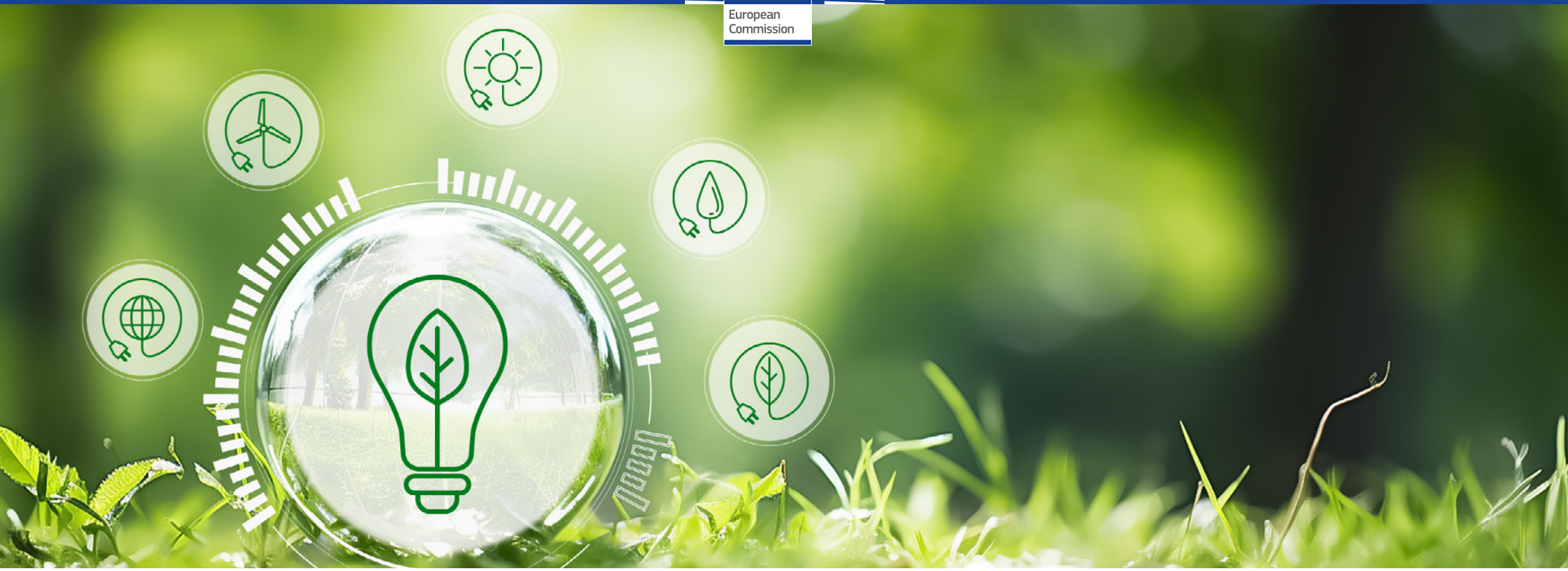

Environmental Statement
reporting for 2022

European Commission
Environmental Management System

EMAS
VERIFIED ENVIRONMENTAL MANAGEMENT
BE-BXL-000003

Prepared by the European Commission's EMAS Coordination team with information from EMAS site coordinators and teams in Brussels (OIB, DIGIT, HR, JRC, DG COMM), Luxembourg (OIL), the five JRC research sites (Geel (BE), Petten (NL), Seville (ES), Karlsruhe (DE), Ispra (IT)), and DG SANTE at Grange in Ireland.

Main contributors: Michael Rourke, Elisabetta Tonin, Sofia Gregou, David Da Camara Gomes, Laila Akkouh, Angelo di Marzio, Anastasia Tasiou, Anne-Marie David, Tuba Guven, Virginie Tregoat, Salvador Laffarga, Andreas Bitterhof, Philip Costeloe, Laura Gitto, Mauro Mondo, Marion Mazabrard, Humberto Latino.

European Commission – DG Human Resources and Security – D7 Greening, Safety and Buildings

This document should not be considered as representative of the European Commission's official position.

Luxembourg: Publications Office of the European Union, 2024

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Case study

AENOR International has, as in previous years, been responsible for the verification of the Commission's sites although for the 2023 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 "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 the sites as indicated in the environmental statement of **EUROPEAN COMMISSION** in possession of the 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 environmental statement of the sites 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. This document shall not be used as a stand-alone piece of public communication.

Done at Madrid, 26 December 2023

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 updated 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 December 27, 2023

Dr. Georg Sulzer (Environmental Verifier Reg. No.: DE-V-0041)

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 (Netherlands), Seville (Spain) and many other places, agencies in several Member States and representations in all EU countries. 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.

http://ec.europa.eu/about/ds_en.htm

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 includes 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 are mainly composed of unique research and technical infrastructures.

1.2 continued...

- **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, and over 100 heated buildings. There are also several nuclear installations on the site, managed under the provisions of Legislative Decree 101/2020, including:
  - Installations in long term shutdown, i.e. those whose nuclear activities are interrupted and that are included in the decommissioning programme (ESSOR – ESSais ORgel , Cyclotron, LCSR - Laboratorio Caldo Studi e Ricerche, STRR - Stazione Trattamento Rifiuti Radioattivi Liquidi). Another installation, the ECO-FARO Esperienza Critica ORGEL Fuel Assemblies melting Oven 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 Effiluenti 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 and 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, to support EU policies and technology innovation related to:
  - Energy - to ensure sustainable, safe, secure and efficient energy production, distribution and use;
  - Mobility - to foster sustainable and efficient mobility in Europe;
  - Climate - to provide scientific and technical analysis in support to integrated air quality, climate and related policies.

