**	**6,71**	**0,00**
Total (t CO2e)		**0,00**	**406,72**	**84,96**	**108,39**	**217,83**	**88,64**	**210,53**	**335,82**	**79,26**	**178,36**

JRC Petten refrigerant loss

Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R410A		0,00	0,00	40	23	0,00	15	1,25	14,81	14,00	12,65
as t CO2e		**0,00**	**0,00**	**76**	**44**	**0,00**	**28**	**2,40**	**28**	**27**	**24**
R407C		6,75	0,00	2,96	0,00	0,00	8,60	0,00	0,00	26	0
as t CO2e		**10,94**	**0,00**	**4,80**	**0,00**	**0,00**	**13,93**	**0,00**	**0,00**	**42**	**0**
R507A		0,00	5,00	0,00	17	8,47	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**11,20**	**0,00**	**38**	**18,97**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ISCEON 89		0,00	0,00	0,00	0	5,00	0,00	0,00	0,00	0,00	0,00

as t CO2e		**0,00**	**0,00**	**0,00**	**0**	**19,03**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R407D		0,00	0,00	0,00	0	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0**	**8,14**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total (t CO2e)		**10,94**	**11,20**	**81**	**82**	**46**	**42**	**2,40**	**28**	**69**	**24**

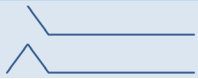
JRC Geel refrigerant loss

Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R410A		2,60	1,43	2,02	5,08	4,45	0,00	3,74	33,25	0,00	0,56
as t CO2e		**4,99**	**2,75**	**3,88**	**9,75**	**8,54**	**0,00**	**7,18**	**63,84**	**0,00**	**1,08**
R134A		8,00	0,00	13,66	6,95	25,66	0,00	0,00	2,00	8,09	0,00
as t CO2e		**10,40**	**0,00**	**17,76**	**9,04**	**33,36**	**0,00**	**0,00**	**2,60**	**10,52**	**0,00**
R404A		46	15,21	8,31	8,49	0,00	5,89	0,00	0,00	0,00	0,00
as t CO2e		**180,45**	**59,93**	**32,74**	**33,45**	**0,00**	**23,21**	**0,00**	**0,00**	**0,00**	**0,00**
R407C		0,00	13,55	0,00	0,00	6,42	0,00	0,00	0,00	0,00	5,61
as t CO2e		**0,00**	**21,95**	**0,00**	**0,00**	**10,40**	**0,00**	**0,00**	**0,00**	**0,00**	**9,09**
R507A		0,00	0,00	0,00	0,55	7,52	37,85	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**1,23**	**16,84**	**84,78**	**0,00**	**0,00**	**0,00**	**0,00**
R227A		0,00	0,00	0,00	0,00	0,00	49,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**129,36**	**0,00**	**0,00**	**0,00**	**0,00**
RSF_6		0,00	0,00	0,23	0,23	0,00	1,71	4,50	2,93	0,97	0,88
as t CO2e		**0,00**	**0,00**	**5,41**	**5,41**	**0,00**	**40,19**	**105,75**	**68,86**	**22,80**	**20,68**
ISCEON 89		0,00	0,00	0,00	0,00	7,54	0,003	8,00	14,05	2,75	0,30
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**28,69**	**0,01**	**30,44**	**53,46**	**10,46**	**1,14**
R449A		0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,41	11,86	1,10
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**6,16**	**16,57**	**1,54**
R32										2,02	2,40
as t CO2e										**1,37**	**1,62**
Total (t CO2e)		**196**	**85**	**60**	**59**	**98**	**278**	**143**	**195**	**62**	**35**

JRC Karlsruhe refrigerant loss

Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R22		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R410A		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R134A		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total (t CO2e)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

JRC Seville refrigerant loss

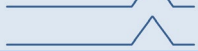
Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R134A			36	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**47**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ISCEON 89		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**19,03**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R407D		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	3,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**8,14**	**0,00**	**0,00**	**0,00**	**4,88**	**0,00**
Total (t CO2e)		**0,00**	**47**	**0,00**	**0,00**	**27**	**0,00**	**0,00**	**0,00**	**4,88**	**0,00**

JRC Ispra refrigerant loss

Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R410A		4,30	6,45	18,86	11,09	3,65	22	6,90	38	0,00	

as t CO2e		**8,26**	**12,38**	**36**	**21**	**7,01**	**41**	**13,25**	**72**	**0,00**	**0,00**
R134A		60	0,00	360	30	0,00	0,00	138	187	48	30
as t CO2e		**78**	**0,00**	**468**	**39**	**0,00**	**0,00**	**179**	**243**	**62**	**39**
R404A		0,00	4,10	0,00	25	0,00	0,00	5,50	0,00	0,00	
as t CO2e		**0,00**	**16,15**	**0,00**	**99**	**0,00**	**0,00**	**22**	**0,00**	**0,00**	**0,00**
R407C		3,59	4,00	48	1,30	2,05	0,00	64	0,00	0,00	
as t CO2e		**5,82**	**6,48**	**77**	**2,11**	**3,32**	**0,00**	**104**	**0,00**	**0,00**	**0,00**
R507A		0,00	0,00	370	0,00	0,00	0,00	99	0,00	0,00	
as t CO2e		**0,00**	**0,00**	**829**	**0,00**	**0,00**	**0,00**	**222**	**0,00**	**0,00**	**0,00**
R23		0,00	31	0,00	0,00	0,00	13,40	0,00	0,00	0,00	
as t CO2e		**0,00**	**384**	**0,00**	**0,00**	**0,00**	**166**	**0,00**	**0,00**	**0,00**	**0,00**
R508B		0,00	6,80	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
as t CO2e		**0,00**	**91**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R227A		0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
as t CO2e		**0,00**	**2,64**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ISCEON 89		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**19,03**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R407D		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**8,14**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total (t CO2e)		**92**	**513**	**1.410**	**161**	**37**	**208**	**540**	**315**	**62**	**39**

DG SANTE at GRANGE refrigerant loss

Refrigerant loss (kg)	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
R404A		0,00	0,00	0,00	0,00	0,00	0,00	2,00	2,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**7,88**	**7,88**	**0,00**	**0,00**
R407C			2,65	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**4,29**	**0,00**	**0,00**	**6,48**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ISCEON 89		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**19,03**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R407D		0,00	0,00	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**8,14**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
R459A		0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,80	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**3,91**	**0,00**	**0,00**
Total (t CO2e)		**0,00**	**4,29**	**0,00**	**0,00**	**34**	**0,00**	**7,88**	**11,79**	**0,00**	**0,00**

NO_x, CO_2 total emissions from Ispra trigeneration plant

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
NOx (kg)		28 498	37 292	33 507	32 317	21 962	37 322	24 450	26 040	29 100	18 230
CO (kg)		46 835	48 489	51 800	37 376	30 887	46 093	25 240	24 800	32 450	9 150
NH3 (kg)		-	-	-	-	-	-	-	-	140	720

NO_x total emissions (tonnes) at JRC Petten

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
NOx (tonnes)		0,56	0,61	0,56	0,43	0,45	0,42	0,23	0,24	0,17	0,24

Total air emissions buildings (tonnes) as minimum (SO2, NOx, PM10) at JRC-Geel

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total air emissions buildings (tonnes) as minimum (SO_2, NO_x, PM_{10})	0,791	0,436	0,47	0,447	0,434	0,42	0,444	0,425	0,482	0,342	0,255

JRC Geel Atmospheric emissions containing α emitting aerosols

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
α aerosols (kBq)	0,90	2,30	0,80	1,10	1,50	1,40	1,40	0,50	1,10	1,00	1,00

JRC Karlsruhe exhaust air: Aerosols declaration to authorities (Bq/y)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beta AE	43 300	130 000	297 000	619 000	15 100	2 850	22 000			12 600	
Alpha AE				500							

JRC Ispra gaseous and liquid discharge %

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Gaseous	0,21	0,18	0,19	0,45	0,25	5,70	0,13	0,11	0,11	0,14	0,06
Liquid	0,04	0,05	0,00	0,01	0,02	0,01	0,02	0,62	0,89	0,85	0,73

Annex 5 - Biodiversity and emissions from food, service contracts and paper

BIODIVERSITY

Total use of land (m^2)

Site	Trend 2020-23	2020	2021	2022	2023
Brussels		285 928	285 928	241 966	241 966
m2/p		**9,56**	**9,34**	**7,82**	**7,82**
Luxembourg		138 339	138 339	138 339	138 322
m2/p		**26**	**25**	**24**	**24**
JRC Petten		332 500	332 500	332 500	332 500
m2/p		**1 346**	**1 385**	**1 446**	**1 446**
JRC Geel		380 316	380 316	380 316	380316
m2/p		**1 430**	**1 446**	**1 441**	**1 441**
JRC Karlsruhe		72 000	72 000	72 000	72 000
m2/p		**233**	**236**	**235**	**235**
JRC Seville		12 094	12 094	12 094	12 094
m2/p		**32**	**31**	**30**	**30**
JRC Ispra		1 592 231	1 592 231	1 592 231	1 592 231
m2/p		**660**	**643**	**638**	**638**
Grange		90 000	90 000	90 000	90 000
m2/p		**520**	**506**	**495**	**495**
Commission		**2 903 408**	**2 907 184**	**2 863 268**	**2 863 251**
m2/p		**75**	**73**	**71**	**68**

Total sealed area (m^2)

Site	Trend 2020-23	2020	2021	2022	2023
Brussels		181 864	181 864	163 031	155 257
m2/p		**6,08**	**5,94**	**5,27**	**5,02**
Luxembourg		104 029	104 029	104 029	104 830
m2/p		**19,85**	**18,71**	**18,26**	**18,40**
JRC Petten		59 909	59 909	59 909	59 909
m2/p		**243**	**250**	**260**	**260**
JRC Geel		70 512	72 110	72 110	72 110
m2/p		**265**	**274**	**273**	**273**
JRC Karlsruhe		72 000	72 000	72 000	72 000
m2/p		**233**	**236**	**235**	**235**
JRC Seville		23 487	23 487	23 487	23 487
m2/p		**61**	**60**	**58**	**58**
JRC Ispra		650 028	644 657	642 116	642 116
m2/p		**270**	**260**	**257**	**257**
Grange		18 000	18 000	18 000	18 000
m2/p		**104**	**101**	**99**	**99**
Commission		**1 179 830**	**1 177 161**	**1 155 790**	**1 148 817**
m2/p		**30**	**29**	**29**	**27**

Nature oriented area onsite (m^2)

Site	Trend 2020-23	2020	2021	2022	2023
Brussels		104 064	104 064	78 935	86 709
m2/p		**3,48**	**3,40**	**2,55**	**2,80**
Luxembourg		34 310	34 310	34 310	33 492
m2/p		**6,55**	**6,17**	**6,02**	**5,88**
JRC Petten		75 591	75 591	75 591	75 591
m2/p		**306**	**315**	**329**	**329**
JRC Geel		309 804	308 206	308 206	308 206
m2/p		**1 165**	**1 172**	**1 167**	**1 167**
JRC Karlsruhe		162 000	162 000	162 000	162 000
m2/p		**524**	**531**	**529**	**529**
JRC Seville		4 994	4 994	4 994	4 994
m2/p		**13**	**13**	**12**	**12**
JRC Ispra		942 203	948 492	951 033	951 033
m2/p		**391**	**383**	**381**	**381**
Grange		18 250	18 250	18 250	18 250
m2/p		**105**	**103**	**100**	**100**
Commission		**1 651 215**	**1 658 331**	**1 635 747**	**1 642 703**
m2/p		**42**	**41**	**40**	**39**

Nature oriented area offsite (m^2)

Site	Trend 2020-23	2020	2021	2022	2023
Brussels		0	0	0	0
m2/p		**0,00**	**0,00**	**0,00**	**0,00**
Luxembourg		0	0	0	0
m2/p		**0,00**	**0,00**	**0,00**	**0,00**
JRC Petten		197 000	197 000	197 000	197 000
m2/p		**798**	**821**	**857**	**857**
JRC Geel		0	0	0	0
m2/p		**0,00**	**0,00**	**0,00**	**0,00**
JRC Karlsruhe		0	0	0	0
m2/p		**0,00**	**0,00**	**0,00**	**0,00**
JRC Seville		0	0	0	0
m2/p		**0,00**	**0,00**	**0,00**	**0,00**
JRC Ispra		0	0	0	0
m2/p		**0,00**	**0,00**	**0,00**	**0,00**
Grange		18 000	18 000	18 000	18 000
m2/p		**104**	**101**	**99**	**99**
Commission		**215 000**	**215 821**	**215 857**	**215 857**
m2/p		**5,52**	**5,39**	**5,33**	**5,13**

FOOD/CATERING

Brussels

A) Catering consumption (tonnes)		Trend 2018-23	2018	2019	2020	2021	2022	2023
i) Beef	tonnes		0,00	70	19,72	2,17	15,18	15,28
as t CO2e			**0,00**	**1 991**	**564**	**62**	**434**	**516**
ii) Pork	tonnes		0,00	82	23	2,54	17,80	19,25
as t CO2e			**0,00**	**481**	**136**	**14,98**	**105**	**180**
iii) Chicken	tonnes		0,00	106	30	3,29	23	17,29
as t CO2e			**0,00**	**502**	**142**	**15,64**	**109**	**77**
iv) Fish	tonnes		0,00	63,0	17,85	1,96	13,74	27
as t CO2e			**0,00**	**604,17**	**164,58**	**18,10**	**126,72**	**296**
v) Milk	tonnes		0,00	50	14,28	1,00	9,00	65
as t CO2e			**0,00**	**61**	**17,42**	**1,22**	**10,98**	**97**
vi) Other dairy (avg yoghurt/butter	tonnes		0,00	28	7,82	0,70	6,33	43
as t CO2e			**0,00**	**171**	**48**	**4,35**	**39**	**384**
vii) Coffee	tonnes		0,00	13,8	3,91	0,27	2,46	16,59
as t CO2e			**0,00**	**43**	**12,28**	**0,86**	**7,73**	**156**
viii) Lamb	kg							36
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	1,45
ix) Veal	kg							27
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,46**
x) Fruits	kg							**71.691**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**42**
xi) Vegetables	kg							**73.455**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**62**
xii) Bread	kg							**41.904**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**29**
xiii) Pasta	kg							**23.445**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**50**
xiv) Rice	kg							**7.764**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**21**
TOTAL CO2e			**0**	**3.852**	**1.085**	**117**	**833**	**1.914**

Luxembourg

A) Catering consumption (tonnes)		Trend 2018-23	2018	2019	2020	2021	2022	2023
i) Beef	tonnes		0,00	11,60	3,60	1,67	5,44	6,60
as t CO2e			**0,00**	**331,76**	**102,85**	**47,82**	**155,53**	**223**
ii) Pork	tonnes		0,00	13,60	3,00	0,85	3,64	5,62
as t CO2e			**0,00**	**80,10**	**17,67**	**5,02**	**21,43**	**52,58**
iii) Chicken	tonnes		0,00	17,60	3,46	2,30	3,07	5,80
as t CO2e			**0,00**	**83,60**	**16,42**	**10,92**	**14,59**	**25,94**
iv) Fish	tonnes		0,00	10,50	5,00	2,73	4,80	4,38
as t CO2e			**0,00**	**100,70**	**46,10**	**25,12**	**44,22**	**48,00**
v) Milk	tonnes		0,00	8,40	7,22	4,91	8,56	8,44
as t CO2e			**0,00**	**10,25**	**8,80**	**5,99**	**10,45**	**12,58**
vi) Other dairy (avg yoghurt/butter	tonnes		0,00	4,60	2,42	5,66	9,47	11,04
as t CO2e			**0,00**	**28,45**	**14,98**	**34,99**	**58,57**	**99**
vii) Coffee	tonnes		0,00	2,30	1,95	0,63	2,30	2,24
as t CO2e			**0,00**	**7,22**	**6,12**	**1,99**	**7,22**	**21,04**
viii) Lamb	kg						715,00	172
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**28,75**	**6,92**
ix) Veal	kg						1.381,00	1.781
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**23,60**	**30**
x) Fruits	kg						7.968,00	17.746
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**4,69**	**10,45**
xi) Vegetables	kg						51.459,00	84.576
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**43,54**	**71,56**
xii) Bread	kg						7.315,00	8.605
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**5,04**	**5,93**
xiii) Pasta	kg						2.570,00	2.298
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**5,51**	**4,93**
xiv) Rice	kg						1.488,00	1.837
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**4,10**	**5,06**
TOTAL CO2e			**0**	**642**	**213**	**132**	**427**	**617**

JRC Petten

A) Catering consumption (tonnes)		Trend 2018-23	2018	2019	2020	2021	2022	2023
i) Beef	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ii) Pork	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iii) Chicken	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Fish	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Milk	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vi) Other dairy (avg yoghurt/butter	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Coffee	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
viii) Lamb	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Veal	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
x) Fruits	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Vegetables	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xii) Bread	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

xiii) Pasta	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiv) Rice	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e			**0**	**0**	**0**	**0**	**0**	**0**

Note: There is no dedicated JRC Petten canteen within the site boundary

JRC Geel

A) Catering consumption (tonnes)		**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Beef	tonnes		0,47	0,44	0,23	0,18	0,54	0,48
as t CO2e			**13,47**	**12,53**	**6,58**	**5,28**	**15,41**	**16,14**
ii) Pork	tonnes		0,44	0,48	0,23	0,14	0,22	0,44
as t CO2e			**2,59**	**2,80**	**1,38**	**0,83**	**1,32**	**4,09**
iii) Chicken	tonnes		0,60	0,49	0,16	0,12	0,33	0,42
as t CO2e			**2,86**	**2,30**	**0,77**	**0,56**	**1,57**	**1,89**
iv) Fish	tonnes		1,02	0,70	0,32	0,11	0,32	0,73
as t CO2e			**9,79**	**6,71**	**2,98**	**1,04**	**2,96**	**8,03**
v) Milk	tonnes		0,42	0,62	0,61	0,46	0,58	0,44
as t CO2e			**0,52**	**0,76**	**0,75**	**0,56**	**0,70**	**0,66**
vi) Other dairy (avg yoghurt/butter	tonnes		0,24	0,48	0,14	0,49	0,32	0,40
as t CO2e			**1,48**	**2,95**	**0,85**	**3,01**	**1,96**	**3,54**
vii) Coffee	tonnes		0,12	0,09	0,03	0,01	0,02	0,01
as t CO2e			**0,36**	**0,27**	**0,10**	**0,02**	**0,06**	**0,08**
viii) Lamb	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Veal	kg							**5,19**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,09**
x) Fruits	kg							**45**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,03**
xi) Vegetables	kg							**6.325**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**5,35**
xii) Bread	kg							**955**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,66**
xiii) Pasta	kg							**240**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,51**
xiv) Rice	kg							**143**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,39**
TOTAL CO2e			**31**	**28**	**13**	**11**	**24**	**41**

JRC Karlsruhe

A) Catering consumption (tonnes)		**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Beef	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ii) Pork	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iii) Chicken	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Fish	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Milk	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vi) Other dairy (avg yoghurt/butter	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Coffee	tonnes		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
viii) Lamb	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Veal	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
x) Fruits	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Vegetables	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xii) Bread	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiii) Pasta	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiv) Rice	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e			**0**	**0**	**0**	**0**	**0**	**0**

Note: There is no dedicated JRC Karlsuhe canteen within the site boundary, only a small cafeteria

JRC Seville

A) Catering consumption (tonnes)		**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Beef	tonnes		0,00	0,00	0,00	0,00	0,00	
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ii) Pork	tonnes		0,00	0,00	0,00	0,00	0,00	
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iii) Chicken	tonnes		0,00	0,00	0,00	0,00	0,00	
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Fish	tonnes		0,00	0,00	0,00	0,00	0,00	
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Milk	tonnes		0,00	0,00	0,00	0,00	0,00	
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vi) Other dairy (avg yoghurt/butter	tonnes		0,00	0,00	0,00	0,00	0,00	
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
vii) Coffee	tonnes		0,00	0,00	0,11	0,11	0,16	0,00
as t CO2e			**0,00**	**0,00**	**0,35**	**0,35**	**0,49**	**0,00**
viii) Lamb	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Veal	kg							

as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
x) Fruits	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Vegetables	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xii) Bread	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiii) Pasta	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiv) Rice	kg							
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e			**0**	**0**	**0**	**0**	**0**	**0**

Note: There is no dedicated JRC Seville canteen

JRC Ispra

A) Catering consumption (tonnes)		**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Beef	tonnes		0,00	0,00	0,00	0,00	0,00	2,42
as t CO2e								**82**
ii) Pork	tonnes		9,66	7,57	3,37	5,12	7,00	6,09
as t CO2e			**57**	**45**	**19,86**	**30**	**41**	**57**
iii) Chicken	tonnes		10,05	9,42	3,11	4,50	8,00	9,08
as t CO2e			**48**	**45**	**14,75**	**21**	**38**	**41**
iv) Fish	tonnes		15,31	15,03	4,07	6,16	7,00	8,30
as t CO2e			**147**	**144**	**38**	**57**	**65**	**91**
v) Milk	tonnes		11,52	11,33	2,96	3,59	7,00	8,29
as t CO2e			**14,05**	**13,82**	**3,61**	**4,38**	**8,54**	**12,35**
vi) Other dairy (avg yoghurt/butter	tonnes		5,67	4,04	1,70	2,00	3,40	3,60
as t CO2e			**35**	**25**	**10,54**	**12,37**	**21**	**32**
vii) Coffee	tonnes		3,27	2,59	2,53	7,42	1,60	1,79
as t CO2e			**10,25**	**8,12**	**7,95**	**23**	**5,02**	**16,85**
viii) Lamb	kg		371	404	101	140	192	394,2
as t CO2e			**14,92**	**16,24**	**4,06**	**5,63**	**7,72**	**15,85**
ix) Veal	kg		7.209	4.081	1.201	1.130	2.199	1.217
as t CO2e			**123,22**	**69,75**	**20,53**	**19,31**	**37,59**	**21**
x) Fruits	kg		53.901	51.770	14.775	15.026	24.743	29.563
as t CO2e			**31,74**	**30,49**	**8,70**	**8,85**	**14,57**	**17,41**
xi) Vegetables	kg		96.533	83.349	25.071	30.352	60.941	66.352
as t CO2e			**81,68**	**70,52**	**21,21**	**25,68**	**51,56**	**56**
xii) Bread	kg		15.285	11.914	4.512	5.143	5.275	7.057
as t CO2e			**10,52**	**8,20**	**3,11**	**3,54**	**3,63**	**4,86**
xiii) Pasta	kg		14.525	12.984	2.538	6.298	10.844	11.423
as t CO2e			**31,15**	**27,85**	**5,44**	**13,51**	**23,26**	**24**
xiv) Rice	kg		5.181	4.455	1.356	2.080	3.740	4.588
as t CO2e			**14,27**	**12,27**	**3,73**	**5,73**	**10,30**	**12,64**
TOTAL CO2e			**618**	**516**	**161**	**231**	**327**	**484**

Grange

A) Catering consumption (tonnes)		**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022***	**2023***
i) Beef	tonnes		0,00	0,55	0,08	0,08	0,13	0,16
as t CO2e			**0,00**	**15,59**	**2,23**	**2,23**	**3,74**	**5,34**
ii) Pork	tonnes		0,00	0,48	0,02	0,02	0,11	0,22
as t CO2e			**0,00**	**2,80**	**0,13**	**0,13**	**0,67**	**2,08**
iii) Chicken	tonnes		0,00	0,48	0,00	0,00	0,11	0,47
as t CO2e			**0,00**	**2,27**	**0,00**	**0,00**	**0,55**	**2,11**
iv) Fish	tonnes		0,00	0,61	0,12	0,12	0,15	0,12
as t CO2e			**0,00**	**5,83**	**1,07**	**1,07**	**1,35**	**1,28**
v) Milk	tonnes		0,00	4,01	0,00	0,00	0,96	2,50
as t CO2e			**0,00**	**4,89**	**0,00**	**0,00**	**1,17**	**3,72**
vi) Other dairy (avg yoghurt/butter	tonnes		0,00	0,24	0,00	0,00	0,06	0,04
as t CO2e			**0,00**	**1,47**	**0,01**	**0,01**	**0,35**	**0,36**
vii) Coffee	tonnes		0,00	0,45	0,12	0,12	0,11	0,21
as t CO2e			**0,00**	**1,43**	**0,37**	**0,37**	**0,34**	**1,97**
viii) Lamb	kg							**0,02**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ix) Veal	kg							**0,00**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
x) Fruits	kg							**0,64**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xi) Vegetables	kg							**1,15**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xii) Bread	kg							**0,27**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiii) Pasta	kg							**0,10**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
xiv) Rice	kg							**0,04**
as t CO2e			**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e			**0**	**34**	**4**	**4**	**8**	**17**

* Data exceptionally not available (N.a) available owing to contractor IT issues, new contract being arranged

SERVICE CONTRACTS

Brussels

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		678	672	579	594	622	571
as t CO2e		**380**	**377**	**325**	**333**	**349**	**320**
ii) Cleaning (FTE)		373	378	356	350	362	340
as t CO2e		**440**	**446**	**420**	**413**	**427**	**401**
iii) Services (printing, advertising, architecture and engineering, multi-technical building		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Other heavy service contracts - (kEUR)		22 411	25 354	22 411	24 275	24 389	30 346

as t CO2e		**2 465**	**2 789**	**3 810**	**4 127**	**4 146**	**5 159**
TOTAL CO2e		**3 285**	**3 612**	**4 555**	**4 872**	**4 922**	**5 880**

Luxembourg

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		250	261	169	177	200	197
as t CO2e		**140**	**146**	**95**	**99**	**112**	**111**
ii) Cleaning (FTE)		143	87	78	82	91	88
as t CO2e		**169**	**103**	**92**	**97**	**107**	**104**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)		0,00	0,00	0,00	1.558	8.751	7.660
as t CO2e		**0**	**0**	**0**	**265**	**1.488**	**1.302**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and fees) (kEUR)		0,00	0,00	0,00	0,00	568	2.153
as t CO2e		**0**	**0**	**0**	**0**	**63**	**237**
v) Other heavy service contracts - (kEUR)		10 295	11 047	11 610	11 959	5 201	3 722
as t CO2e		**1 132**	**1 215**	**1 974**	**2 033**	**884**	**633**
TOTAL CO2e		**1 441**	**1 464**	**2 160**	**2 494**	**2 654**	**2 386**

JRC Petten

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		4,12	4,12	4,12	4,12	4,12	4,12
as t CO2e		**2,31**	**2,31**	**2,31**	**2,31**	**2,31**	**2,31**
ii) Cleaning (FTE)		3,77	3,77	3,77	3,77	3,77	3,77
as t CO2e		**4,44**	**4,44**	**4,44**	**4,44**	**4,44**	**4,45**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)		500	500	500	500	500	881
as t CO2e		**55**	**55**	**85**	**85**	**85**	**150**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and fees) (kEUR)		898	898	898	898	898	141
as t CO2e		**99**	**99**	**99**	**99**	**99**	**16**
v) Other heavy service contracts - (kEUR)		0,00	0,00	0,00	0,00	0,00	12,86
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**2,19**
TOTAL CO2e		**160**	**160**	**190**	**190**	**190**	**174**

JRC Geel

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		18,00	18,00	18,00	18,00	18,00	18,00
as t CO2e		**10,10**	**10,10**	**10,10**	**10,10**	**10,10**	**10,10**
ii) Cleaning (FTE)		7,63	7,63	7,63	7,63	7,63	7,63
as t CO2e		**9,00**	**9,00**	**9,00**	**9,00**	**9,00**	**9,00**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)		0,00	1.018	1.126	1.178	1.321	1.667
as t CO2e		**0,00**	**111,94**	**191,38**	**200,33**	**224,53**	**283,31**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and		0,00	0,00	0,00	0,00	0,00	
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Other heavy service contracts - (kEUR)		7	510	392	588	576	636
as t CO2e		**0,77**	**56**	**67**	**100**	**98**	**108**
TOTAL CO2e		**20**	**187**	**277**	**319**	**342**	**411**

JRC Karlsruhe

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		0,00	0,00	38	38	38	38
as t CO2e		**0,00**	**0,00**	**21**	**21**	**21**	**21**
ii) Cleaning (FTE)		0,00	0,00	5,00	5,00	5,00	5,00
as t CO2e		**0,00**	**0,00**	**5,90**	**5,90**	**5,90**	**5,90**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)		0,00	0,00	0,00	0,00		
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and fees) (kEUR)		0,00	0,00	0,00	0,00		
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Other heavy service contracts - (kEUR)		0,00	0,00	0,00	0,00		
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e		**0,00**	**0,00**	**27**	**27**	**27**	**27**

JRC Seville

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
ii) Cleaning (FTE)		0,00	0,00	1,00	1,00	1,00	1,00
as t CO2e		**0,00**	**0,00**	**1,18**	**1,18**	**1,18**	**1,18**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)		0,00	0,00	69,6	151	138	230
as t CO2e		**0,00**	**0,00**	**11,83**	**26**	**23**	**39**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and		0,00	0,00	0,00	0,00	0,00	0,80
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,09**
v) Other heavy service contracts - (kEUR)		0,00	0,00	0,00	9,59	6,90	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**1,63**	**1,17**	**0,00**
TOTAL CO2e		**0,00**	**0,00**	**13,01**	**28**	**26**	**40**

JRC Ispra

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		50	50	47	42	46	51
as t CO2e		**28**	**28**	**26**	**24**	**26**	**29**
ii) Cleaning (FTE)		90	90	90	90	90	90
as t CO2e		**106**	**106**	**106**	**106**	**106**	**106**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)							
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and fees) (kEUR)							

as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
v) Other heavy service contracts - (kEUR)							
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e		**134**	**134**	**133**	**130**	**132**	**135**

Grange

B) Service contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
i) Security (FTE)		9,00	9,00	9,00	9,00	9,00	9,00
as t CO2e		**5,05**	**5,05**	**5,05**	**5,05**	**5,05**	**5,05**
ii) Cleaning (FTE)		7,00	7,00	7,00	7,00	7,00	7,00
as t CO2e		**8,26**	**8,26**	**8,26**	**8,26**	**8,26**	**8,26**
iii) Services (printing, advertising, architecture and engineering, multi-technical building maintenance) (kEUR)		71	90	90	90	90	77
as t CO2e		**7,79**	**9,85**	**15,23**	**15,23**	**15,23**	**13,08**
iv) Service contracts - Services (Service/Insurance, banking services, advice, and		0,00	0,00	0,00	0,00	0,00	31
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**3,36**
v) Other heavy service contracts - (kEUR)		0,00	0,00	0,00	0,00	0,00	0,00
as t CO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
TOTAL CO2e		**21**	**23**	**29**	**29**	**29**	**30**

PAPER

Paper (tonnes per year)

Site	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		894	875	750	634	639	608	227	166	150	189
tonnes/person		**0,033**	**0,032**	**0,028**	**0,022**	**0,022**	**0,021**	**0,008**	**0,005**	**0,005**	**0,005**
Luxembourg		96,00	85,68	77,00	58,34	54,01	48,44	18,53	11,07	15,60	15,42
tonnes/person		**0,0237**	**0,0184**	**0,0165**	**0,0122**	**0,0108**	**0,0094**	**0,0035**	**0,0020**	**0,0027**	**0,0027**
JRC Petten*		4,71	5,76	2,42	3,03	2,35	4,76	1,15	1,07	1,48	0,95
tonnes/person		**0,017**	**0,021**	**0,009**	**0,012**	**0,009**	**0,019**	**0,005**	**0,004**	**0,006**	**0,004**
JRC Geel		7,44	3,57	5,93	3,15	3,09	3,42	0,95	1,37	1,51	1,11
tonnes/person		**0,022**	**0,011**	**0,020**	**0,012**	**0,012**	**0,013**	**0,004**	**0,005**	**0,006**	**0,004**
JRC Karlsruhe		6,00	4,80	4,80	3,60	3,60	2,10	0,00	1,05	2,24	2,10
tonnes/person		**0,019**	**0,015**	**0,015**	**0,011**	**0,011**	**0,007**	**0,000**	**0,003**	**0,007**	**0,007**
JRC Seville		3,58	3,76	3,29	3,73	4,31	3,51	1,21	0,92	3,10	1,22
tonnes/person		**0,012**	**0,013**	**0,011**	**0,012**	**0,013**	**0,010**	**0,003**	**0,002**	**0,008**	**0,003**
JRC Ispra		41	36	32	30	28	24	9,76	9,71	10,04	10,44
tonnes/person		**0,017**	**0,016**	**0,014**	**0,013**	**0,012**	**0,010**	**0,004**	**0,004**	**0,004**	**0,004**
Grange		1,84	3,54	6,25	3,74	3,30	2,87	1,16	1,06	0,94	0,90
tonnes/person		**0,010**	**0,020**	**0,033**	**0,020**	**0,018**	**0,016**	**0,007**	**0,006**	**0,005**	**0,005**
Commission		1.054	1.018	881	741	737	697	259	192	185	221
tonnes/person		**0,030**	**0,029**	**0,025**	**0,020**	**0,020**	**0,018**	**0,007**	**0,005**	**0,005**	**0,005**

*Paper usage since 2021 at JRC Petten based on printed paper

Printshop paper consumption (tonnes)