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

- **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 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 being in fully 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. 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 **Annex 10** 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 please contact the following - OIB-RE3-EMAS@ec.europa.eu (Brussels); OIL-EMAS@ec.europa.eu (Luxembourg), JRC-ISPRA-ENVIRONMENTAL-OFFICE@ec.europa.eu (JRC Ispra); Franz.HUKELMANN@ec.europa.eu (JRC Petten); Virginie. TREGOAT@ec.europa.eu (JRC Geel); JRC-SEVILLE-ENVIRONMENT@ec.europa.eu (JRC Seville); Andreas.BITTERHOF@ec.europa.eu (JRC Karlsruhe); COMM-EMAS-IN-REPRESENTATIONS@ec.europa.eu; SANTE-IRL-Greening@ec.europa.eu (DG SANTE at Grange, Ireland)

1.3 What was new in 2022?

On 5th April the Commission adopted a Communication (a) establishing the way towards its climate neutrality in 2030. The main areas of the action plan set in the Communication concern:

- the reduction of buildings emissions by reducing the office's surface (mainly in Brussels) and the efficiency of remaining buildings,
- the reduction of the mobility, principally:
  - the professional travels of Commission's staff
  - the travels of experts which are paid by the Commission on administrative budget
  - staff commuting
- the digitalisation strategy
- the implementation of the Green Deal strategy at the Commission level, including for example green public procurement (circularity), biodiversity protection, farm to fork policy
- the staff participation, and
- the compensation of the remaining emissions by carbon removals (at a late stage with a possible pilot when removals become sufficiently accessible and robust).

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

European Commission

EUROPEAN GREEN DEAL

2022

GREENING THE COMMISSION

HOW CAN WE REACH CORPORATE CLIMATE NEUTRALITY BY 2030?

5 April 2022

Buildings

Greener working place and less office surface

Improved energy efficiency

Refurbishment and insulation works

Light sensors

Photovoltaic and solar rooftops

100% green electricity

Green Deal

Systematic use of green public procurement

Green space projects to support local ecosystems and biodiversity

Sustainable food

Reducing environmental impact of catering via short circuits and use of food labels in canteens

Greener mobility

Sustainable business and expert travel

More videoconferencing

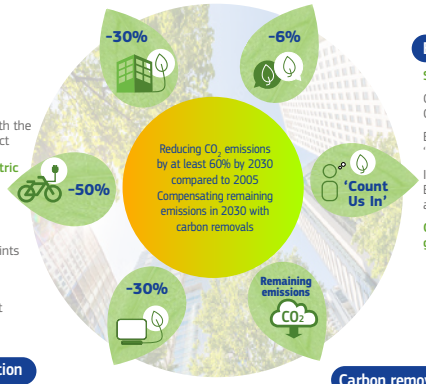
Favouring travel options with the lowest environmental impact

Transition to a 100% electric Commission conventional vehicle fleet by 2027

Greener commuting

Electric vehicle charging points installed in buildings

Encouraging staff to cycle, walk or use public transport



Engagement

Staff participation

Commission pledge under the Climate Pact

Encouraging personal pledges via 'Count Us In' platform

Implementing New European Bauhaus objectives: sustainability, aesthetics, inclusion

Communication campaigns on green challenges

Digitalisation

Mitigating environmental impact of digital solutions

Reducing emissions from data centres

More energy efficient devices

Greener digital behaviours

Carbon removals

Upcoming Commission proposal on carbon removal certification

Start procuring certificates in 2030 to ensure efficient carbon removals from the atmosphere

Possible pilot project in 2024

Greening: Key Milestones 2022/2023

Achievements to date

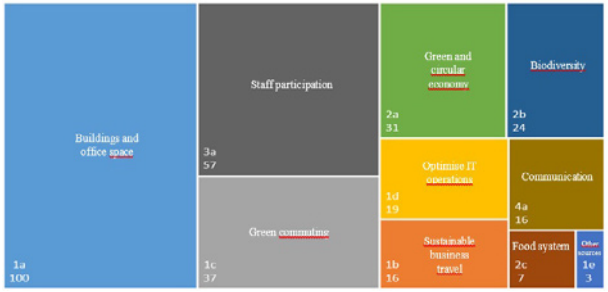
- Commission joins the **Climate Pact**: Institutional pledge + call for individual pledges
- Launch of **Interinstitutional outreach** (GIME; CCA reflection group on greening and missions)
- Guidance note on **staff and experts' travel** + DGs internal pledges
- New Internal **Digital Strategy**
- **Communication**: town-halls, articles; Greening spring communication campaign + **Greening learning challenge**
- Consolidation of **corporate data centres**
- **Mobility** pulse survey completed (results published end-September)
- 65% **corporate car fleet** low or zero emissions: target exceeded
- **Energy-efficiency** measures (7 comfort temperature pilots complete: action extended)
- Greening **the real estate park**: discussions ongoing on 2 new energy efficient buildings
- **Feasibility study for photovoltaics panels** in Brussels
- Initial steps on **Green public procurement** actions (working group)
- **Environmental Statement finalised including estimates of emissions from teleworking and from staff and experts' travel**
- **Almost 6500 colleagues in dynamic collaborative space**
- **Brussels' biodiversity strategy**
- **Incorporation of all actions and targets into the EMAS Global Annual Action Plan (GAAP)**

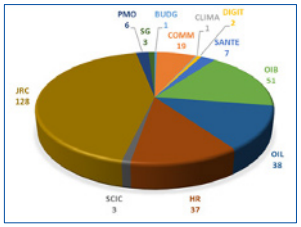
Up to end Q1 2023

- **New biodiversity actions**
- **Guide to missions**: revision
- **New commuting policy**
- Adoption of integrated GAAP at EMAS Steering Committee level
- Technical discussions for installation of **photovoltaics panels** in Brussels
- **Teleworking survey**

European Commission

Overview of Greening actions* by category and service





310 actions related to the Greening Communication; **12** leading DGs/services

*EMAS Global Annual Action Plan, 2023

European Commission

In 2022, the Commission already started implementing actions from the Greening initiative, for example:

- A note to all Directorates Generals and Services containing instructions on the new approach for missions (staff travels),
- Being the first EU Institution to sign the Climate Pact,
- Signing a pledge supporting the objective of 50% missions emissions reductions in 2024 compared with 2019 (signed by 49 DG/Services out of 51)
- Adopting the Digital Strategy (a)
- Targeting a 15% reduction in energy consumption over the winter 2022-23 compared with the five previous years
- Extending its end of year buildings closure plan in Brussels to 44 buildings in 2022, and introducing late opening of buildings after the New Year in 30 buildings
- Preparation of a guidance note for staff and experts' travel
- Continued consolidation of corporate data centres
- Nearly 6500 colleagues accommodated in dynamic collaborative space
- 65% of corporate car fleet with low or zero tailpipe emissions vehicles
- Brussels biodiversity study/strategy and study for the potential for photovoltaic installation.