Site	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		272	225	248	251	206	226	78	35	98	59
tonnes/person		**0,010**	**0,008**	**0,009**	**0,009**	**0,007**	**0,008**	**0,003**	**0,001**	**0,003**	**0,002**
Luxembourg		0,00	0,00	0,00	40,31	38,78	41,63	18,19	14,61	17,74	16,30
tonnes/person		**0,0000**	**0,0000**	**0,0000**	**0,0084**	**0,0077**	**0,0081**	**0,0035**	**0,0026**	**0,0031**	**0,0029**
JRC Petten		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
tonnes/person		**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
JRC Geel		0,00	0,00	0,00	0,00	0,53	0,63	0,44	0,32	0,30	0,53
tonnes/person		**0,000**	**0,000**	**0,000**	**0,000**	**0,002**	**0,002**	**0,002**	**0,001**	**0,001**	**0,002**
JRC Karlsruhe		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
tonnes/person		**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
JRC Seville		1,24	1,24	1,67	1,40	2,10	1,45	1,30	0,53	0,60	0,27
tonnes/person		**0,004**	**0,004**	**0,006**	**0,004**	**0,006**	**0,004**	**0,003**	**0,001**	**0,001**	**0,001**
JRC Ispra		5,82	4,82	3,76	5,06	6,37	5,50	1,76	1,28	3,01	2,29
tonnes/person		**0,002**	**0,002**	**0,002**	**0,002**	**0,003**	**0,002**	**0,001**	**0,001**	**0,001**	**0,001**
Grange		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
tonnes/person		**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
Commission		279	231	253	298	254	275	99	52	120	78
tonnes/person		**0,008**	**0,007**	**0,007**	**0,008**	**0,007**	**0,007**	**0,003**	**0,001**	**0,003**	**0,002**

Purchased paper, used or new (tonnes)

C) Supply contracts	**Trend 2018-23**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		845	834	304	201	248	247
as t CO2e		**776**	**766**	**280**	**185**	**228**	**227**
Luxembourg		92,79	90,07	36,72	25,68	37,34	31,72
as t CO2e		**85, 27**	**82, 77**	**33, 75**	**23, 6**	**34, 31**	**29, 15**
Petten		11,75	4,76	0,00	2,82	0,00	0,00
as t CO2e		**10,80**	**4,37**	**0,00**	**2,59**	**0,00**	**0,00**
Geel		3,62	4,05	1,39	1,68	1,81	1,64
as t CO2e		**3,33**	**3,72**	**1,28**	**1,55**	**1,66**	**1,50**
Karlsruhe		3,60	2,10	0,00	1,05	2,24	2,10
as t CO2e		**3,31**	**1,93**	**0,00**	**0,96**	**2,06**	**1,93**
Seville		0,00	0,00	1,76	1,76	1,33	1,49
as t CO2e		**0,00**	**0,00**	**1,61**	**1,61**	**1,22**	**1,37**
Ispra		33,92	29,16	11,52	10,99	13,00	12,73
as t CO2e		**31**	**27**	**10,58**	**10,10**	**11,95**	**11,70**
Grange		3,30	2,87	1,16	1,06	0,77	1,43
as t CO2e		**3,03**	**2,64**	**1,07**	**0,97**	**0,71**	**1,31**
Commission		**994**	**967**	**357**	**246**	**305**	**299**
as t CO2e		**913**	**888**	**328**	**226**	**280**	**274**

Annex 6 - GPP data and EMAS costs

GPP

Contracts greater than 60 K EUR with additional 'eco' criteria %

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Target 2019-30
Brussels		80	100	82	93	100	100	100	100	100	90	90
Luxembourg		100	100	93	83	100	71	93	100	100	58	100
JRC Petten		NR	NR	NR	NR	76	76	76	76	40	14	60
JRC Geel		NR	NR		22	33	35	29	14	16	36	20	33
JRC Karlsruhe		8,00	8,00	8,00	28	26	36	27	54	52	30	15
JRC Seville**		1	2	1	1	2	100	30	n/a	n/a	100	100
JRC Ispra		32	9	9	10	17	64	53	40	82	80	100
Grange*		100	100	100	100	100	100	100	100	100	66	100

NR - Not recorded; *Total number, not % reported prior to 2019

**From 2019 onwards, contracts dealing with infrastructure and logistics of the site

Contracts using GPP procedures

Site	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels		0,00	0,00	0,00	0,00	17,00	16,00	18,00	15,00	17,00	19,00
Luxembourg		11,00	13,00	14,00	15,00	5,00	5,00	14,00	12,00	8,00	5,00
JRC Petten		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,00	9,00
JRC Geel		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
JRC Karlsruhe		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
JRC Seville		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	4,00
JRC Ispra		0,00	0,00	0,00	6,00	15,00	14,00	17,00	14,00	27	24
Grange		2	4	3	3	3	2	2	2	1	3
Commission		**13,00**	**17,00**	**17,00**	**24,00**	**40,00**	**37,00**	**51,00**	**43,00**	**60,00**	**64,00**

Greenness (of procedures, ECA approach)

Brussels

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	9,00	2,00	2,00	19,00	3,00	2,00
Light green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Green		0,00	0,00	0,00	0,00	15,00	15,00	16,00	15,00	12,00	19,00
Very green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Green by nature		0,00	0,00	0,00	0,00	2,00	1,00	2,00	0,00	5,00	0,00
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**26**	**18,00**	**20**	**34**	**20**	**21**
Procedures using EU GPP criteria		**0**	**0**	**0**	**0**	**17**	**16**	**18**	**15**	**17**	**19**
Office supply catalogue											
Green products (no)		186	330	364	358	351	110	113	57	51	86
Green products (EUR)		0,00	0,00	0,00	0,00	0,00	940 701	303 170	339 306	335 040	412 303
Total products (no)		514	715	780	750	737	234	238	105	103	163
Total products (EUR)		0,00	0,00	0,00	0,00	0,00	1 894 255	439 029	414 472	515 605	561 276

Luxembourg

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0	0	1	3	0	2	1	0	0	5
Light green		11	13	14	15	1	2	4	6	4	2
Green		0	0	0	0	3	2	7	6	4	4
Very green		0	0	0	0	1	1	2	0	0	1
Green by nature		0	0	0	0	0	0	1	0	0	0
Total (No)		**11**	**13**	**15**	**18**	**5**	**7**	**15**	**12**	**8**	**12**
Procedures using EU GPP criteria		**11**	**13**	**14**	**15**	**5**	**5**	**14**	**12**	**8**	**5**
Office supply catalogue											
Green products (no)		94	89	87	118	108	98	102	109	89	90
Green products (EUR)		66 729	68 944	71 916	43 105	32 960	16 326	12 700	20 763	38 464	39 795
Total products (no)		357	391	331	324	309	181	184	198	171	168
Total products (EUR)		193 508	239 796	137 671	124 593	108 469	149 596	61 057	44 285	56 071	51 686

JRC Petten

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	9,00	5,00
Light green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	16,00
Green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00
Very green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	1,00
Green by nature		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	2,00
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**15,00**	**28**
Procedures using EU GPP criteria		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**6,00**	**9,00**
Office supply catalogue											
Green products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Green products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

JRC Geel

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	22	24	44	49	41	47
Light green		0,00	0,00	0,00	0,00	4,00	3,00	3,00	4,00	13,00	19,00
Green		0,00	0,00	0,00	0,00	4,00	3,00	3,00	5,00	9,00	5,00

Very green		0,00	0,00	0,00	0,00	3,00	3,00	0,00	0,00	1,00	0,00
Green by nature		0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**34**	**34**	**51**	**58**	**64**	**71**
Procedures using EU GPP criteria		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Office supply catalogue											
Green products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Green products (EUR)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (EUR)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

JRC Karlsruhe

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	28	21	30	13,00	15,00	38
Light green		0,00	0,00	0,00	0,00	7,00	9,00	8,00	14,00	15,00	2,00
Green		0,00	0,00	0,00	0,00	3,00	3,00	3,00	1,00	1,00	
Very green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Green by nature		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**38**	**33**	**41**	**28**	**31**	**40**
Procedures using EU GPP criteria		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Office supply catalogue											
Green products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Green products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

JRC Seville

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	0,00	11,00	11,00	0,00	0,00	0,00
Light green		0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	1,00
Green		0,00	0,00	0,00	0,00	0,00	1,00	2,00	5,00	1,00	1,00
Very green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00
Green by nature		0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**13,00**	**15,00**	**7,00**	**1,00**	**4,00**
Procedures using EU GPP criteria		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**1,00**	**4,00**
Office supply catalogue											
Green products (no)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Green products (EUR)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Total products (no)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Total products (EUR)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

JRC Ispra

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	75,00	8,00	15,00	21	6	6
Light green		0,00	0,00	0,00	0,00	9,00	5,00	6,00	3,00	4,00	2,00
Green		0,00	0,00	0,00	0,00	5,00	4,00	4,00	2,00	9,00	6,00
Very green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Green by nature		0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	1,00	2,00
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**90**	**18**	**26**	**26**	**20**	**16**
Procedures using EU GPP criteria		**0,00**	**0,00**	**0,00**	**6,00**	**15**	**14**	**17**	**14**	**14**	**10**
Office supply catalogue											
Green products (no)		165	171	232	200	210	203	201	172	148	219
Green products (EUR)		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Total products (no)		682	700	732	675	742	709	718	650	767	763
Total products (EUR)		280 000	191 600	165 726	170 229	184 406	153 221	106 929	90 836	87 230	82 948

Grange

Category	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Breakdown of tender procedures according to green scale of ECA											
Not green		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00
Light green		0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	2,00
Green		0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00
Very green		0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	0,00
Green by nature		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00
Total (No)		**0,00**	**0,00**	**0,00**	**0,00**	**3,00**	**2,00**	**2,00**	**2,00**	**1,00**	**3,00**
Procedures using EU GPP criteria		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**2,00**
Office supply catalogue											
Green products (no)		NA	NA	NA	NA	NA	NA	NA	NA	NA	124
Green products (EUR)		NA	10 485	10 485	3 310	11 562	3 347	3 347	3 347	n.a.	2 558
Total products (no)		NA	NA	NA	NA	NA	NA	NA	NA	NA	389
Total products (EUR)		NA	28 301	20 093	13 628	18 594	14 112	14 112	14 112	n.a.	6 359

Note: Grange purchases greatly reduced in recent years, financial breakdown of green product purchase in the office catalogue not available

COSTS

Costs for HR COORD and ECORS (overhead for all staff inclued in calcs)											
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Total amount	**1 122 884**	**928 052**	**1 007 252**	**1 021 252**	**1 021 252**	**1 049 252**	**1 119 252**	**1 133 252**	**1 147 252**	**1 182 252**	**1 366 480**	**1 961 000**
Number of total staff	36 108	34 143	35 188	35 443	35 224	36 648	37 140	37 788	38 969	40 014	40 505	44 071
Total per employee	31	27	29	29	29	29	30	30	29	30	34	44
Staff Time Cost annual	**1 056 000**	**844 800**	**924 000**	**938 000**	**938 000**	**966 000**	**1 036 000**	**1 050 000**	**1 064 000**	**1 099 000**	**1 176 480**	**1 691 000**
HR COORD (FTE)	2,00	2,40	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,28	4,50

ECOR network (FTE)	6,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,60	5,00
Annual cost of one FTE	132 000	132 000	132 000	134 000	134 000	138 000	148 000	150 000	152 000	157 000	171 000	178 000
CONTRACTS (HR COORD)												
Total	**66 884**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**190 000**	**270 000**
External audit	11 121	15 874	15 874	15 874	15 874	15 874	15 874	15 874	15 874	15 874	66 000	99 000
Internal Audit	55 763	67 378	67 378	67 378	67 378	67 378	67 378	67 378	67 378	67 378	124 000	171 000
Veille Relglementaire	0	0	0	0	0	0						

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brussels										
Electricity (EUR/MWh)	**97**	**90**	**85**	**90**	**90**	**110**	**110**	**125**	**249**	**234**
Electricity (EUR)	10 679 072	9 884 792	9 193 990	9 482 459	9 470 524	11 591 280	9 955 729	10 134 854	18 439 197	16 129 478
Electricity (EUR/p)	390	365	341	336	332	400	333	331	596	466
Gas (EUR/MWh)	**41**	**41**	**35**	**32**	**32**	**27**	**22**	**75**	**150**	**98**
Gas (EUR)	2 906 121	3 302 796	2 841 300	2 572 941	2 524 857	2 075 177	1 547 925	6 020 675	8 805 750	4 945 466
Gas (EUR/p)	106	122	106	91	89	72	52	197	285	143
Fuel (EUR/MWh)	**68**	**45**	**37**	**37**	**37**	**37**	**37**	**37**	**117**	**79**
Fuel (EUR)	174 750	72 927	36 860						11 399	20 035
Fuel (EUR/p)	6,38	2,69	1,37	0,00	0,00	0,00	0,00	0,00	0,37	0,58
Annual direct staff costs (time FTE)	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**2,00**	**1,60**
Annual contract costs	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Luxembourg										
Electricity (EUR/MWh)	**51**	**47**	**42**	**38**	**41**	**56**	**62**	**52**	**109**	**380**
Electricity (EUR)	1 052 651	1 845 840	1 765 039	1 262 135	1 277 994	1 759 646	1 885 721	1 502 114	3 199 490	9 918 340
Electricity (EUR/p)	260	396	379	264	255	342	360	270	562	1 758
Gas (EUR/MWh)	**26**	**26**	**26**	**24**	**26**	**31**	**22**	**21**	**83**	**118**
Gas (EUR)	88 364	714 100	958 703	673 456	346 950	430 007	314 187	330 026	1 095 455	1 268 800
Gas (EUR/p)	22	153,01	206,04	140,71	69,17	83,69	59,96	59,37	192,25	224,88
Fuel (EUR/MWh)	**100**	**100**	**100**	**100**	**60**	**60**	**31**	**31**	**31**	**66**
Fuel (EUR)	0,00	0,00	0,00	362,20	89,70	365,98	190,33	190,33	0,00	4.962,60
Fuel (EUR/p)	0,00	0,00	0,00	0,08	0,02	0,07	0,04	0,03	0,00	0,88
Annual direct staff costs (time FTE)	**3,50**	**3,50**	**3,50**	**3,50**	**2,50**	**2,50**	**2,50**	**2,50**	**2,50**	**2,50**
Annual contract costs	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Petten										
Electricity (EUR/MWh)	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**98**	**135**
Electricity (EUR)	223 027	214 904	210 473	206 928	214 608	201 167	180 489	173 186	219 170	292 844
Electricity (EUR/p)	791	773	763	787	865	808	731	722	953	1 284
Gas (EUR/MWh)	**34**	**34**	**34**	**34**	**34**	**34**	**34**	**34**	**121**	**18**
Gas (EUR)	122 332	129 033	120 461	110 670	116 518	105 582	77 211	84 401	229 697	32 719
Gas (EUR/p)	434	464	436	421	470	424	313	352	999	144
Fuel (EUR/MWh)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Fuel (EUR)	0,00	0,00	0,00	1 372	0,00	0,00	0,00	0,00	0,00	0,00
Fuel (EUR/p)	0,00	0,00	0,00	5,22	0,00	0,00	0,00	0,00	0,00	0,00
Annual direct staff costs (time FTE)	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**1,00**	**1,00**
Annual contract costs	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Geel										
Electricity (EUR/MWh)	**88**	**90**	**88**	**88**	**87**	**121**	**111**	**99**	**335**	**441**
Electricity (EUR)	1 027 269	930 755	956 148	906 670	850 201	1 112 063	902 226	794 204	2 539 123	2 949 930
Electricity (EUR/p)	2 969	2 838	3 230	3 421	3 283	4 245	3 392	3 020	9 618	11 174
Gas (EUR/MWh)	**47**	**29**	**22**	**27**	**30**	**24**	**17,17**	**46**	**148**	**92**
Gas (EUR)	79 046	56 551	41 701	47 982	51 724	43 313	31 111	91 698	208 067	94 663
Gas (EUR/p)	228	172	141	181	200	165	117	349	788	359
Fuel (EUR/MWh)	**62**	**49**	**35**	**47**	**57**	**57**	**44**	**69**	**104**	**84**
Fuel (EUR)	4 848	1 253	941	1 501	2 026	1 896	381	1 908	2 882	2 168
Fuel (EUR/p)	14,01	3,82	3,18	5,66	7,82	7,24	1,43	7,25	10,92	8,21
Annual direct staff costs (time FTE)	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**
Annual contract costs	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Karlsruhe										
Electricity (EUR/MWh)	**90**	**90**	**90**	**90**	**90**	**90**	**90**	**90**	**144**	**269**
Electricity (EUR)	1 048 523	1 101 240	1 070 730	1 050 338	1 103 400	1 107 000	958 500	1 022 400	1 675 008	3 228 040
Electricity (EUR/p)	3 277	3 420	3 305	3 262	3 481	3 514	3 102	3 352	5 474	10 619
District heating (EUR/MWh)	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**128**	**195**
District heating (EUR)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1 149 285	1 434 030
District heating (EUR/p)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3 756	4 717
Fuel (EUR/MWh)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Fuel (EUR)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Fuel (EUR/p)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Annual direct staff costs (time FTE)	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**	**0,50**
Annual contract costs	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**
Seville										
Electricity (EUR/MWh)	**136**	**131**	**138**	**131**	**131**	**135**	**130**	**110**	**148**	**168**
Electricity (EUR)	306 085	283 358	284 193	285 187	238 652	261 415	234 108	231 428	340 018	351 456
Electricity (EUR/p)	1 059	1 001	947	886	698	710	613	593	844	861
Gas (EUR/MWh)	**62**	**46**	**58**	**52**	**52**	**58**	**53**	**51**	**62**	**49**
Gas (EUR)	23 881	17 244	20 024	22 731	27 677	21 569	24 417	22 737	24 448	8 730
Gas (EUR/p)	83	61	67	71	81	59	64	58	61	21
Fuel (EUR/MWh)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Fuel (EUR)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Fuel (EUR/p)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Annual direct staff costs (time FTE)	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**

Annual contract costs	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Ispra										
Electricity (EUR/MWh)	**168**	**164**	**157**	**179**	**173**	**210**	**137**	**210**	**340**	**198**
Electricity (EUR)	374 745	407 986	473 856	720 748	772 934	455 516	738 646	1 085 108	3 725 006	2 656 764
Electricity (EUR/p)	160	178	210	317	338	195	306	438	1 494	1 076
Gas (EUR/MWh)	**39**	**31**	**22**	**25**	**30**	**23**	**17**	**51**	**141**	**63**
Gas (EUR)	3 765 554	2 968 460	1 957 302	2 229 755	2 654 795	2 095 452	1 339 432	4 322 010	8 556 389	3 044 412
Gas (EUR/p)	1 612	1 293	867	979	1 162	899	556	1 746	3 431	1 234
Fuel (EUR/MWh)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**122,45**	**101,21**
Fuel (EUR)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5 510	5 567
Fuel (EUR/p)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,21	2,26
Annual direct staff costs (time FTE)	**1,85**	**1,85**	**1,85**	**1,85**	**1,85**	**1,85**	**1,85**	**1,85**	**1,85**	**2,85**
Annual contract costs	**139 560**	**120 268**	**198 300**	**231 645**	**218 128**	**196 095**	**195 315**	**184 725**	**168 255**	**160 020**
Grange										
Electricity (EUR/MWh)	**117**	**116**	**116**	**116**	**116**	**116**	**116**	**116**	**314**	**205**
Electricity (EUR)	102 991	98 731	96 603	94 613	92 292	98 886	74 414	65 591	175 655	116 304
Electricity (EUR/p)	575	549	508	503	516	562	430	368	965	688
Gas (EUR/MWh)	**646**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**596**	**505**
Gas (EUR)	4 437	582	239	150	3 615	4 564	2 389	203	2 430	2 800
Gas (EUR/p)	25	3,23	1,26	0,80	20	26	13,81	1,14	13,35	16,57
Fuel (EUR/MWh)	**43**	**48**	**48**	**48**	**48**	**48**	**48**	**48**	**113**	**133**
Fuel (EUR)	59 176	75 554	74 389	65 561	52 490	54 514	50 176	46 176	105 746	111 702
Fuel (EUR/p)	331	420	392	349	293	310	290	259	581	661
Annual direct staff costs (time FTE)	**0,25**	**0,25**	**0,25**	**0,25**	**0,25**	**0,25**	**0,25**	**0,25**	**0,25**	**0,25**
Annual contract costs	**14 400**	**14 400**	**14 856**	**14 856**	**14 856**	**18 600**	**18 600**	**18 600**	**0,00**	**76.563,20**

Annex 7 - Fleet vehicles and professional travel

FLEET

Brussels

Vehicle fleet and emissions data - Brussels	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fleet vehicles:											
Full Electric		0,00	10,00	10,00	13,00	13,00	13,00	13,00	14,00	17,00	50,00
Hybrid		0,00	0,00	0,00	0,00	20,00	32	41	62	70	58
Euro 6		0,00	56	74	98	93	86	75	49	36	8
Euro 5		0,00	51	23	18,00	0,00	0,00	0,00	0,00	0,00	11,00
Euro 4		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 3		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 2		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 1		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 0		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	13,00	10,00	10,00	4,00	4,00
Semi armoured		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	4,00
Avg No fleet vehicles		**0,00**	**117**	**107**	**129**	**126**	**131**	**129**	**125**	**123**	**127**
Total kms		2 456 406	2 477 072	2 829 675	2 508 253	2 311 311	2 346 590	1 432 721	1 766 920	2 138 721	2 081 145
Diesel used (m3)		201	204	198	178	144	132	54	32	32	16
Petrol used (m3)		6,46	5,33	13,40	22	61	85	73	114	135	137
Fuel efficiency (litres/100km)		**8,45**	**8,45**	**7,46**	**7,95**	**8,86**	**9,27**	**8,90**	**8,24**	**7,80**	**7,37**
gCO2e/km (manufacturer)		148	145	129	118	116	119	113	94	82	53
tCO2e diesel combustion		**502**	**510**	**495**	**444**	**360**	**330**	**135**	**79**	**80**	**40**
tCO2e diesel upstream		**133**	**135**	**131**	**117**	**95**	**87**	**36**	**21**	**20**	**10**
tCO2e petrol combustion		**14,72**	**12,14**	**31**	**50**	**138**	**195**	**168**	**260**	**298**	**303**
tCO2e petrol upstream		**3,42**	**2,82**	**7,10**	**11,60**	**32**	**45**	**39**	**60**	**67**	**68**
Total tCO2e		**653**	**659**	**663**	**623**	**626**	**657**	**377**	**420**	**464**	**420**
gCO2e/km (actual, inc upstream)		**266**	**266**	**234**	**248**	**271**	**280**	**263**	**238**	**217**	**202**
Commission vehicles fixed asset emissions (tonnes CO2e)						**116**	**117**	**72**	**88**	**107**	**104**

Luxembourg

Vehicle fleet and emissions data - Luxembourg	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fleet vehicles:											
Full Electric		0	0	0	0	2	4	4	4	4	8
Hybrid		0	0	0	0	0	5	8	10	11	12
Euro 6		0	5	12	18	23	21	18	16	14	10
Euro 5		0	12	11	5	3	1	1	0	0	0
Euro 4		0	4	3	3	2	1	1	1	1	1
Euro 3		0	4	4	4	3	0	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0	0	0
Avg No fleet vehicles		**0**	**25**	**30**	**30**	**33**	**32**	**32**	**31**	**30**	**31**
Total kms		623 890	665 992	771 824	731 060	812 152	781 567	322 876	408 831	543415	514009
Diesel used (m3)		50,50	53,26	62,82	58,63	61,29	54,05	24,45	23,74	28,55	27,20
Petrol used (m3)		1,05	1,27	1,46	0,72	3,76	7,91	4,12	9,17	13,82	13,33
Fuel efficiency (litres/100km)		**8,26**	**8,19**	**8,33**	**8,12**	**8,01**	**7,93**	**8,85**	**8,05**	**7,80**	**7,88**
gCO2e/km (manufacturer)		171	167	161	158	145	142	126	121	110,0	91,8
tCO2e diesel combustion		**126**	**133**	**157**	**147**	**153**	**135**	**61**	**59**	**71**	**68**
tCO2e diesel upstream		**33**	**35**	**41**	**39**	**40**	**36**	**16**	**16**	**17**	**17**
tCO2e petrol combustion		**2,38**	**2,88**	**3,34**	**1,65**	**8,57**	**18,04**	**9,39**	**20,91**	**30,54**	**29,39**
tCO2e petrol upstream		**0,55**	**0,67**	**0,78**	**0,38**	**1,99**	**4,19**	**2,18**	**4,84**	**6,83**	**6,58**
Total tCO2e		**163**	**172**	**203**	**187**	**204**	**193**	**89**	**101**	**126**	**120**
gCO2e/km (actual, inc upstream)		**260**	**258**	**263**	**256**	**251**	**247**	**275**	**246**	**232**	**234**
Commission vehicles fixed asset emissions (tonnes CO_2e)						**41**	**39**	**16**	**20**	**27**	**26**

Petten

Vehicle fleet and emissions data - JRC Petten	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fleet vehicles:											
Full Electric		0,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hybrid		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 6		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 5		0,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Euro 4		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Euro 3		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 2		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 1		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 0		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other		0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00
Avg No fleet vehicles		**0,00**	**3,00**	**3,00**	**3,00**	**4,00**	**4,00**	**4,00**	**4,00**	**4**	**4**
Total kms		4 500	30 513	55 440	61 324	56 473	45 396	21 963	37 109	43 577	48 931
Diesel used (m3)		0,10	1,50	2,70	3,41	3,24	2,12	1,49	2,32	2,73	3,01
Petrol used (m3)		0,46	1,40	2,19	1,98	1,88	1,40	0,33	0,41	0,92	1,21
Fuel efficiency (litres/100km)		**12,45**	**9,49**	**8,82**	**8,79**	**9,07**	**7,74**	**8,26**	**7,34**	**8,38**	**8,62**
gCO2e/km (manufacturer)		168	148	148	148	148	148	148	148	148,00	148,00
tCO2e diesel combustion		**0,24**	**3,75**	**6,76**	**8,52**	**8,11**	**5,30**	**3,72**	**5,79**	**6,81**	**7,49**
tCO2e diesel upstream		**0,06**	**0,99**	**1,78**	**2,25**	**2,14**	**1,40**	**0,98**	**1,52**	**1,66**	**1,83**
tCO2e petrol combustion		**1,06**	**3,19**	**4,99**	**4,51**	**4,28**	**3,19**	**0,74**	**0,93**	**2,03**	**2,68**
tCO2e petrol upstream		**0,25**	**0,74**	**1,16**	**1,05**	**1,00**	**0,74**	**0,17**	**0,22**	**0,45**	**0,60**
Total tCO2e		**1,61**	**8,67**	**14,69**	**16,33**	**15,53**	**10,62**	**5,61**	**8,46**	**10,95**	**12,59**
gCO2e/km (actual, inc upstream)		**357**	**284**	**265**	**266**	**275**	**234**	**256**	**228**	**251**	**257**
Commission vehicles fixed asset emissions (tonnes CO_2e)						**3**	**2**	**1**	**2**	**2**	**2**

Geel

Vehicle fleet and emissions data - JRC Geel	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Fleet vehicles:											
Full Electric		0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	1,00
Hybrid		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00
Euro 6		0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Euro 5		0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00		
Euro 4		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
Euro 3		0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00		
Euro 2		0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Euro 1		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
Euro 0		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		
Other		0,00	0,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Avg No fleet vehicles		**0,00**	**0,00**	**7,00**	**7,00**	**7,00**	**7,00**	**7,00**	**7,00**	**7,00**	**7,00**
Total kms		NR	NR	NR	NR		11 909	6 940	6 708	6 579	8 181
Diesel used (m3)		0,85	0,71	0,86	1,04	0,80	0,78	0,92	0,59	0,49	0,74
Petrol used (m3)		2,03	2,11	1,73	1,66	1,61	1,16	0,75	0,71	0,59	0,61
Propane used (kg)		158	158	158	126	116	165	121	126	137	130
Fuel efficiency (litres/100km)							**16,30**	**24**	**19,29**	**16,42**	**16,58**
gCO2e/km (manufacturer)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
tCO2e diesel combustion		**2,13**	**1,79**	**2,15**	**2,59**	**2,00**	**1,96**	**2,31**	**1,47**	**1,22**	**1,85**
tCO2e diesel upstream		**0,56**	**0,47**	**0,57**	**0,68**	**0,53**	**0,52**	**0,61**	**0,39**	**0,30**	**0,45**
tCO2e petrol combustion		**4,63**	**4,81**	**3,95**	**3,78**	**3,66**	**2,64**	**1,72**	**1,61**	**1,31**	**1,35**
tCO2e petrol upstream		**1,08**	**1,12**	**0,92**	**0,88**	**0,85**	**0,61**	**0,40**	**0,37**	**0,29**	**0,30**
tCO2e propane combustion		**0,47**	**0,47**	**0,47**	**0,37**	**0,34**	**0,49**	**0,36**	**0,37**	**0,41**	**0,39**
tCO2e propane upstream		**0,08**	**0,08**	**0,08**	**0,06**	**0,06**	**0,08**	**0,06**	**0,06**	**0,07**	**0,07**
Total tCO2e		**8,94**	**8,73**	**8,13**	**8,37**	**7,44**	**6,30**	**5,45**	**4,27**	**3,59**	**4,42**
gCO2e/km (actual, inc upstream)							**529**	**785**	**637**	**545**	**540**
Commission vehicles fixed asset emissions (tonnes CO_2e)						**0,00**	**0,60**	**0,35**	**0,34**	**0,33**	**0,41**

Karlsruhe

Vehicle fleet and emissions data - JRC Karslruhe	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Fleet vehicles:											
Full Electric		0,00	0,00	0,00	1,00	1,00	2,00	2,00	2,00	4,00	4,00
Hybrid		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 6		0,00	0,00	0,00	0,00	0,00	2,00	4,00	4,00	2,00	2,00
Euro 5		0,00	0,00	9,00	9,00	9,00	7,00	5,00	5,00	5,00	4,00
Euro 4		0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Euro 3		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 2		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 1		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 0		0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg No fleet vehicles		**0,00**	**0,00**	**11,00**	**12,00**	**12,00**	**12,00**	**12,00**	**12,00**	**12,00**	**11,00**
Total kms		183 400	137 616	133 520	124 944	104 666	77 749	94 250	96 380	83500	
Diesel used (m3)		5,71	7,79	12,47	14,30	11,71	4,59	2,50	3,86	4,46	2,75

Petrol used (m3)	11,71	5,87	1,58	1,10	1,35	2,60	1,74	2,13	1,51	0,37
Fuel efficiency (litres/100km)	**9,50**	**9,93**	**10,52**	**12,33**	**12,48**	**9,25**	**4,49**	**6,21**	**7,60**	**8,60**
gCO2e/km (manufacturer)	202	172	165	162	157	146	151	151	140	117
tCO2e diesel combustion	**14,27**	**19,49**	**31**	**36**	**29**	**11,47**	**6,24**	**9,65**	**11,11**	**6,86**
tCO2e diesel upstream	**3,77**	**5,14**	**8,23**	**9,44**	**7,73**	**3,03**	**1,64**	**2,54**	**2,72**	**1,68**
tCO2e petrol combustion	**27**	**13**	**3,6**	**2,5**	**3,1**	**5,9**	**4,0**	**4,9**	**3,3**	**0,8**
tCO2e petrol upstream	**6,20**	**3,11**	**0,84**	**0,58**	**0,72**	**1,38**	**0,92**	**1,12**	**0,75**	**0,18**
Total tCO2e	**51**	**41**	**44**	**48**	**41**	**22**	**13**	**18**	**18**	**10**
gCO2e/km (actual, inc upstream)	**278**	**299**	**328**	**386**	**390**	**281**	**135**	**189**	**214**	
Commission vehicles fixed asset emissions (tonnes CO2e)					**5**	**4**	**5**	**5**	**4**	**0**

Seville

Vehicle fleet and emissions data - JRC Seville	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Fleet vehicles:											
Full Electric		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Hybrid		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 6		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 5		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 4		0,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	0,00
Euro 3		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 2		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 1		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 0		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg No fleet vehicles		**0,00**	**0,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**	**0,00**
Total kms		4 440	4 356	3 192	4 016	3 859	5 521	714	0	0	0
Diesel used (m3)		0,37	0,34	0,23	0,32	0,26	0,26	0,05	0,00	0,00	0,00
Petrol used (m3)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Fuel efficiency (litres/100km)		**8,23**	**7,74**	**7,33**	**7,92**	**6,63**	**4,71**	**7,50**	**0,00**	**0,00**	**0,00**
gCO2e/km (manufacturer)		136	136	136	136	136	136	136	136	136	0
tCO2e diesel combustion		**0,91**	**0,84**	**0,59**	**0,80**	**0,64**	**0,65**	**0,13**	**0,00**	**0,00**	**0,00**
tCO2e diesel upstream		**0,24**	**0,22**	**0,15**	**0,21**	**0,17**	**0,17**	**0,04**	**0,00**	**0,00**	**0,00**
tCO2e petrol combustion		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
tCO2e petrol upstream		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total tCO2e		**1,16**	**1,06**	**0,74**	**1,00**	**0,81**	**0,82**	**0,17**	**0,00**	**0,00**	**0,00**
gCO2e/km (actual, inc upstream)		**260**	**244**	**232**	**250**	**210**	**149**	**237**	**0,0**	**0,0**	**0,0**
Commission vehicles fixed asset emissions (tonnes CO_2e)						**0,2**	**0,3**	**0,0**	**0,0**	**0,0**	**0,0**