(a) https://commission.europa.eu/publications/european-commission-digital-strategy_en

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

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 conformity 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 01 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, amongst others, 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.

Figure 1.1 Evolution of EMAS registered area (m²)

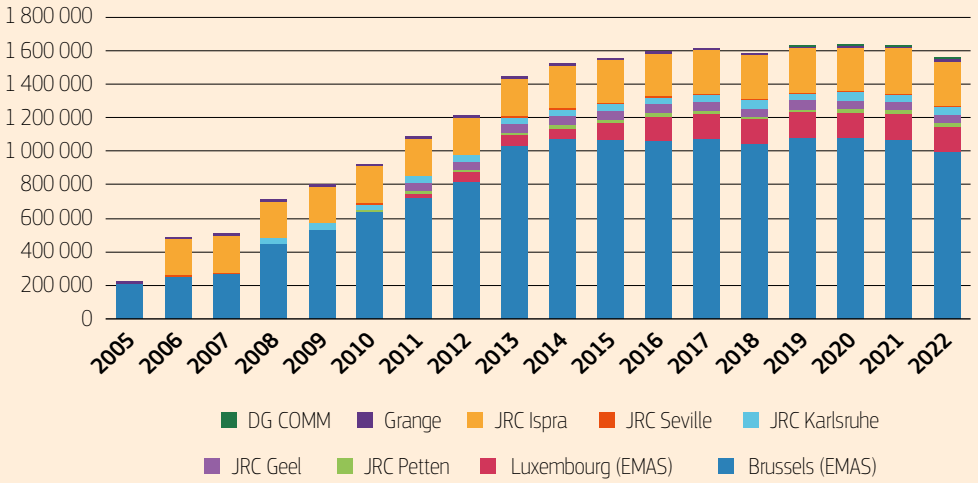


Figure 1.2 Evolution of staff in EMAS registered area

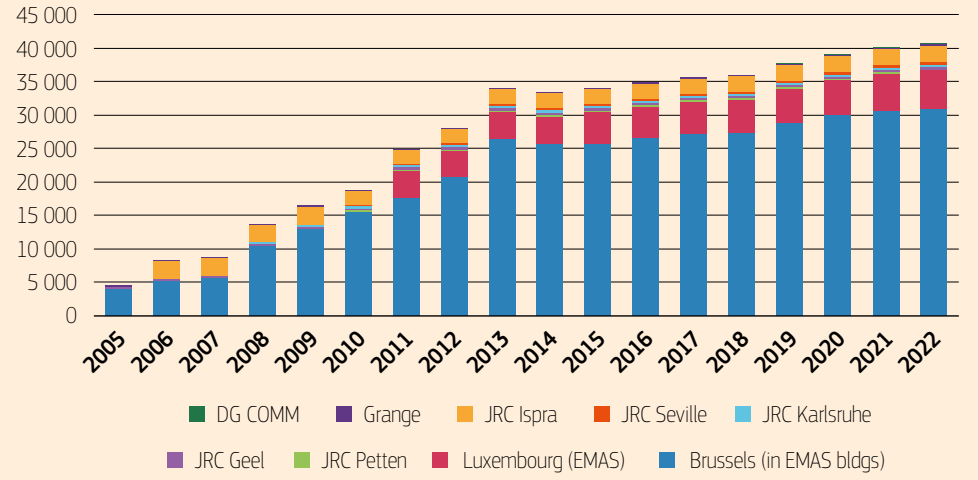


Table 1.1 Nomenclature of Economic Activities (NACE) codes for the EMAS sites

Code	Description	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Seville	JRC Karlsruhe	JRC Ispra	DG SANTE at Grange	DG COMM (Vienna, Valletta, Budapest, Nicosia)
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 on social science and humanities					✓				
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 2014-22**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
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	1 080 298	1 080 298	1 069 244	992 390
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
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
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
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
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
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
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
DG COMM																8 372	8 372	8 372	8 372
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**	**1 634 171**	**1 637 871**	**1 634 072**	**1 557 756**
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	1 104 593	1 104 593	1 108 478	1 043 355
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
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
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**	**1 625 800**	**1 629 500**	**1 625 701**	**1 549 384**
Commission (all bldgs)										**1 465 511**	**1 527 037**	**1 556 559**	**1 610 615**	**1 629 975**	**1 613 227**	**1 650 095**	**1 653 795**	**1 664 935**	**1 600 349**

Table 1.3 Evolution of staff and contractor numbers (*)

a) Evolution in staff numbers where the system is implemented																			
Site	**Trend 2014-22**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
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
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
JRC Petten							232	229	266	263	282	278	276	263	248	249	247	240	230
JRC Geel		318	326	331	342	317	325	331	322	341	346	328	296	265	259	262	266	263	264
JRC Karlsruhe					276	273	294	305	299	305	320	322	324	322	317	315	309	305	306
JRC Seville							212	240	244	282	289	283	300	322	342	368	382	390	403
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
Grange		195	195	195	195	195	188	186	189	182	179	180	190	188	179	176	173	178	182
DG COMM																124	118	110	125
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**
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
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
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**
Commission (all bldgs)										**34 143**	**35 188**	**35 443**	**35 224**	**36 648**	**37 140**	**37 788**	**38 969**	**40 014**	**40 505**

(*) 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

Table 1.4 Number of buildings registered under EMAS

Site	Trend 2014-22	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		8	13	15	23	32	42	48	54	59	62	62	62	62	58	60	60	60	48
(all bldgs)										59	62	62	64	64	61	61	61	61	54
Luxembourg								2	3	4	6	7	10	11	14	14	15	15	15
(all bldgs)								13	14	14	14	17	19	19	18	18	18	18	17
JRC Petten		0	0	0	0	0	14	14	14	14	14	17	16	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
JRC Geel		0	0	0	0	0		14	14	14	15	16	16	16	16	16	17	17	17
JRC Karlsruhe		0	0	0	0	0	0	0	0	2	2	2	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
JRC Ispra		0	0	0	0	0	0		0	0	419	409	410	402	402	384	376	366	360
Grange		0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3
DG COMM																		4	6
Commission		**8**	**13**	**15**	**23**	**32**	**56**	**78**	**85**	**94**	**522**	**517**	**522**	**511**	**510**	**494**	**488**	**482**	**466**
Commission (all bldgs)											**530**	**527**	**533**	**522**	**518**	**501**	**494**	**488**	**476**

(1) including Valletta, Vienna, Nicosia and Budapest since 2019, even if registered later.