Ispra

Vehicle fleet and emissions data - JRC Ispra	**Trend 2014-23**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Fleet vehicles:											
Full Electric		3,00	21	21	34	36	36	41	50	58	55
Hybrid		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Euro 6		0,00	0,00	1,00	2,00	2,00	1,00	5,00	5,00	5,00	7,00
Euro 5		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Euro 4		39	39	39	39	39	39	39	34	27	27
Euro 3		43	43	43	29	18	18	18	14	10	10
Euro 2		7,00	7,00	7,00	5,00	4,00	4,00	4,00	2,00	2,00	2,00
Euro 1		9,00	9,00	9,00	7,00	6,00	6,00	6,00	4,00	4,00	4,00
Euro 0		2,00	2,00	2,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg No fleet vehicles		**104**	**122**	**123**	**121**	**110**	**109**	**118**	**114**	**111**	**110**
Total kms		258 622	286 517	240 217	208 053	192 277	200 893	149 008	136 077	145 471	155 537
Diesel used (m3)		14,37	13,53	12,08	12,02	10,36	10,55	7,37	7,40	5,63	7,55
Petrol used (m3)		14,62	15,03	10,66	8,77	6,93	6,87	4,23	3,51	2,99	3,10
Fuel efficiency (litres/100km)		**11,2**	**10,0**	**9,5**	**10,0**	**9,0**	**8,7**	**7,8**	**8,0**	**5,9**	**6,8**
gCO2e/km (manufacturer)		186	158	157	132	111	109	104	91	71	74
tCO2e diesel combustion		**36**	**34**	**30**	**30**	**26**	**26**	**18**	**19**	**14**	**19**
tCO2e diesel upstream		**9,48**	**8,93**	**7,97**	**7,93**	**6,84**	**6,96**	**4,85**	**4,87**	**3,43**	**4,60**
tCO2e petrol combustion		**33**	**34**	**24**	**20**	**16**	**16**	**10**	**8**	**7**	**7**
tCO2e petrol upstream		**7,75**	**7,96**	**5,65**	**4,65**	**3,67**	**3,64**	**2,24**	**1,85**	**1,48**	**1,53**
Total tCO2e		**86**	**85**	**68**	**63**	**52**	**53**	**35**	**33**	**26**	**32**
gCO2e/km (actual, inc upstream)		**334**	**297**	**284**	**301**	**272**	**262**	**236**	**244**	**176**	**204**
Commission vehicles fixed asset emissions (tonnes CO_2e)						**10**	**10**	**7,5**	**6,8**	**7,3**	**7,8**

Grange

Vehicle fleet and emissions data - DG SANTE at Grange	Trend 2014-23	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fleet vehicles:											
Full Electric		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Hybrid		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Euro 6		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Euro 5		0,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	
Euro 4		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Euro 3		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Euro 2		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Euro 1		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Euro 0		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Armoured vehicle		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Other		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Avg No fleet vehicles		**0,00**	**1,00**	**1,00**	**1,00**	**1,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total kms		7 674	5 155	2 928	2 928	2 928	0,00	0,00	0,00	0,00	
Diesel used (m3)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Petrol used (m3)		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
Fuel efficiency (litres/100km)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
gCO2e/km (manufacturer)		174	174	174	174	174	0,00	0,00	0,00	0,00	
tCO2e diesel combustion		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
tCO2e diesel upstream		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
tCO2e petrol combustion		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
tCO2e petrol upstream		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total tCO2e		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
gCO2e/km (actual, inc upstream)		**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Commission vehicles fixed asset emissions (tonnes CO_2e)						**0**	**0**	**0**	**0**	**0**	**0**

TRAVELS *From 2014 to 2018 the division is Air, Air taxi, Rail, hired car and Private car*

tonnes CO_2e emissions

	2014	2015	2016	2017	2018	NEW CATEGORIES	2019	2020	2021	2022	2023
Brussels											
Air travel	50 044	44 044	44 507	44 993	45 617	Air travel (economy)	13.492	1 918	1 779	6 852	9 638
						Air travel (not economy)	20 358	3 216	2 024	11 006	17 094
Air taxi(and helicopter)	132	308	328	501	453	Air taxi(and helicopter)	462	860	1 223	1 062	973
Rail	132	233	182	175	157	Rail	532	113	109	318	378
Hired car	178	170	183	117	114	Non rail surface travel 1 – Commission vehicle fleet	253	81	164	308	377
Private car	505	510	512	481	484	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	540	131	186	413	409
Total	**50 991**	**45 264**	**45 712**	**46 267**	**46 824**		**35 638**	**6 320**	**5 485**	**19 960**	**28 868**
Luxembourg											
Air travel	2 067	1 752	1 691	1 611	1 878	Air travel (economy)	1 014	224	211	462	632
						Air travel (not economy)	491	56	3,72	180	225
Air taxi(and helicopter)						Air taxi(and helicopter)	0,05	0,00	2,14	0,00	1,32
Rail	8,79	9,86	6,23	6,39	5,33	Rail	75	19	15	30	40
Hired car	396	427	470	421	391	Non rail surface travel 1 –Commission vehicle fleet	82	21	13	53	56
Private car	126	133	157	145	158	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	424	207	202	286	282
Total	**2 597**	**2 322**	**2 324**	**2 183**	**2 432**		**2 087**	**527**	**447**	**1 011**	**1 237**
Petten						**Petten**					
Air travel	418	308	197	216	226	Air travel (economy)	132	9	2,5	49	81
						Air travel (not economy)	59	15	0,15	12	73
Air taxi(and helicopter)						Air taxi(and helicopter)	0,00	0,00	0,00	0,00	0,00
Rail	1,21	2,83	1,11	1,46	1,66	Rail	12,83	2,42	0,28	3,13	6,24

Hired car	2,03	3,79	4,34	1,89	0,00	Non rail surface travel 1 –Commission vehicle fleet	0,66	0,00	0,00	0,10	0,05
Private car	1,24	6,70	11,35	12,63	12,00	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	12,07	1,83	0,39	4,31	6,46
Total	**422**	**321**	**213**	**232**	**239**		**217**	**28**	**3,3**	**68**	**167**
Geel						**Geel**					
Air travel	602	395	496	412	413	Air travel (economy)	104	9,3	2,4	24	47
						Air travel (not economy)	172	14	0,00	48	28
Air taxi(and helicopter)						Air taxi(and helicopter)	0,00	0,00	0,00	0,00	0,00
Rail	1,93	1,51	2,03	1,98	1,29	Rail	6,49	0,86	1,10	2,12	2,68
Hired car	0,11	5,51	3,81	4,07	4,21	Non rail surface travel 1 –Commission vehicle fleet	5,40	0,66	0,40	2,47	1,74
Private car	6,77	6,61	6,15	6,36	5,65	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	11,25	1,63	5,53	11,85	10,72
Total	**611**	**408**	**508**	**425**	**424**		**299**	**26**	**9**	**89**	**91**
Seville						**Seville**					
Air travel	465	636	654	662	570	Air travel (economy)	414	64	19	266	411
						Air travel (not economy)	132	29	0,00	56	97
Air taxi(and helicopter)						Air taxi(and helicopter)	0,00	0,09	0,05	0,00	0,00
Rail	1,05	2,76	2,00	1,57	0,03	Rail	6,80	1,67	1,13	6,68	8,66
Hired car	0,33	0,79	0,58	0,37	0,92	Non rail surface travel 1 –Commission vehicle fleet	1,75	0,61	0,00	1,20	0,73
Private car	0,89	0,82	0,57	0,78	0,63	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	8,51	2,71	0,65	8,66	8,57
Total	**468**	**640**	**657**	**664**	**572**		**564**	**98**	**21**	**339**	**527**
Karlsruhe						**Karlsruhe**					
Air travel	322	293	263	290	291	Air travel (economy)	133	17	6,5	38	50
						Air travel (not economy)	147	25	0,00	42	96
Air taxi(and helicopter)						Air taxi(and helicopter)	0,46	0,00	0,00	0,00	0,00
Rail	2,83	6,55	5,34	4,82	4,29	Rail	14,80	2,76	3,45	11,57	10,79
Hired car	56	60	75	58	61	Non rail surface travel 1 –Commission vehicle fleet	3,57	0,05	0,26	0,91	1,60
Private car	39	32	34	37	32	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	67	23	48	46	43
Total	**420**	**391**	**378**	**391**	**388**		**366**	**67**	**59**	**139**	**201**
Ispra						**Ispra**					
Air travel	274	2 282	1 916	1 961	2 091	Air travel (economy)	1 108	156	43	383	677
						Air travel (not economy)	907	132	4,0	340	527
Air taxi(and helicopter)						Air taxi (and helicopter)	0,05	0,00	0,00	0,00	0,04
Rail	23	28	23	23	25	Rail	28,87	5,10	1,45	12,00	24,66
Hired car	45	13	11	11	12	Non rail surface travel 1 –Commission vehicle fleet	12	2,33	4,17	8,74	4,39
Private car	109	135	111	114	121	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	57	14,27	13,71	28	42
Navette	224	236	233	238	244						
Total	**674**	**2 694**	**2 294**	**2 347**	**2 493**		**2 112**	**310**	**66**	**772**	**1 276**
Grange						**Grange**					
Air travel	1 142	853	953	927	747	Air travel (economy)	314	43	27	154	193

						Air travel (not economy)	359	183	7,60	325	407
Air taxi(and helicopter)						Air taxi(and helicopter)	0,00	0,00	0,00	0,00	18,13
Rail	0,39	1,39	1,46	0,26	0,42	Rail	7,73	0,49	0,80	1,29	2,08
Hired car	7,02	5,54	10,61	7,02	6,83	Non rail surface travel 1 –Commission vehicle fleet	66	2,97	1,18	57,30	72,49
Private car						Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	9,51	9,18	18,07	14,63	5,58
Total	**1 150**	**860**	**965**	**934**	**754**		**757**	**238**	**54**	**553**	**698**

Annex 8 - Impact of telework

Introductory information

- The data is provided for the eight main EMAS registered sites. The same approach was used for the EC Representations in Member States, but these are reported separately. Consequently, the teleworking data presented for the Commission's overall footprint in Chapter 3 excludes the data for the Representations that are reported in a separate annex

Main sources of information used for teleworking calculation:

• Space heating data and national energy mix by country	Eurostat
• Emissions for space heating by country	Eurostat
• Electrical consumption and emissions of equipment used while teleworking	Commission survey
• Fixed asset contribution for teleworking equipment	DG DIGIT
• Videoconferecing emissions	Research paper, Commission survey
• Domestic teleworking arrangements	Commission Survey
• Paper consumption	Commission Survey
• Waste generation	Commission Survey
• Water consumption	Commission Survey

Table for Figure 6.2 (2023 data)

$kgCO_2e/p$	Space heating	Space cooling	Equipment electricity use	Video-conferencing	Fixed assets	Paper	Total
Brussels	74	0,1	22	9	15	0,3	**121**
Luxembourg	114	0,4	21	8,9	11	0,2	**155**
JRC Petten	58	0,4	64	11	138	0,2	**271**
JRC Geel	56	0,1	19	5,2	93	0,1	**175**
JRC Seville	17	0,4	33	9	134	0,1	**193**
JRC Karlsruhe	39	0,2	38	4,2	56	0,4	**138**
JRC Ispra	39	0,8	40	7	10	0,2	**97**
Grange	76	0,6	73	7,5	0	0,3	**157**

Table 1: Summary of teleworking emissions, 2018 - 2023

	Totals (tCO_2e)					
	2018	**2019**	**2020**	**2021**	**2022**	**2023**
Space heating	**538**	**553**	**6 213**	**6 752**	**4 068**	**3 209**
Space cooling	**1**	**2**	**16**	**15**	**9**	**7**
Equipment electricity use	**226**	**256**	**2 820**	**2 573**	**1 651**	**998**
Videoconferencing	**50**	**56**	**600**	**688**	**449**	**376**
Fixed assets		**197**	**199**	**716**	**480**	**716**
Paper	**1**	**2**	**17**	**20**	**13**	**11**
Total	**816**	**1 065**	**9 865**	**10 764**	**6 669**	**5 316**
	Per capita* ($kgCO_2e/p$)					
Space heating	15,0	14,7	159,5	168,7	100,4	76,3
Space cooling	0,0	0,0	0,4	0,4	0,2	0,2
Equipment electricity use	6,3	6,8	72,4	64,3	40,8	23,7
Videoconferencing	1,4	1,5	15,4	17,2	11,1	8,9
Fixed assets	0,0	5,2	5,1	17,9	11,8	17,0
Paper	0,0	0,0	0,4	0,5	0,3	0,3
Total	**23**	**28**	**253**	**269**	**165**	**126**

Note electricity based emisssions were lower in 2021 than 2020 due to the high emission factor for electricity in Belgium in 2020.
Although consumption was higher in 2021 than 2020, the emissions were lower.
* Population from Table 1.3, excluding DG COMM

Total emissions caused by telework

	Totals (tCO_2e)					
	2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels	504	709	7637	8405	5106	3945
Luxembourg	265	301	1374	1606	1018	876
JRC Petten	6	7	63	64	38	62
JRC Geel	3	4	65	64	39	46
JRC Seville	3	4	52	47	71	79
JRC Karlsruhe	1	1	95	72	43	42
JRC Ispra	30	33	532	447	320	239
Grange	5	6	48	58	33	26
	Per capita ($kgCO_2e/p$)					
Brussels	18	24	255	275	165	121
Luxembourg	53	58	262	289	179	155
JRC Petten	23	29	254	267	167	271
JRC Geel	12	15	243	245	148	175
JRC Seville	8	12	169	155	233	260
JRC Karlsruhe	3	3	249	185	107	102
JRC Ispra	165	189	3073	2514	1761	1415
Grange	156	194	1828	2632	1413	1127

Table 1a: Space heating teleworking emissions by site

	Totals (tCO_2e)					
	2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels	336	358	4831	5226	3073	2410
Luxembourg	180	171	978	1158	785	643
JRC Petten	2	3	24	27	16	13
JRC Geel	2	3	46	45	19	15
JRC Seville	1	1	12	16	9	7
JRC Karlsruhe	1	1	54	37	20	12
JRC Ispra	14	15	245	213	130	96
Grange	2,3	2,1	22,7	29,7	15,8	12,8
	Per capita ($kgCO_2e/p$)					
Brussels	12	12	161	171	99	74
Luxembourg	36	33	187	208	138	114
JRC Petten	9	11	98	112	69	58
JRC Geel	8	10	173	171	73	56
JRC Seville	2	2	32	40	22	17

JRC Karlsruhe		2	2	176	123	65	39
JRC Ispra		6	6	101	86	52	39
Grange		13	12	131	167	87	76

Table 1b: Space cooling teleworking emissions by site

		Totals (tCO_2e)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		0	0	6	6	4	2
Luxembourg		1	1	4	4	3	2
JRC Petten		0	0	0	0	0	0
JRC Geel		0	0	0	0	0	0
JRC Seville		0	0	0	0	0	0
JRC Karlsruhe		0	0	0	0	0	0
JRC Ispra		0	0	4	4	2	2
Grange		0,0	0,0	0,2	0,2	0,1	0,1
		Per capita ($kgCO_2e/p$)					
Brussels		0,0	0,0	0,2	0,2	0,1	0,1
Luxembourg		0,2	0,2	0,8	0,7	0,5	0,4
JRC Petten		0,1	0,1	0,7	0,7	0,4	0,4
JRC Geel		0,0	0,0	0,2	0,2	0,1	0,1
JRC Seville		0,1	0,1	0,9	0,7	0,5	0,4
JRC Karlsruhe		0,0	0,0	0,6	0,6	0,3	0,2
JRC Ispra		0,1	0,1	1,7	1,6	1,0	0,8
Grange		0,1	0,1	1,1	1,2	0,6	0,6

Table 1c: Equipment electricity use teleworking emissions by site

		Totals (tCO_2e)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		133	151	2137	1988	1309	724
Luxembourg		71	79	298	263	149	119
JRC Petten		3	4	34	32	17	15
JRC Geel		1	1	15	16	8	5
JRC Seville		2	3	34	25	17	13
JRC Karlsruhe		0	0	34	30	17	11
JRC Ispra		14	16	244	195	120	98
Grange		2,7	2,5	22,4	25,3	14,9	12,3
		Per capita ($kgCO_2e/p$)					
Brussels		5	5	71	65	42	22
Luxembourg		14	15	57	47	26	21
JRC Petten		13	16	138	132	72	64
JRC Geel		3	4	58	60	29	19
JRC Seville		5	7	90	63	43	33
JRC Karlsruhe		1	1	111	100	54	38
JRC Ispra		6	7	101	79	48	40
Grange		15	14	130	142	82	73

Table 1d: Videoconferencing teleworking emissions by site

		Totals (tCO_2e)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		34	39	472	546	354	299
Luxembourg		12	14	70	86	59	50
JRC Petten		0	0	4	5	3	2
JRC Geel		0	0	3	3	2	1
JRC Seville		0	0	6	7	5	4
JRC Karlsruhe		0	0	6	4	2	1
JRC Ispra		2	2	38	35	22	17
Grange		0,2	0,2	1,9	2,6	1,6	1,3
		Per capita ($kgCO_2e/p$)					
Brussels		1	1	16	18	11	9
Luxembourg		2	3	13	16	10	9
JRC Petten		1	2	17	22	12	11
JRC Geel		1	1	13	13	7	5
JRC Seville		1	1	15	17	12	9
JRC Karlsruhe		0	0	18	12	7	4
JRC Ispra		1	1	16	14	9	7
Grange		1	1	11	15	9	8

Table 1e: IT fixed assets teleworking emissions by site

		Totals (tCO_2e)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		0,0	159,9	176,7	623	356	501
Luxembourg		0,0	35,4	22,0	93	21	61
JRC Petten		0,0	0,0	0,0	0	3	31
JRC Geel		0,0	0,0	0,0	0	10	25
JRC Seville		0,0	0,0	0,0	0	40	55
JRC Karlsruhe		0,0	0,0	0,0	0	4	17
JRC Ispra		0,0	0,0	0,0	0	44	25
Grange		0,0	1,7	0,2	0,0	0,8	0,0
		Per capita ($kgCO_2e/p$)					
Brussels		0,0	5,6	5,9	20,4	11,5	15,4
Luxembourg		0,0	6,9	4,2	16,7	3,6	10,8
JRC Petten		0,0	0,0	0,0	0,0	13,3	138,1
JRC Geel		0,0	0,0	0,0	0,0	39,1	93,4
JRC Seville		0,0	0,0	0,0	0,0	98,7	134,3
JRC Karlsruhe		0,0	0,0	0,0	0,0	14,0	56,3
JRC Ispra		0,0	0,0	0,0	0,0	17,8	10,3
Grange		0,0	9,4	1,4	0,0	4,2	0,0

Table 1f: Paper use teleworking emissions by site

		Totals (tCO_2e)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		1,0	1,1	13,8	15,9	10,4	8,7
Luxembourg		0,3	0,3	1,7	2,2	1,5	1,3
JRC Petten		0,0	0,0	0,1	0,1	0,0	0,0
JRC Geel		0,0	0,0	0,1	0,1	0,0	0,0

JRC Seville		0,0	0,0	0,1	0,1	0,0	0,0
JRC Karlsruhe		0,0	0,0	0,5	0,3	0,2	0,1
JRC Ispra		0,1	0,1	1,1	1,0	0,7	0,5
Grange		0,0	0,0	0,1	0,1	0,1	0,1
		Per capita ($kgCO_2e/p$)					
Brussels		0,0	0,0	0,5	0,5	0,3	0,3
Luxembourg		0,1	0,1	0,3	0,4	0,3	0,2
JRC Petten		0,0	0,0	0,3	0,3	0,2	0,2
JRC Geel		0,0	0,0	0,3	0,3	0,2	0,1
JRC Seville		0,0	0,0	0,1	0,2	0,1	0,1
JRC Karlsruhe		0,0	0,0	1,6	1,1	0,6	0,4
JRC Ispra		0,0	0,0	0,5	0,4	0,3	0,2
Grange		0,0	0,0	0,4	0,6	0,4	0,3

Table 2: Telework energy use (from space heating, cooling and electricity from equipment use)

		Totals (MWh)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		2 147	2 257	28 499	32 911	19 891	15.169
Luxembourg		994	992	5 628	6 958	4 542	3.767
JRC Petten		14	17	159	200	113	94
JRC Geel		12	16	264	276	122	97
JRC Seville		7	8	146	138	98	100
JRC Karlsruhe		4	5	352	298	167	74
JRC Ispra		93	105	1 753	1 616	993	734
Grange		12	11	129	181	100	74
Total		**3 347**	**3 477**	**37 258**	**42 926**	**26 027**	**20 109**
		Per capita (kWh/p)					
Brussels		75	78	952	1 075	643	466
Luxembourg		198	193	1 074	1 252	797	668
JRC Petten		55	68	645	834	493	413
JRC Geel		48	62	994	1 050	463	369
JRC Seville		21	25	472	453	321	245
JRC Karlsruhe		12	12	921	763	416	244
JRC Ispra		41	45	727	653	398	297
Grange		68	63	745	1 016	551	435

Total energy use (office and telework), (MWh)

	2018	2019	2020	2021	2022	2023
office	391 125	388 747	350 537	358 063	302 519	270 258
telework	3 347	3 477	37 258	42 926	26 027	20 109
Total	394 472	392 224	387 795	400 989	328 546	290 367
% telework	0,8	0,9	10	11	8	7

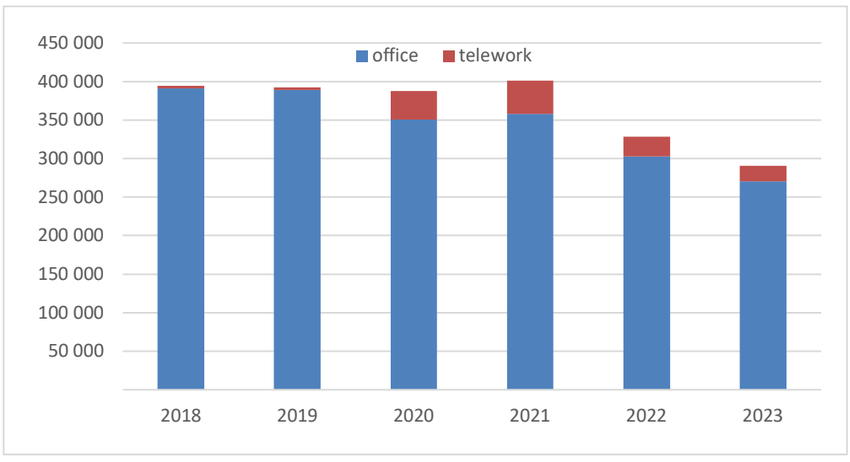


Table 3: Telework water use

		Totals (m^3)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		7 154	7 811	94 710	109 375	70 994	59.857
Luxembourg		2 972	3 311	16 691	20 634	14 143	11.992
JRC Petten		51	64	603	757	409	345
JRC Geel		34	46	712	744	367	293
JRC Seville		45	53	939	889	628	648
JRC Karlsruhe		16	17	1 333	1 128	641	298
JRC Ispra		356	414	6 939	6 391	4 147	3.167
Total		**10 626**	**11 717**	**121 928**	**139 918**	**91 328**	**76 600**
		Per capita (L/p)					
Brussels		251	270	3 163	3 574	2 295	1 838
Luxembourg		592	644	3 186	3 712	2 482	2 126
JRC Petten		204	259	2 442	3 154	1 777	1 514
JRC Geel		130	174	2 678	2 830	1 390	1 109
JRC Seville		143	169	3 039	2 916	2 052	1 588
JRC Karlsruhe		46	47	3 489	2 892	1 591	981
JRC Ispra		156	177	2 878	2 582	1 663	1 283
Grange		232	222	2 531	3 452	2 027	1 762

Total water use (office and telework), (m3)

	2018	2019	2020	2021	2022	2023
buildings	790 173	689 319	537 628	469 921	472 376	469 109
telework	10 626	11 717	121 928	139 918	91 328	76 600
Total	800 799	701 036	659 557	609 839	563 705	545 709
% telework	1,3	1,7	18	23	16	14

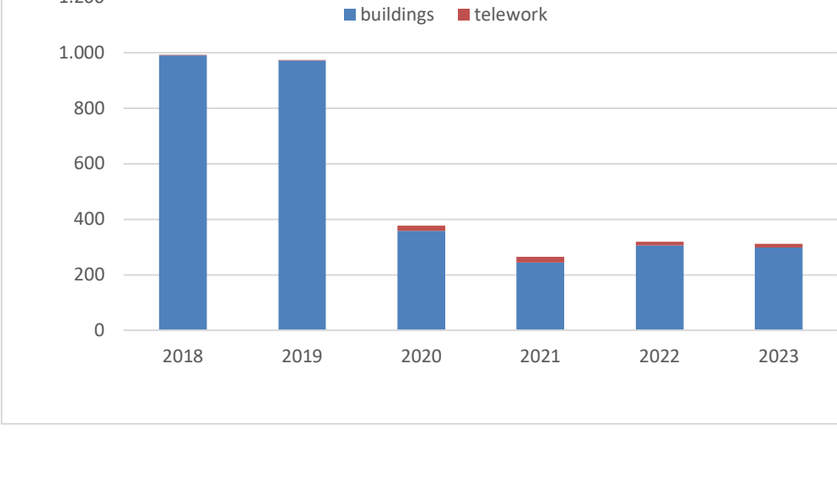


Table 4: Telework paper use

		Totals (tonnes)					
		2018	**2019**	**2020**	**2021**	**2022**	**2023**
Brussels		1,13	1,24	15,0	17,4	11,3	9,5
Luxembourg		0,34	0,38	1,89	2,34	1,60	1,36
JRC Petten		0,01	0,01	0,07	0,09	0,05	0,04
JRC Geel		0,00	0,01	0,10	0,10	0,05	0,04
JRC Seville		0,00	0,00	0,05	0,05	0,04	0,04
JRC Karlsruhe		0,01	0,01	0,54	0,45	0,26	0,12
JRC Ispra		0,06	0,07	1,18	1,09	0,71	0,54
Grange		0,01	0,01	0,08	0,12	0,07	0,06
Total		**1,6**	**1,7**	**19**	**22**	**14,0**	**11,7**
		Per capita (sheets/person/day)					
Brussels		3,9	3,9	3,9	3,9	3,9	3,9
Luxembourg		3,1	3,1	3,1	3,1	3,1	3,1
JRC Petten		2,2	2,2	2,2	2,2	2,2	2,2
JRC Geel		3,0	3,0	3,0	3,0	3,0	3,0
JRC Seville		2,9	2,9	2,9	2,9	2,9	2,9
JRC Karlsruhe		4,9	4,9	4,9	4,9	4,9	4,9
JRC Ispra		4,0	4,0	4,0	4,0	4,0	4,0
Grange		2,6	2,6	2,6	2,6	2,6	2,6

Total paper consumption (office and telework), (tonnes)

	2018	2019	2020	2021	2022	2023
buildings	**991**	**972**	**359**	**244**	**305**	**299**
telework	2	2	19	22	14	12
Total	992	973	378	266	319	311
% telework	0,2	0,2	5	8	4	4

Scope of the Commission's EMAS system by site (2023)

A) Brussels

Bldg. Code	Address	Useful surface area (PEB, m2) [(a)]	Staff [(a)]	EMAS Registration status	Included in EMAS reporting?	Year of verification	Comment
B232	Rue Breydel 4	11 425	444	BXL 2009/016	yes	2019	
B-28	Rue Belliard 28	14 843	1 198	BXL 2007/009	yes	2019	
B-68	Rue Belliard 68	7 305	0		no		Empty building entering the EC portfolio in 2022 and planned for sale
BERL	Rue de la Loi 200	156 450	2 237	BXL 2005/001	yes	2021	
BRE2	Avenue d'Auderghem 19	19 578	824	BXL 2005/002	yes		
BREY	Avenue d'Auderghem 45	35 868	784	BXL 2009/015	yes	2021	
CCAB	Rue Froissart 36	19 645	539	BXL 2013/049	yes		
CDMA	Rue du Champ de Mars 21	21 590	667	BXL 2009/017	yes	2023	
CHAR	Rue de la Loi 170	55 828	1 398	BXL 2013/050	yes		
CLOV - WILS	Boulevard Clovis 75	9 111	19	BXL 2007/010	yes		
COLE	Rue G.Leman 60	9 961	74	BXL 2011/026	yes	2023	
COVE-COV2	Placer Rogier 16	69 896	2 098	BXL 2014/055	yes		
CSM1	Rue Père de Deken 23	12 866	602	BXL 2011/026	yes	2024	
DAV1	Avenue de Bourget 1-3	12 567	96	BXL 2007/011	yes	2021	
DM24	Rue Demot 24	15 758	502	BXL 2014/055	yes	2022	
DM28	Rue Demot 28	11 638	353	BXL 2013/051	yes	2022	
F101	Rue Froissart 101	8 268	227	BXL 2010/031	yes	2017	
G-12	Avenue de Genève 12	16 789	514	BXL 2011/038	yes		
G--6	Avenue de Genève 6	17 054	400	BXL 2011/039	yes	2010	
J-27	Rue Joseph II 27	13 247	377	BXL 2009/019	yes	2018	
J-30	Rue Joseph II 30	18 890	449	BXL 2009/020	yes	2024	
J-54	Rue Joseph II 54	20 419	415	BXL 2007/012	yes	2016	
J-59	Rue Joseph II 59	9 340	314	BXL 2010/030	yes		
J-70	Rue Joseph II 70	20 013	575	BXL 2010/029	yes	2018	
J-79	Rue Joseph II 79	16 400	396	BXL 2009/021	yes	2016	
J-99	Rue Joseph II 99	8 413	300	BXL 2014/056	yes		
KORT	Industriepark Gullendelle, Vinkstraat 3 3070 KORTENBERG	1 070	15	VL 2015/002	yes		
L102	Rue de la Loi 102	4 756	59	BXL 2013/052	yes		
L107	Rue de la Loi 107	29 901	1 901	BXL 2013/053	yes	2023	
L130	rue de la Loi, 130	38 295	972	BXL 2014/057	yes		
L-15	Rue de la Loi 15	17 306	472	BXL 2013/053	yes		
L-41	Rue de la Loi 41	30 179	801	BXL 2009/022	yes		
L-51	Rue de la Loi 51	12 745	673		yes	2024	
L-56	Rue de la Loi 56	9 640	282	BXL 2012/046	yes	2018	
L-86/L-84	Rue de la Loi 86	13 445	408	BXL 2011/032	yes		
LX40	Rue de Luxembourg 40	7 926	221	BXL 2013/054	yes	2020	
LX46 + MO59	Rue de Luxembourg 46	25 790	806	BXL 2010/023	yes	2020	
MADO	Place Madou, 1	39 992	1 168	BXL 2014/058	yes		
MERO	Av. Tervuren, 41	13 651	425	2020	yes	2024	
MO15	Rue Montoyer 15	11 968	524	2020	yes	2020	
N105	Avenue des Nerviens 105	10 045	292	BXL 2010/025	yes		
NOHE	Chaussée de Vilvorde 142 1120 - Neder-Over-Heembeek	21 892	24		yes	2024	
ORBN	square Frère Orban, 8	24 820	697	BXL 2014/059	yes	2021	
OVER	Dennenboslaan, 54- 3090 OVERIJSE	2 600	7	VL/2015/003	yes	2016	
PALM	Avenue Palmerston 6-14	2 403	0		no		Empty building plannned for sale
RP14	Rond-poinr Schuman 14	530	0		no		Exhibition space
PLB3	Philippe Le Bon 3	17 432	145	BXL 2015/060	yes		
SB34	Simon Bolivar 34	35 463	1 175		no		will enter in EMAS scope in 2025
SC11	Rue de la Science 11	9 158	414	BXL 2005/008	no		
SPA2	Rue de SPA 2	19 483	451	BXL 2012/047	yes	2022	
SPA3	Rue de Spa 3	12 044	502	BXL 2012/048	yes	2023	
TR74	Rue de Trèves, 74	6 091	0		no		Empty building getting in EC park in 2022 and plannned for sale
VM18	Rue Van Maerlant 18	11 123	82	BXL 2010/028	yes	2017	
WALI	Boulevard Clovis 53	5 598	126	BXL 2015/061	yes		
W910	Chaussée de Wavre, 910- 1040 ETTERBEEK	10 310	421	2022	yes		
PXEB	Virtual buildings for externl prestataires	N/A	1711		no		Staff formerly working in Commission buildings now in non Commission accommodation, not considered in the system

Summary*	Buildings registered in EMAS, (No)	49	Including external verification in 2023
	Total 'useful area' of buildings registered in EMAS (sq.m)	1 029 363	
	Staff in buildings registered in EMAS	32 562	
	Total number of buildings	55	
	Total 'useful area' of buildings (sq.m)	1 095 114	
	Total number of staff	34 588	

*Totals are reported in Tables 1.2 to 1.4

Note (a) Indicative figures

B) Luxembourg

Bldg. Code	Address	Useful surface area (PEB, m2) [(a)]	Staff [(a)]	EMAS Registration status	Included in EMAS reporting?	Year of verification	Comment
ARIA	Route d'Esch 400, L-1471	13 624	508	LU-008	yes	2023	
BECH	Rue Alphonse Weicker 5, L-2721	34 060	819	LU-007	yes	2024	
CPE 1 et 2	Rue Albert Borschette 1, L-1246	4 370	34	n/a	yes	-	Will be replaced
CPE 3	Rue Albert Borschette 5, L-1246	5 218	60	LU-011	yes	2020	
CPE 5	Rue Gaston Thorn 6, L-8268	10 895	51	LU-004	yes	2014	
DRB	Rue Guillaume Kroll 12, L-1882	27 124	882	LU-001	yes	2024	
EUFO	Rue Robert Stumper 10, L-2557	26 098	477	LU-003	yes	2021	
FOYER (HEI)	Rue Heinrich Heine 10-12, L-1720	1 192	4	LU-012	yes	2019	
LACC	Rue Eugène Ruppert 18-20, L-2453	11 292	390	LU-009	yes	2017	
T2	Rue Pierre Frieden 1-7, L-1543	15 342	450	LU-010	yes	2017	
MER	Rue Mercier 2, L-2985	19 626	319	n/a	yes	-	Abandonned 31 July 2023
MERP	Rue de Reims 20, L-2417	15 361	382	n/a	yes	-	Rented since Feb 2023. Renovation works folllwed. Occupied since 1 August 2023. EMAS registr. in 2025
FISR	Rue Adolphe Fischer 135-137 L- 1521	3 526	10	LU-014	yes	2021	
WIND (DC)	Rue Pierre Flammang 3, L-8399	1 206	5	LU-006	yes	2023	
WIND - Telecom Centre	Rue Pierre Flammang 3, L-8399	274		LU-006	yes	2019	
BETZ (DC)	Parc Audiovisuel et des Télécommunications, L-6832 Betzdorf	2 384	5	LU-013	yes	2019	
PXEL	Virtual buildings for externl prestataires	n/a	358	n/a	no	not EMAS	