1.7 Support and leadership by top management: Testamonies by the Director General of Human Resources and site management

Gertrud INGESTAD: Director General for Human Resources

"The European Green Deal initiative in 2019 required Member States to commit to significant emissions reductions while underlining the importance of sustainable food supply chains and maintaining biodiversity. The energy crisis following Russia's unprovoked invasion of Ukraine forced Member States to seek alternative energy sources while committing to reduce winter energy consumption by 15%.

In this context, the Commission's adoption in April 2022 of a Communication on Greening the Commission, alongside a new HR Strategy, was timely. Its main objective is to implement the European Green Deal as an organisation, by reducing CO_2 emissions by 60% from 2005 to 2030 (or 38% from 2019). Through applying carbon removals to the remaining emissions in 2030, the Commission seeks carbon neutrality two decades earlier than required from Member States. The actions needed to achieve this have been incorporated into the Commission's Eco Management and Audit Scheme (EMAS).

Under EMAS, the Commission publishes its environmental performance results annually in the Environmental Statement, and since 2005 when it became the first EU Institution to achieve registration, 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 is being extended to premises of Commission representations in EU Member States that are shared with the European Parliament's Liaison Offices.

Environmental performance in 2022 continued to improve upon pre COVID times through the gradual return to normal working practices after the COVID pandemic. The carbon footprint is dominated by emissions from buildings operation and professional travel. Travel emissions were less than 60% of 2019 figures, and almost all Commission services have pledged to help meet the Commission's target of a 50% reduction from 2019 to 2024 and a new Guide to Missions is under development. 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. While increasing in geographical scope, the EMAS system continued to evolve in 2022, with a more streamlined reporting which nonetheless incorporates more detailed estimations of teleworking impact. While progress towards 2030 targets is encouraging, 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 Office for Infrastructure and Logistics in Luxembourg (OIL) 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. This includes building management, transport services for staff and goods, office supplies administration, catering and after-school childminding services. In its mission, OIL is committed to the action plan on Greening the Commission to reach corporate climate neutrality by 2030. OIL is currently building on the results achieved via the EMAS scheme to reduce the Commission's environmental footprint as much as possible.

2022 was a year of slowly returning to the office after several years of erratic working patterns due to the pandemic. It was also a year of another crisis in Europe – an energy crisis – and OIL contributed to the general efforts to reduce energy consumption and improve the overall environmental performance through its daily work.

For the future, after the move of the Publications Office and DG CNECT into Mercier-Post building in 2023, the main milestones in real estate projects are the construction of the Commission's main seat – Jean Monnet 2 – and a brand-new childcare facility, CPE6, which will replace two older buildings.

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 2022 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 made the most of the challenging energy crises in combination with significant budget restrictions; to review its situation and launched several sustainable energy saving actions embedded within a more efficient management approach. During 2022 the site's energy consumption decreased by almost 22% compared to the previous year (-25% gas consumption) while the contribution from renewable sources increased by 30% (mainly thanks to the doubling in use of "green" grid energy. This has led to a decrease in CO_2eq emissions from energy consumption of about 30%.

All the above-mentioned actions 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."

Mikel LANDABASO - Director Fair and Sustainable Economy, JRC Seville

Some EMAS indicators such as paper or CO_2 emissions due to energy consumption, that had been gradually increasing accordingly to the progressive return of the staff to the office, remain nevertheless, under pre-pandemic levels thanks to continual cooperation with the landlord who operates the building that we rent and to robust calls for the staff involvement.

We embrace the challenge of environmental engagement of the staff, units and contractors in the site, to deliver the commitments of the Greening the Commission communication in the upcoming years.

Finally, we are confident that the construction of a new building fully in line with the New European Bauhaus values will bring a top-of-the-art environmental performance.

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.

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 Geel

Implementing EMAS is a genuine challenge for a nuclear site like JRC-Geel, for example because of the high energy demand for the operation of its nuclear accelerators and because the laboratories are operated in aging facilities. Despite these obstacles, JRC-Geel staff has always strived for improving its EMS. For instance, JRC-Geel has continuously upgraded its systems to measure and monitor in an accurate way the different EMAS indicators (water, gas, electricity, diesel etc.).

This provides the management with accurate tools to intervene where improvements can be made. This has proven very valuable at the beginning of the energy crisis when accurate data of the site were required and actions could be put in place to save energy. Every small saving helps to reduce our environmental impact.

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 tons of CO_2 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.

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).

High level objectives – **Table 2.1** lists the significant aspects under the high level objectives in the Environmental Policy which include efficient i) 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.

Greening the Commission Communication (2019-30)
The communication 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 very 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 highly relevant.

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 boxes of the aspects mentioned under the EMAS objectives in **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**, the Environmental Impact Analysis from 2022 showed that the site has significant environmental aspects under all six EMAS high level objectives.

In **JRC Seville**, the identified significant environmental aspects are related to offices used in rented premises. Business travels are considered under the corporate umbrella.

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

EMAS Objective and significant aspect	BX	LX	PE	GE	SE	KA	IS	GR	Val	Vie	Bud	Nic	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	✓	✓	✓	✓						✓		✓		d
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

EMAS Objective and significant aspect	BX	LX	PE	GE	SE	KA	IS	GR	Val	Vie	Bud	Nic	DGs	sig. Impacts*
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 (eg SO2, 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 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.

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).

ii) Targets for 2023, 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 both 2023 and 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.

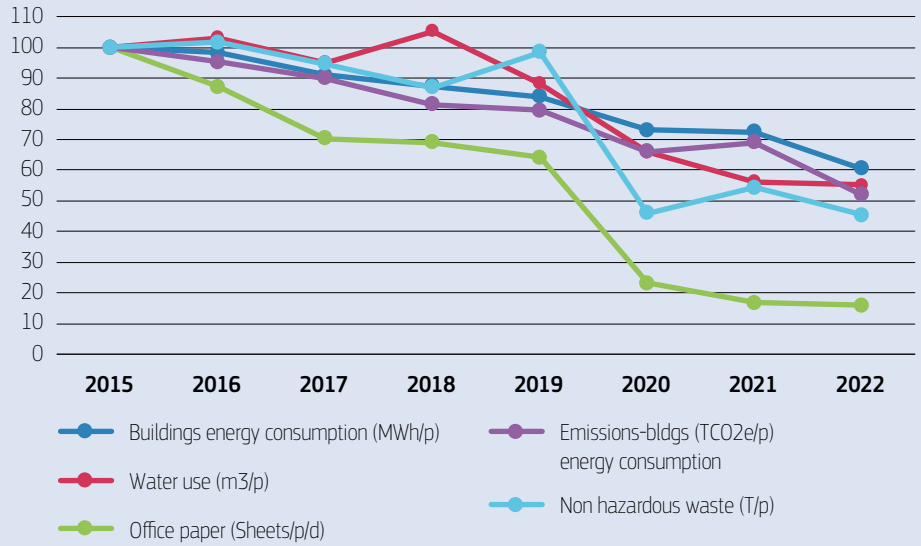
Overall targets include:

- 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

Figure 2.1 Evolution of selected Commission core parameters, 2015 to 2022 (2015 = 100)



iii) Past performance

Figure 2.1 shows how selected core parameters have reduced since 2015, and demonstrates continued improved performance at Commision 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.

The downwards trend of the core parameters continued in 2022 despite generally higher office presence as explained in the following chapters.

Table 2.2 Corporate performance indicator and targets

Site	No	Corporate indicator	Units*	Performance (%)		Targets (%) (*)	
				2015-22	2019-22	2019-23 (**)	2019-30 (*)*
Comm	1a	Total energy consumption (buildings)	MWh/p	-40	-28	-7.2	-24
			kW/m^2	-23	-18	-4.5	-21
Comm	1c	Non renewable energy (buildings)	% of total	-15	-9	2.6	2.4
All			MWh/p				
Comm	1d	Water use	m^3/p	-45	-38	-11	-17
All			L/m^2	-34	-30	-11	-18
Comm	1e	Office paper consumption	Sht/p/d; T/p	-84	-75	-41	-51
Comm	2a	CO_2 emissions (buildings) (***)	Tonnes CO_2e/p	-48	-34	-11	-36
All			$kgCO_2/m^2$	-38	-26	-7.6	-29
Comm	2c	CO_2 emissions (vehicles, manufacturer spec)	gCO_2/km	-47	-30	-0.15	-52
Comm		Total carbon footprint (****)	Tonnes CO_2e		-32		-38
Comm	3a	Non-hazardous waste	Tonnes/p	-55	-54	-16	-22
Comm	3c	Unseparated waste	%	1	-11	-9	-3.7
			Tonnes/p	-74	-68	-18	-21

Note (*) Targets from 2023 Global Annual Action Plan (**) Target in green achieved in 2022
(***) from operational energy use and coolant losses (****) for scope as defined in 2019

2.3 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 impact assessment system and its application to the myriad of EU policies.

The Commission provides financial support for environmental projects via the LIFE programme and others 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://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/impact-assessments_en
- EU environment policy and evaluation: http://ec.europa.eu/environment/index_en.htm
- LIFE+ programme: http://ec.europa.eu/environment/life/index.htm
- Climate policy: https://climate.ec.europa.eu/index_en
- Energy strategy: https://ec.europa.eu/energy/topics/energy-strategy-and-energy-union_en
- Transport policy: http://ec.europa.eu/transport/index_en.htm
- The European Green Deal: https://ec.europa.eu/info/strategy/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) (1). A positive opinion is in principle needed from the Board 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 these policies.

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

- Detailed information on EU policies available on www.europa.eu
- http://ec.europa.eu/info/law-making-process/regulatory-scrutiny-board_en
- http://ec.europa.eu/smart-regulation/impact/ia_carried_out/cia_2015_en.htm

3 Overview of the Commission's carbon footprint

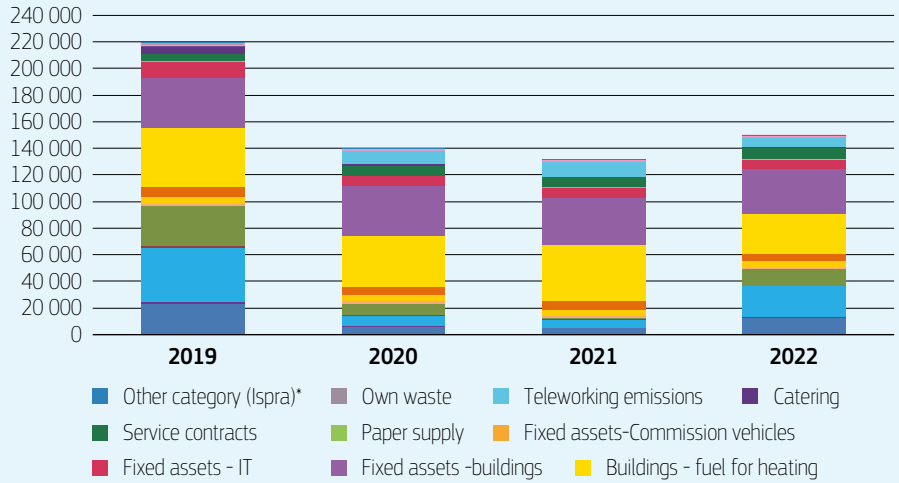
3.1 Overall Commission summary

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 categories of additional (Scope 3) emissions were introduced including embodied (fixed asset) emissions for buildings and IT equipment, for service contracts (for example catering, security, cleaning etc) and for waste disposal. Emissions from experts' travel were introduced in 2021 reporting along with those from teleworking. 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 that are introduced to the carbon footprint (or procedural modifications) are calculated for previous years as far back as 2019 where possible, and headline categories are shown in **Figure 3.1**.

The Commission's approach uses for the most part ADEME Bilan Carbone methodology, and coefficients used to calculate emissions are mostly derived from the ADEME database. However other sources of emissions coefficients are used where considered appropriate, for example from DEFRA for professional air travel (see Section 3.4). **Figure 3.1** shows the evolution of the carbon footprint since 2019.