Summary*			
	Buildings registered in EMAS, (No)	13	Including external verification in 2023
	Total 'useful area' of buildings registered in EMAS (sq.m)	152 235	
	Staff in buildings registered in EMAS	4 907	
	Total number of buildings	16	
	Total 'useful area' of buildings (sq.m)	191 592	
	Total number of staff	5642	

Note (a) Indicative figures

C) Remaining main sites* - each of which (except JRC Seville) is defined by a perimeter, rather than by individual buildings in a city centre

Site	Address	Useful surface area (PEB, m2) (a)	Staff (a)	EMAS Registration status	Included in EMAS reporting?	Year of verification	Comment on scope including exclusions
JRC Petten	Petten, Westerduinweg, 3	19996	228	NL-001	yes		Nuclear reactor not in scope, run by NRG (Nuclear Research and Consultancy Group)
JRC Geel	Geel, Retieseweg, 111	50650	264	VL-001	yes		B180 (heating building managed by VITO) out of EMAS
JRC Seville	41092 Sevilla, Calle Inca Garcilaso, 3	8039	408	ES-001	yes		No exclusions
JRC Karlsruhe	Eggenstein Leopoldshafen, Hermann von Helmholtz Platz, 1	43710	304	DE-001	yes		No exclusions
JRC Ispra	Ispra, Via Enrico Fermi, 2749	1592231	2494	IT-001	yes		Not included in the scope: • the nuclear reactor named 'Ispra-1'; • the Italian Fire Brigade station; • the Carabinieri offices; • the Italian Post office; • the travel agency; • the bank office; • the ENEA building (a subsidiary site of the Italian national agency for new technologies, energy and sustainable economic development); • the EUROPOL data centre.
DG SANTE at Grange	Dunsany Co. Meath, Grange, 0	12402	169	IE-001	yes		No exclusions

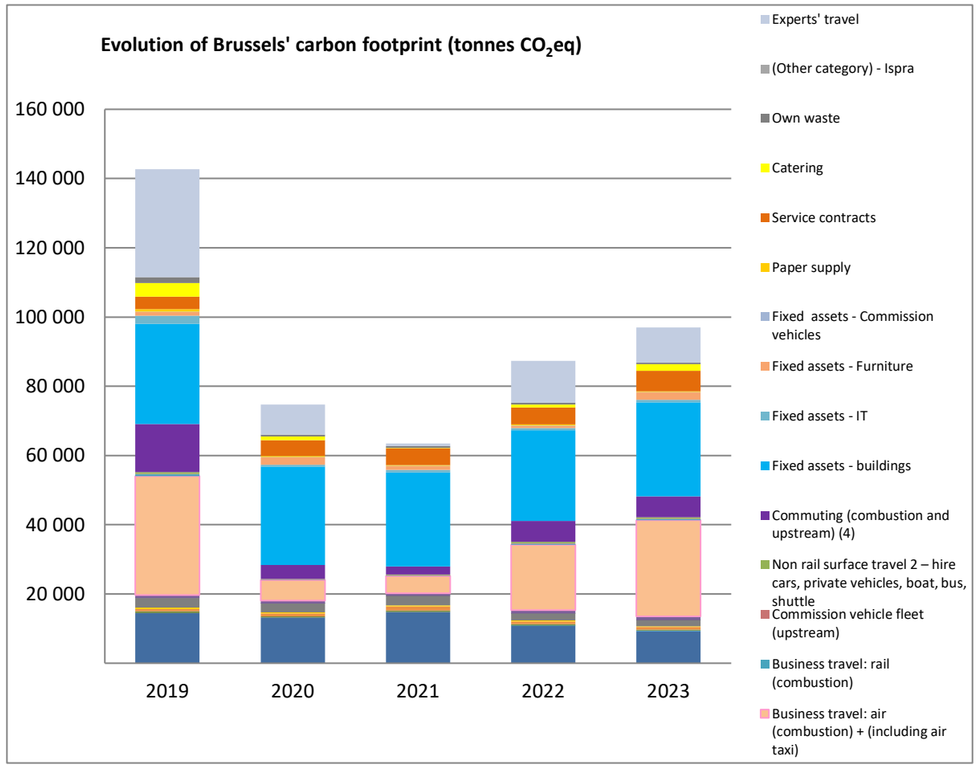
(a) Indicative figures

* Excluding EC Representations in Member States (see separate Annex)

Table 10.1 Evolution of emissions at the EMAS sites (tonnes CO_2e)

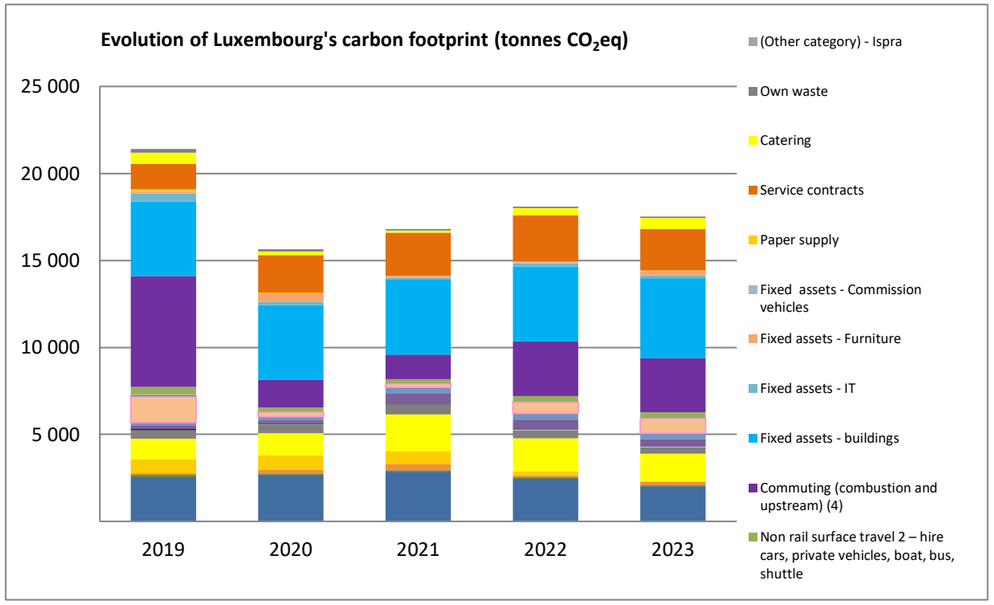
Brussels

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**15.666**	**14.400**	**16.354**	**12.036**	**10.407**
Fuel for bldgs: mains gas	14.464	13.221	14.851	10.860	9.286
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	0	0	0	26	67
Biomass	na	na	na	na	na
Commission vehicle fleet	525	303	339	378	343
Refrigerants (2)	677	876	1.163	771	711
Scope 2: Purchased energy	**406**	**349**	**313**	**286**	**266**
External electricity supply (grey),	406	349	313	286	266
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	na	na	na	na	na
Scope 3: Other indirect sources	**127.364**	**67.636**	**55.202**	**80.129**	**90.208**
Fuel for bldgs: mains gas (upstream)	2.752	2.509	2.818	2.061	1.763
Fuel for bldgs: tanked gas (upstream) (1)	na	na	na	na	na
Fuel for bldgs: diesel (upstream)	0	0	0	6	15
Site generated renewables (upstream) (3)	1	1	1	1	5
External grey electricity supply, line losses	17	17	12	11	9
External 'renewables' electricity contract (upstream with line loss)	866	776	695	883	1.097
District heating (upstream)					
Business travel: air (combustion) + (including air taxi)	34.313	5.995	5.026	18.921	27.704
Business travel: rail (combustion)	532	113	109	318	378
Commission vehicle fleet (upstream)	132	74	81	86	77
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	540	131	186	413	409
Commuting (combustion and upstream) (4)	13.916	4.001	2.366	6.028	6.102
Experts' travel	31.216	8.730	748	12.141	10.092
Fixed assets - buildings	28.920	28.381	27.154	26.264	27.121
Fixed assets - IT	2.274	539	770	621	795
Fixed assets - Furniture	1.107	2.206	1.014	675	2.070
Fixed assets - Commission vehicles	117	72	88	107	104
Paper supply	766	280	185	228	227
Service contracts	3.612	4.555	4.872	4.922	5.880
Catering	3.852	1.085	117	833	1.914
Teleworking emissions	709	7.637	8.405	5.106	3.945
Own waste	1.721	533	553	504	503
(Other category) - Ispra	na	na	na	na	na
Sum	**143.436**	**82.385**	**71.869**	**92.451**	**100.881**
Total tonnes CO_2 per person	***4,99***	***2,75***	***2,35***	***2,99***	***3,10***



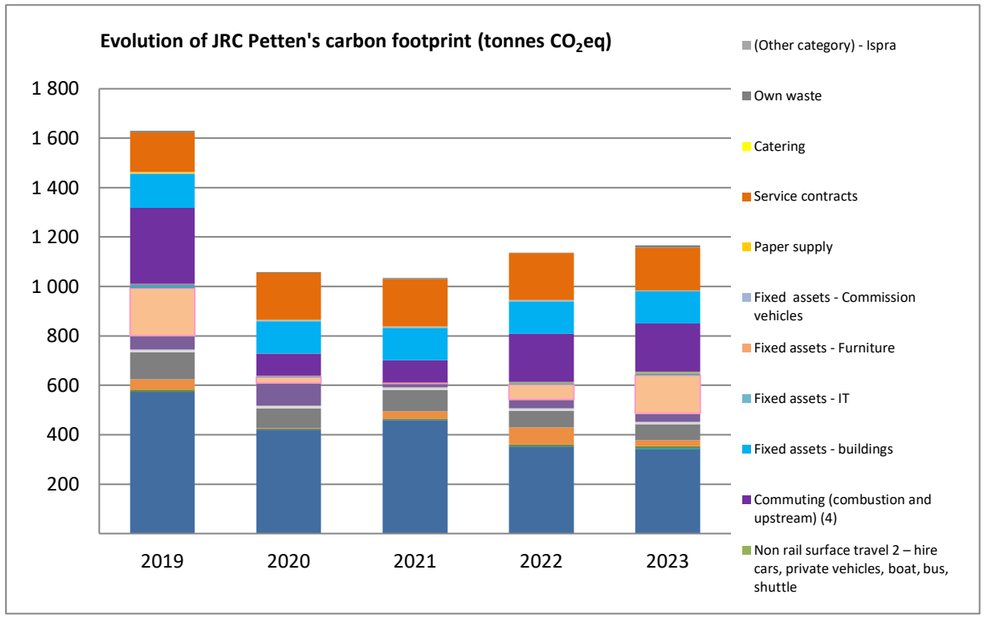
Luxembourg

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**2.776**	**2.956**	**3.282**	**2.641**	**2.286**
Fuel for bldgs: mains gas	2.532	2.665	2.856	2.454	1.984
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	2	2	2	0	20
Biomass	0	8	8	6	6
Commission vehicle fleet	153	71	80	102	97
Refrigerants (2)	89	211	336	79	178
Scope 2: Purchased energy	**1.988**	**2.123**	**2.878**	**2.139**	**1.611**
External electricity supply (grey),	807	856	732	240	0
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	1.181	1.267	2.145	1.899	1.611
Scope 3: Other indirect sources	**16.942**	**11.947**	**12.252**	**14.339**	**14.502**
Fuel for bldgs: mains gas (upstream)	482	506	542	466	377
Fuel for bldgs: tanked gas (upstream) (1)					
Fuel for bldgs: diesel (upstream)	0	0	0	0	4
Site generated renewables (upstream) (3)	5	10	10	11	11
External grey electricity supply, line losses	55	44	27	9	0
External 'renewables' electricity contract (upstream with line loss)	188	178	633	587	449
District heating (upstream)	187	200	339	368	334
Business travel: air (combustion) + (including air taxi)	1.506	280	217	642	858
Business travel: rail (combustion)	75	19	15	30	40
Commission vehicle fleet (upstream)	40	18	20	24	23
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	424	207	202	286	282
Commuting (combustion and upstream) (4)	6.372	1.599	1.420	3.149	3.107
Fixed assets - buildings	4.298	4.298	4.298	4.298	4.589
Fixed assets - IT	457	182	141	191	170
Fixed assets - Furniture	108	484	36	34	228
Fixed assets - Commission vehicles	39	16	20	27	26
Paper supply	83	34	24	34	29
Service contracts	1.464	2.160	2.494	2.654	2.386
Catering	642	213	132	427	617
Teleworking emissions	301	1.374	1.606	1.018	876
Own waste	216	126	76	83	96
(Other category) - Ispra	na	na	na	na	na
Sum	**21.706**	**17.026**	**18.411**	**19.119**	**18.400**
Total tonnes CO_2 per person	***4,22***	***3,25***	***3,31***	***3,36***	***3,26***



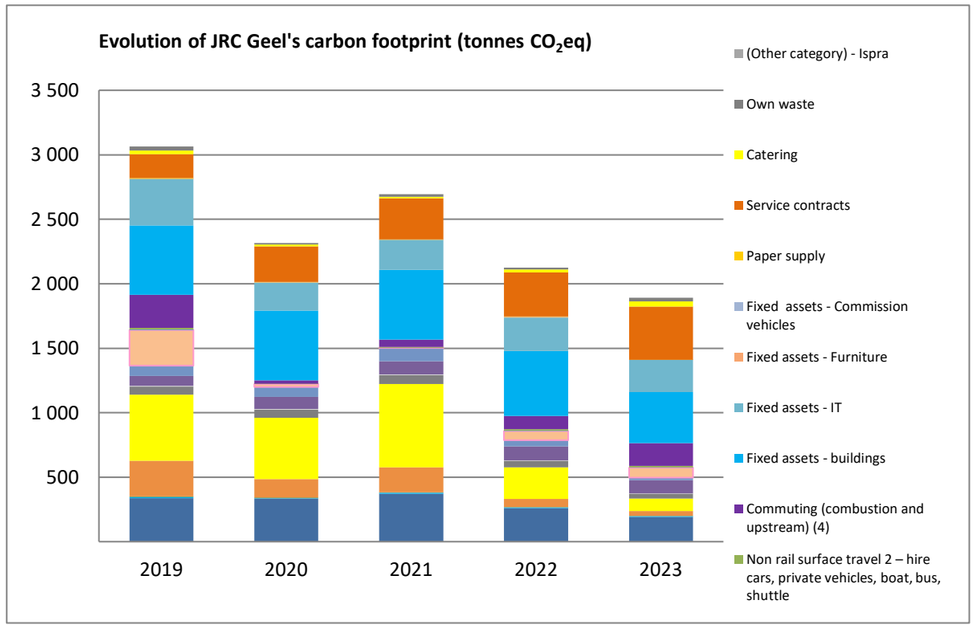
JRC Petten

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**624**	**427**	**494**	**430**	**378**
Fuel for bldgs: mains gas	574	420	459	352	342
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	0	0	0	0	2
Biomass	na	na	na	na	na
Commission vehicle fleet	8	4	7	9	10
Refrigerants (2)	42	2	28	69	24
Scope 2: Purchased energy	**0**	**0**	**0**	**0**	**0**
External electricity supply (grey),	0	0	0	0	0
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	na	na	na	na	na
Scope 3: Other indirect sources	**1.014**	**694**	**604**	**746**	**850**
Fuel for bldgs: mains gas (upstream)	109	80	87	67	65
Fuel for bldgs: tanked gas (upstream) (1)					
Fuel for bldgs: diesel (upstream)	0	0	0	0	0
Site generated renewables (upstream) (3)	11	11	10	11	8
External grey electricity supply, line losses	0	0	0	0	0
External 'renewables' electricity contract (upstream with line loss)	57	92	15	36	34
District heating (upstream)	na	na	na	na	na
Business travel: air (combustion) + (including air taxi)	192	24	3	61	155
Business travel: rail (combustion)	13	2	0	3	6
Commission vehicle fleet (upstream)	2	1	2	2	2
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	2	2	0	4	6
Commuting (combustion and upstream) (4)	308	89	89	195	194
Fixed assets - buildings	138	130	130	130	130
Fixed assets - IT	0	4	1	3	1
Fixed assets - Furniture	2	1	1	0	0
Fixed assets - Commission vehicles	2	1	2	2	2
Paper supply	4	0	3	0	0
Service contracts	160	190	190	190	174
Catering	0	0	0	0	0
Teleworking emissions	7	63	64	38	62
Own waste	6	3	5	2	8
(Other category) - Ispra	na	na	na	na	na
Sum	**1.638**	**1.121**	**1.098**	**1.176**	**1.228**
Total tonnes CO_2 per person	***6,58***	***4,54***	***4,57***	***5,11***	***5,39***



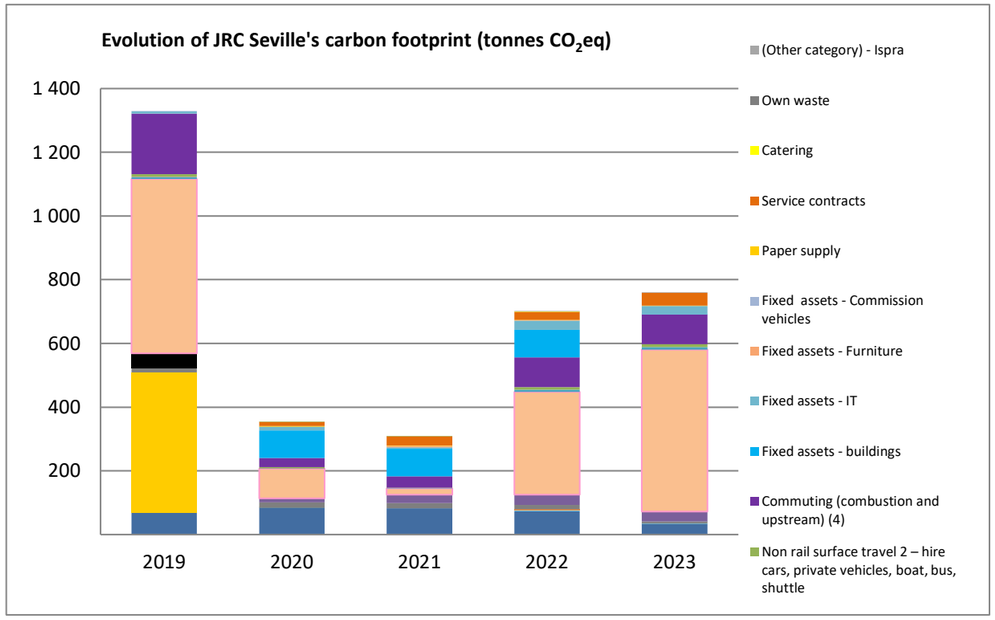
JRC Geel

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**628,43**	**484,90**	**576,73**	**331,24**	**236,18**
Fuel for bldgs: mains gas	337,42	335,22	371,36	259,63	190,60
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	8,87	2,29	7,38	7,37	6,84
Biomass	na	na	na	na	na
Commission vehicle fleet	4,60	4,02	3,08	2,52	3,60
Refrigerants (2)	277,55	143,37	194,92	61,71	35,15
Scope 2: Purchased energy	**510,77**	**474,99**	**644,43**	**245,93**	**99,02**
External electricity supply (grey),	0,00	0,00	0,00	0,00	0,00
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	510,77	474,99	644,43	245,93	99,02
Scope 3: Other indirect sources	**1.927,64**	**1.419,33**	**1.537,13**	**1.586,86**	**1.601,27**
Fuel for bldgs: mains gas (upstream)	64,19	63,61	70,47	49,27	36,18
Fuel for bldgs: tanked gas (upstream) (1)					
Fuel for bldgs: diesel (upstream)	1,93	0,50	1,61	1,61	1,49
Site generated renewables (upstream) (3)	3,33	4,55	3,89	1,37	1,75
External grey electricity supply, line losses	0,00	0,00	0,00	0,00	0,00
External 'renewables' electricity contract (upstream with line loss)	75,34	95,69	101,28	109,72	102,83
District heating (upstream)	80,70	75,05	101,82	47,71	20,50
Business travel: air (combustion) + (including air taxi)	275,48	23,20	2,36	72,32	75,38
Business travel: rail (combustion)	6,49	0,86	1,10	2,12	2,68
Commission vehicle fleet (upstream)	1,13	1,00	0,76	0,59	0,82
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	11,25	1,63	5,53	11,85	10,72
Commuting (combustion and upstream) (4)	256,00	25,65	57,95	100,34	175,56
Fixed assets - buildings	537,95	539,64	539,63	503,61	396,06
Fixed assets - IT	359,45	218,08	233,20	259,91	249,93
Fixed assets - Furniture	1,54	1,95	0,17	6,11	0,35
Fixed assets - Commission vehicles	0,60	0,35	0,34	0,33	0,41
Paper supply	3,72	1,28	1,55	1,66	1,50
Service contracts	187,17	277,14	319,46	341,56	410,62
Catering	28,32	13,40	11,30	23,99	41,45
Teleworking emissions	3,91	64,75	64,32	39,06	46,09
Own waste	29,15	10,98	20,41	13,72	26,95
(Other category) - Ispra	na	na	na	na	na
Sum	**3.067**	**2.379**	**2.758**	**2.164**	**1.936**
Total tonnes CO_2 per person	***11,71***	***8,94***	***10,49***	***8,20***	***7,34***



JRC Seville

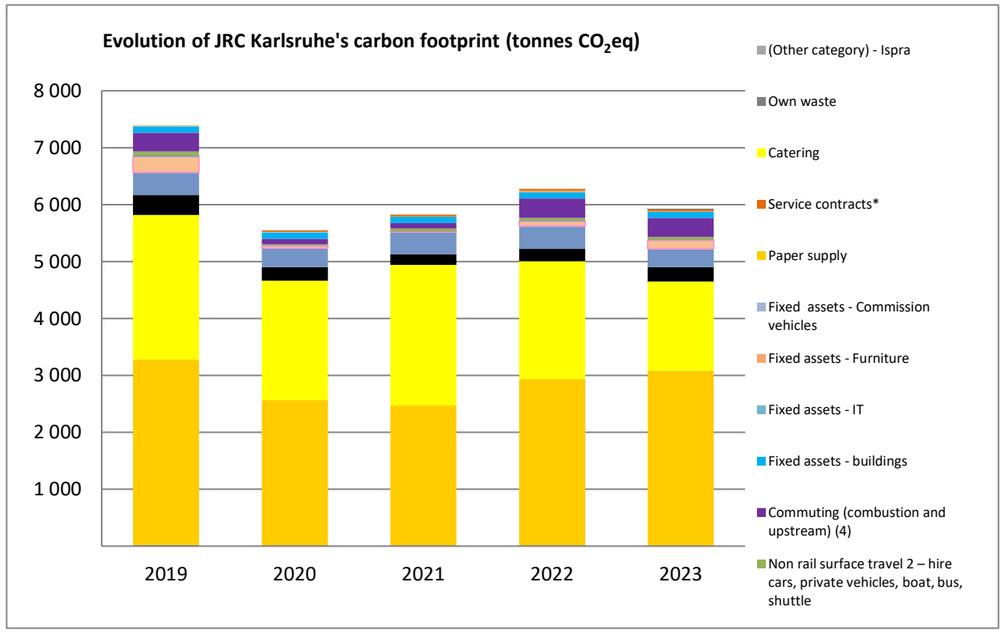
Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**69**	**85**	**83**	**79**	**34**
Fuel for bldgs: mains gas	69	85	83	73	33
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	0	0	0	1	1
Biomass	na	na	na	na	na
Commission vehicle fleet	1	0	0	0	0
Refrigerants (2)	0	0	0	5	0
Scope 2: Purchased energy	**440**	**0**	**0**	**0**	**0**
External electricity supply (grey),	440	0	0	0	0
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	na	na	na	na	na
Scope 3: Other indirect sources	**823**	**322**	**274**	**694**	**804**
Fuel for bldgs: mains gas (upstream)	13	16	16	14	6
Fuel for bldgs: tanked gas (upstream) (1)	na	na	na	na	na
Fuel for bldgs: diesel (upstream)	0	0	0	0	0
Site generated renewables (upstream) (3)	na	na	na	na	na
External grey electricity supply, line losses	46	0	0	0	0
External 'renewables' electricity contract (upstream with line loss)	0	12	27	33	31
District heating (upstream)					
Business travel: air (combustion) + (including air taxi)	547	93	19	322	509
Business travel: rail (combustion)	7	2	1	7	9
Commission vehicle fleet (upstream)	0	0	0	0	0
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	9	3	1	9	9
Commuting (combustion and upstream) (4)	190	29	36	93	94
Fixed assets - buildings	0	87	87	87	0
Fixed assets - IT	7	12	5	29	26
Fixed assets - Furniture	0	0	4	1	0
Fixed assets - Commission vehicles	0	0	0	0	0
Paper supply	0	2	2	1	1
Service contracts	0	13	28	26	40
Catering	0	0	0	0	0
Teleworking emissions	4	52	47	71	79
Own waste	0	1	1	1	1
(Other category) - Ispra	na	na	na	na	na
Sum	**1.333**	**407**	**357**	**773**	**839**
Total tonnes CO $_2$ per person	***3,62***	***1,07***	***0,92***	***1,92***	***2,06***



JRC Karlsruhe

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**20**	**13**	**17**	**17**	**10**
Fuel for bldgs: mains gas	na	na	na	na	na
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	3	3	3	3	3
Biomass	na	na	na	na	na
Commission vehicle fleet	17	10	15	14	8
Refrigerants (2)	0	0	0	0	0
Scope 2: Purchased energy	**5.797**	**4.649**	**4.926**	**4.991**	**4.638**
External electricity supply (grey),	3.260	2.556	2.454	2.920	3.071
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	2.537	2.093	2.472	2.071	1.566
Scope 3: Other indirect sources	**1.572**	**983**	**951**	**1.309**	**1.321**
Fuel for bldgs: mains gas (upstream)	na	na	na	na	na
Fuel for bldgs: tanked gas (upstream) (1)	na	na	na	na	na
Fuel for bldgs: diesel (upstream)	0	0	0	0	0
Site generated renewables (upstream) (3)	na	na	na	na	na
External grey electricity supply, line losses	347	243	186	216	255
External 'renewables' electricity contract (upstream with line loss)	0	0	0	0	0
District heating (upstream)	401	331	391	402	324
Business travel: air (combustion) + (including air taxi)	281	42	7	81	146
Business travel: rail (combustion)	15	3	3	12	11
Commission vehicle fleet (upstream)	4	3	4	3	2
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	67	23	48	46	43
Commuting (combustion and upstream) (4)	328	94	94	341	339
Fixed assets - buildings	111	111	111	111	111
Fixed assets - IT	9	8	2	2	0
Fixed assets - Furniture	3	0	0	19	5
Fixed assets - Commission vehicles	4	5	5	4	0
Paper supply	2	0	1	2	2
Service contracts*	0	27	27	27	27
Catering	0	0	0	0	0
Teleworking emissions	1	95	72	43	42
Own waste	0	0	0	0	15
(Other category) - Ispra	na	na	na	na	na
Sum	**7.389**	**5.645**	**5.894**	**6.317**	**5.969**
Total tonnes CO $_2$ per person	***23,46***	***18,27***	***19,32***	***20,64***	***19,64***

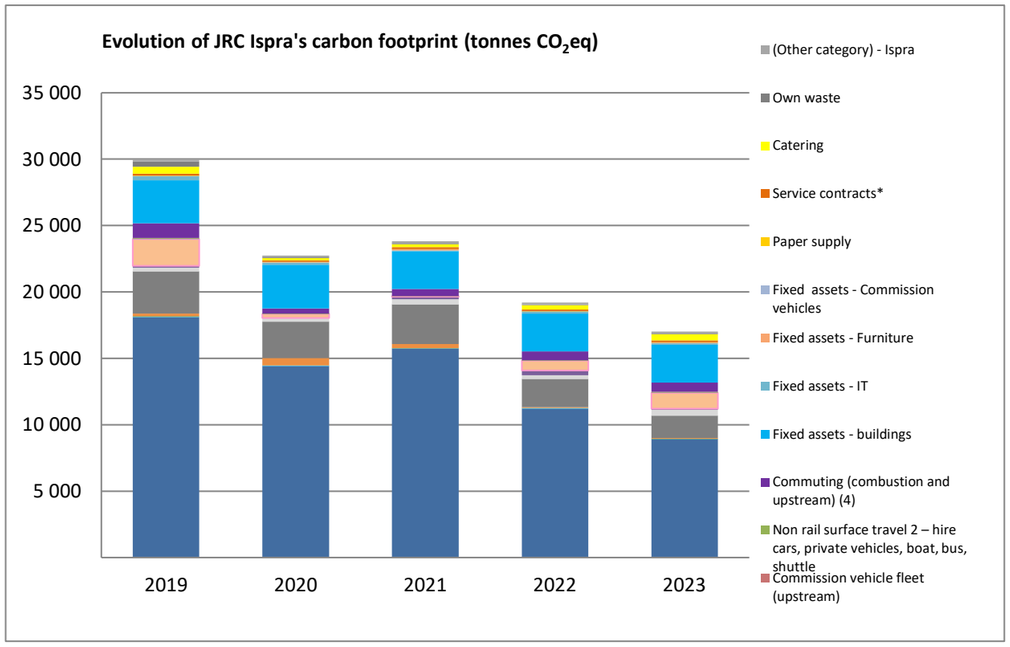
* Approach under revision



JRC Ispra

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**18.382**	**15.024**	**16.089**	**11.319**	**8.993**
Fuel for bldgs: mains gas	18.101	14.432	15.727	11.225	8.914
Fuel for bldgs: tanked gas (1) (biogas)	na	na	na	na	na
Fuel for bldgs: diesel	31	23	20	12	15
Biomass	na	na	na	na	na
Commission vehicle fleet	42	28	27	21	26
Refrigerants (2)	208	540	315	62	39
	na	na	na	na	na
Scope 2: Purchased energy	**0**	**0**	**0**	**0**	**0**
External electricity supply (grey),	0	0	0	0	0
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	na	na	na	na	na
Scope 3: Other indirect sources	**11.608**	**8.255**	**8.186**	**8.217**	**8.271**
Fuel for bldgs: mains gas (upstream)	3.159	2.739	2.984	2.130	1.692
Fuel for bldgs: tanked gas (upstream) (1)					
Fuel for bldgs: diesel (upstream)	7	5	4	3	3
Site generated renewables (upstream) (3)	288	253	364	287	433
External grey electricity supply, line losses	0	0	0	0	0
External 'renewables' electricity contract (upstream with line loss)	124	35	193	361	86
District heating (upstream)	na	na	na	na	na
Business travel: air (combustion) + (including air taxi)	2.014	288	47	723	1.205
Business travel: rail (combustion)	29	5	1	12	25
Commission vehicle fleet (upstream)	11	7	7	5	6
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	57	14	14	28	42
Commuting (combustion and upstream) (4)	1.096	388	514	662	704
Fixed assets - buildings	3.257	3.292	2.844	2.831	2.826
Fixed assets - IT	297	160	80	165	128
Fixed assets - Furniture	22	33	92	11	52
Fixed assets - Commission vehicles	10	7	7	7	8
Paper supply	27	11	10	12	12
Service contracts*	134	133	130	132	135
Catering	516	161	231	327	484
Teleworking emissions	33	532	447	320	239
Own waste	385	48	73	57	69
(Other category) - Ispra	143	143	143	143	124
Sum	**29.990**	**23.279**	**24.275**	**19.537**	**17.264**
Total tonnes CO_2 per person	***12,86***	***9,66***	***9,81***	***7,83***	***7,00***

* Approach under revision



Grange

Scope and category of emissions	2019	2020	2021	2022	2023
Scope 1: Own fuel use and direct loss	**301**	**291**	**267**	**250**	**225**
Fuel for bldgs: mains gas	na	na	na	na	na
Fuel for bldgs: tanked gas (1) (biogas)	0	6	1	1	1
Fuel for bldgs: diesel	301	277	255	249	224
Biomass	na	na	na	na	na
Commission vehicle fleet	0	0	0	0	0
Refrigerants (2)	0	8	12	0	0
Scope 2: Purchased energy	**165**	**120**	**106**	**35**	**13**
External electricity supply (grey),	165	120	106	35	13
External electricity supply contract (renewables), combustion	na	na	na	na	na
District heating (combustion)	0	0	0	0	0
Scope 3: Other indirect sources	**1.459**	**629**	**448**	**1.039**	**1.107**
Fuel for bldgs: mains gas (upstream)	na	na	na	na	na
Fuel for bldgs: tanked gas (upstream) (1)	0	1	0	0	0
Fuel for bldgs: diesel (upstream)	66	60	56	54	49
Site generated renewables (upstream) (3)	0	0	0	0	0
External grey electricity supply, line losses	18	11	8	3	1
External 'renewables' electricity contract (upstream with line loss)	0	0	0	0	0
District heating (upstream)	na	na	na	na	na
Business travel: air (combustion) + (including air taxi)	674	225	34	480	618
Business travel: rail (combustion)	8	0	1	1	2
Commission vehicle fleet (upstream)	0	0	0	0	0
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	10	9	18	15	6
Commuting (combustion and upstream) (4)	370	5	5	179	167
Fixed assets - buildings	215	215	215	215	184
Fixed assets - IT	15	4	3	4	3
Fixed assets - Furniture	0	0	0	0	0
Fixed assets - Commission vehicles	0	0	0	0	0
Paper supply	3	1	1	1	1
Service contracts	23	29	29	29	30
Catering	34	4	4	8	17
Teleworking emissions	6	48	58	33	26
Own waste	17	17	17	17	4
(Other category) - Ispra	na	na	na	na	na
Sum	**1.924**	**1.040**	**820**	**1.324**	**1.346**
Total tonnes CO_2 per person	***10,93***	***6,01***	***4,61***	***7,28***	***7,96***