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



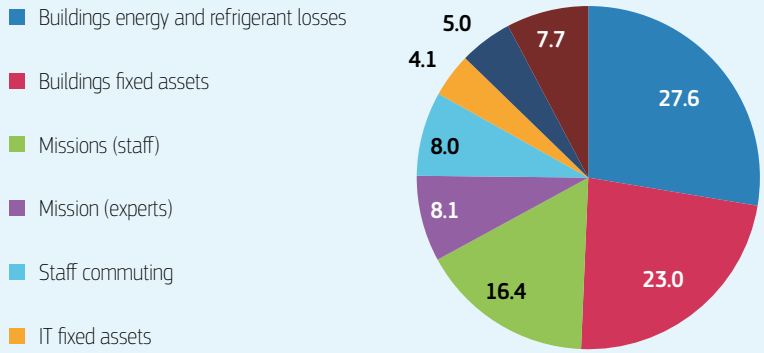
Data for Figure 3.1	2014	2015	2016	2017	2018	2019	2020	2021	2022
Staff commuting	13 908	12 103	12 725	13 086	13 611	22 837	6 230	4 581	11 911
Missions excluding air	1 643	1 795	1 814	1 633	1 597	1 815	513	542	1 151
Missions air (RFI=2) and air taxi	55 467	50 870	51 005	51 572	52 286	40 407	7 356	5 840	23 408
Vehicle fleet fuel consumption	965	976	1 001	947	947	943	525	585	627
Experts' travel						31 216	8 730	748	12 141
Buildings coolant losses	1 119	1 830	2 950	1 160	1 308	1 188	1 803	2 031	1 000
Buildings - district heating/cooling	3 544	4 296	3 815	3 859	4 703	5 317	4 455	4 896	4 795
Buildings - electricity	14 364	12 995	11 474	12 280	8 257	7 624	6 081	6 074	5 676
Buildings - fuel for heating	41 718	48 264	48 977	45 928	43 532	44 458	38 835	42 048	29 918
Fixed assets -buildings					37 641	37 631	37 214	35 539	34 526
Fixed assets - IT					20 003	11 294	7 557	7 261	6 204
Fixed assets - Commission vehicles					174	173	101	122	147
Paper supply					905	886	330	226	280
Service contracts					5 062	5 581	7 438	8 138	8 309
Catering					548	4 954	1 444	445	1 422
Teleworking emissions					920	958	10 215	11 167	7 476
Own waste					2 000	2 374	739	745	678
Other category (Ispra) (*)					168	143	143	143	143
Total	**132 728**	**133 128**	**133 761**	**130 465**	**193 660**	**219 801**	**139 710**	**131 131**	**149 813**

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

Figure 3.1 shows a 32% reduction in emissions in 2022 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 immediate goal of a 15% reduction in energy consumption in the winter 2022-23 in line with Member States. The evaluation of fixed assets for buildings is also significantly reduced, some sites have reviewed their approach.

Figure 3.2 shows the main components of the carbon footprint of which emissions from buildings' energy consumption (and refrigerant losses) is the main component accounting for a third of the emissions.

Figure 3.2 Main components of the Commission's carbon footprint in 2022 (%)



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** has no influence on the selection of the electricity mix (and therefore emissions). In 2022, there was a slight increase in CO_2e emissions, mainly due to a significant increase in the CO_2 conversion factor as a result of a change in the electricity mix of the supplier *enercity* (resulting in a factor of 0.251 compared to 0.216 in 2021). Fortunately, this was mostly compensated by lower CO_2e emissions due to a lower heating consumption.
- In **JRC Ispra**, CO_2e emissions are mainly related to on site buildings. The site's tri-generation plant accounts for 69,5% of the emissions (13 246 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 14,8% of the total emissions (2 822 tonnes CO_2e). As explained in chapter 4.2.1c, the energy consumption related to third parties and VELA 10-11 laboratories (please refer to chapter 4.2.1c) 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 (and VELA 10-11 labs), are 20 450 tonnes in 2022.

Table 3.1 Emissions at the EMAS sites in 2022 (tonnes CO_2e/p)

Scope and category of emissions	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Seville	JRC Karlsruhe	JRC Ispra	Grange
Scope 1: Own fuel use and direct loss	**0.39**	**0.44**	**1.84**	**1.25**	**0.20**	**0.01**	**4.43**	**1.38**
Fuel for bldgs: mains gas	0.35	0.41	1.53	0.98	0.18	N.a.	4.39	N.a.
Fuel for bldgs: tanked gas (1) (biogas)	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	0.01
Fuel for bldgs: diesel	0.00	0.00	0.00	0.03	0.00	0.01	0.00	1.37
Biomass	N.a.	0.00	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.
Commission vehicle fleet	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.00
Refrigerants (2)	0.02	0.01	0.30	0.23	0.01	0.00	0.02	0.00
Scope 2: Purchased energy	**0.01**	**0.34**	**0.00**	**0.93**	**0.00**	**16.31**	**0.00**	**0.19**
External electricity supply (grey)	0.01	0.05	0.00	0.00	0.00	9.54	0.00	0.19
External electricity supply contract (renewables), combustion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
District heating (combustion)	N.a.	0.30	N.a.	0.93	N.a.	6.77	N.a.	0.00

Scope and category of emissions	Brussels	Luxem-bourg	JRC Petten	JRC Geel	JRC Seville	JRC Karlsruhe	JRC Ispra	Grange
Scope 3: Other indirect sources	**2.21**	**2.46**	**4.07**	**6.02**	**1.78**	**4.99**	**3.15**	**6.79**
Fuel for bldgs: mains gas (upstream)	0.07	0.08	0.29	0.19	0.03	N.a.	0.83	N.a.
Fuel for bldgs: tanked gas (upstream) (1)	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	0.00
Fuel for bldgs: diesel (upstream)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.30
Commission vehicle fleet (upstream)	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
Site generated renewables (upstream) (3)	0.00	0.00	0.05	0.01	N.a.	N.a.	0.03	0.00
External grey electricity supply, line losses	0.00	0.00	0.00	0.00	0.00	0.86	0.00	1.05
External 'renewables' electricity contract (upstream with line loss)	0.03	0.08	0.16	0.35	0.08	0.00	0.09	0.00
District heating (upstream)	N.a.	0.06	N.a.	0.18	N.a.	1.31	N.a.	N.a.
Business travel: air (combustion) + (including air taxi)	0.68	0.11	0.26	0.22	0.92	0.16	0.32	2.70
Business travel: rail (combustion)	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.01
Commission vehicle fleet (upstream)	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	0.01	0.04	0.02	0.03	0.02	0.06	0.01	0.07
Commuting (combustion and upstream) (4)	0.22	0.62	0.95	0.38	0.26	1.24	0.27	1.10
Fixed assets - buildings	0.85	0.73	0.83	2.47	0.21	0.36	1.13	1.18
Fixed assets - IT	0.13	0.16	0.42	0.77	0.17	0.86	0.23	0.12
Fixed assets - Commission vehicles	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
Paper supply	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00
Service contracts	0.16	0.47	1.06	1.27	0.06	0.09	0.05	0.16
Catering (5)	0.03	0.06	0.00	0.09	0.00	0.00	0.09	0.00
Own waste	0.02	0.01	0.01	0.05	0.00	0.00	0.02	0.09
(Other category) - Ispra	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	0.06	N.a.
Sum	**2.61**	**3.25**	**5.92**	**8.20**	**1.98**	**21.32**	**7.58**	**8.35**

Notes N.a - Not applicable, Ne - Negligable

(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 heatpumps includes upstream emissions

(4) Can include Commission bus service when appropriate

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

3.2a The evolution of per capita performance of individual sites to 2022 is as follows:

Luxembourg

In general, a number of indicators exhibit an upwards trend in 2022, as a consequence of a higher office presence, compared to 2020 and 2021. The values do not revert to those of pre-covid times, confirming some changes in the working methods (for example hybrid meetings, distance learning, teleworking). It must also be noted, in particular, that Luxembourg hosts the Commission's data centers.

JRC

In **JRC Geel**, the implementation of the energy savings plan has had a positive effect on the reduction of CO_2e emissions. The main decrease (-60%) compared to 2021 is linked to the purchase of electricity.

JRC Ispra, observed a 24% reduction in emissions per capita in 2022 with respect to 2021. This was mainly related to the reduction in the gas consumption by the trigeneration plant totalling 7,58 tonnes CO_2eq. Including all third parties (and VELA 10-11 laboratories) in the calculation, as explained in chapters 3.2 and 4.2.1c, the CO_2 emissions are 8,20 tonnes per capita in 2022.

Due to the nature of the **JRC Karlruhe**'s site and past and current infrastructure measures, per capita emissions are not considered a meaningful measure. Floor space is the main indicator and is independent from the number of staff and only based on technical and regulatory requirements and scientific activities.

The carbon footprint at **JRC Petten** has overall decreased by 12% compared to 2021, mainly due to the reduced gas consumption, whereas refrigerant losses increased in 2022 as several installations were replaced.

JRC Seville achieved 100% supply of electricity from green sources for the first time. Besides, the reduction of gas consumption played an important role in the overall emissions balance, compensating the logical increase of emissions from professional air travel in the post-pandemic scenario. Overall, emissions per person decreased by 15% in 2022 compared to 2021.

3.3 Commission carbon footprint and greening action plan criteria

Table 3.2 shows the distribution of expected emissions reductions by category for 2019-2030, resulting in an overall reduction of 35% from 2019, based on the greening the Commission Communication. While there is some site specificity, for several categories the quantities are Commission wide.

Teleworking was not included in the original greening communication carbon footprint, and will result in increased emissions, but consequently commuting emissions will be lower than anticipated in 2019. Although not introduced in 2021, it has been estimated for the baseline year 2019 and for the following years.

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 established by the French government body ADEME, but now called the Agence de la transition écologique. This information is 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 vbalues 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 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

The Commission's approach to the carbon footprint is reviewed annually by experts who methodology, coefficients and sources when required.

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

Progress on Greening Communication targets	2019*	GC Target		Actual 2022	
Emissions source	value tCO_2e	reduction % of CF	tCO_2e value	reduction % of CF	value tCO_2e
1. Buildings, operations, fixed assets		**-13.1**		**-9.3**	
Brussels reduce office surface area by 200k sq.m	36 038	-5.9	17 655	-2.4	30 877
Brussels office space energy efficiency		-2.5			
Luxembourg; move to JMO2- Post building	7 850	-1.6	4 349	-0.7	6 299
all other buildings, real estate management	52 329	-2.6	45 545	-6.2	38 739
all other buildings, increased energy efficiency		-0.5			
2. Mobility		**-16.2**		**-13.2**	
Staff Missions	42 222	-13.9	11 803	-8.1	24 559
Staff commuting Brussels	13 916	-2.1	9 320	-3.3	6 730
Staff commuting other sites	8 921	-0.1	8 702	-1.7	5 181
Vehicle fleet	1 116	-0.1	897	-0.2	774
3. IT fixed assets	11 294	**-1.4**	8 231	**-2.3**	6 204
4. Goods and services, own waste (plus "other" Ispra)	13 940	**-0.3**	13 283	**-1.4**	10 833
5. Subsidised travel (experts travel)	31 216	**-6.8**	16 335	**-8.7**	12 141
Total (original greening scope)	218 842	**-37.8**	136 120	**-35.0**	142 337
6. Teleworking (added in 2021)	958				7 476
Total (including teleworking)	219 801			**-31.8**	149 813

Note * 2019 data reported in 2022

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

Greening The Commission: *To reach that target, the Commission will comply with the relevant targets set in the package of proposals on energy and climate action aiming at delivering the European Green Deal*

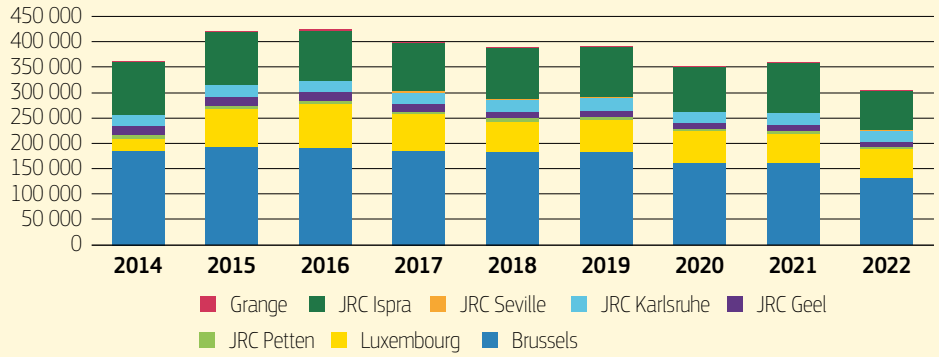
4.1 Introduction

Reducing emissions related to buildings is a major part of the Commission's carbon footprint. The aspect over which the Commission exercises the most control, is **energy consumption.** Reducing overall consumption and dependence on fossil fuels are the two most important aspects. A minor contributor to the carbon footprint 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.

4.1.1 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.

Figure 4.1 Final energy consumption at EMAS sites (2014 to 2022), MWh



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

Table 4.1 Final energy consumption at EMAS sites (2014 to 2022), MWh

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		183 896	191 982	190 364	185 485	183 868	183 712	162 016	161 383	132 883
Luxembourg		25 988	76 681	87 795	71 232	58 901	62 896	62 210	57 663	55 878
JRC Petten		6 618	6 705	6 393	6 071	6 334	5 830	4 716	4 829	4 132
JRC Geel		17 719	16 243	15 737	14 777	13 750	13 049	11 797	12 550	9 964
JRC Karlsruhe		20 500	22 786	21 889	22 104	23 158	24 222	20 486	22 977	21 366
JRC Seville		2 639	2 542	2 414	2 612	2 351	2 315	2 259	2 555	2 691
JRC Ispra		103 362	102 941	97 609	97 025	98 618	97 245	88 114	96 287	75 433
Grange		2 271	2 425	2 389	2 185	1 925	2 034	1 709	1 525	1 502
Commission		**362 993**	**422 304**	**424 590**	**401 489**	**388 905**	**391 304**	**353 307**	**359 770**	**303 849**

4.1.1a Brussels, key achievements and actions

- 42 of 46 office buildings were closed at the end of year (2022)
- 30 buildings closed during first days of January 2023
- 7 buildings fully organised in dynamic collaborative space (DCS)
- Buildings plan foresees moving to 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)

4.1.1b Luxembourg, key achievements and actions

- Energy saving measures (namely, temperature reduction, earlier switching-off of the ventilation system, adaptation of the timing of the lights - inside and outside the buildings)
- Progress on construction of the Jean Monnet 2 (JM02) building, to be completed by November 2025 for phase 1, and April 2026 for the phase 2.
- Preparation of the move to Mercier/Post building in first half of 2023 of two DGs. The building has the « Deutsche Gesellschaft für Nachhaltiges Bauen » (DGNB) environmental certification for sustainable construction - Platinum level.

4.1.1c JRC (non Brussels) sites, key achievements and actions

Overall, the JRC has considerably reduce its energy consumption in 2022 compared to 2021. Between August and December 2022, the five JRC sites had a total energy consumption approximately 26% lower than the average of the last five years for the same period. This result was achieved through measures such as the reduction of the temperatures and the daily schedule for heating and ventilation, where possible. Some medium-term measures are also being developed to pursue the efforts, such as the temporary mothballing of least energy-effective buildings or the efficient planning of the 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. Also, the performance of scientific tests in the framework JRC's long-term commitment requires specific testings (e.g. use of very low temperature freezers).

JRC Geel is a high energy consumer of energy due to some of its activities (e.g., Gelina, nuclear accelerator). The site has been adversely affected by the rapid increase in energy cost. To limit this huge economic impact, JRC Geel developed an action plan for saving energy. All staff were involved in the development of the plan. More than 40 proposals were made and analysed to gauge their feasibility. Several of the actions, including the ones cited above, were adopted allowing for a decrease of energy consumption of 20.6%.

In **JRC Ispra**, the total energy consumption of the site in 2022 reduced by 21.6% compared with the previous year. This notable result was achieved mainly because of the many actions to reduce energy consumption implemented at site (see **table 4.2**). Furthermore, this is also linked to a different approach to management that promotes the integration of the trigeneration plant production (-30% compared to 2021) along with the renewable energies, both on-site and off-site (e.g., +107% of "green" electric energy purchased and +2,6% of cooling energy from lake water heat exchange compared to 2021). 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: 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; VELA 10-11 laboratories (in force since November 2021).

The above activities are outside the EMAS scope of JRC-Ispra, with the exception of VELA 10-11. The latter consumption has not been included within the data set because 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 2022, including all the above contributions is 84145 MWh (-15.8% compared to previous year), that corresponds to 34 MWh/p and 317 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, renewal of the ventilation systems) that require heavy financial investments (more than EUR 10 million per action to be expected) will have a significant environmental impact. As the availability of these amounts of financial means cannot be foreseen, JRC Karlsruhe refrains from detailed planning in this context. Although they contribute only to a limited extent to improve energy consumption, other site actions are implemented such as exchanging "conventional" lights by light-emitting diode (LEDs), organising a mobility day, reducing the time when the ventilation of the controlled areas is operating at 100%, etc.

JRC Petten has implemented several actions to decrease the energy consumption in 2022, such as lowering the building temperature, reducing ventilation, decreasing the duration of daytime heating. Additionally, various labs have reviewed their actual needs and switched-off many devices. The adoption of all actions resulted in an energy consumption decrease of 14,4% for the site.

JRC Seville partially occupies a building built in 1990, that itself was made in part from reclaimed materials. The landlord plans to implement a number of 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 (see case study 4.1).

4.1.1d 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 such facility in the area. Bio-LPG is provided by two propane storage tanks and is 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.

Key Corporate level communication campaigns: addressing energy use

Against the backdrop of Russia's unprovoked invasion of Ukraine and the resulting rise in energy prices, the European Council asked Member States for a voluntary **15% reduction** of gas consumption during autumn/winter of 2022-23. In line with the strong emphasis of our President, Ursula Von der Leyen, in her State of the Union speech, the Commission wants to lead by example and help save energy. To succeed in this, EC took several measures to reduce both gas and electricity consumption in Commission buildings in Brussels during autumn and winter.

Some of those measures are already being implemented in the context of the greening of the Commission. 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.

4.1.2 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

ii) Site level actions are as follows

Overall, the **JRC** implemented actions which allowed to save 14 000 MWh between August and December 2022, which represents more than the annual energy consumption of JRC Geel:

- 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 2022 were:

- Ventilation and heating provided in offices only between 8am and 6pm, from Monday to Friday
- Temperature in offices reduced to 19°C during the heating period and increased to above 27°C during cooling period
- Heating switched off in all buildings on 08.04.2022, one week ahead of the date set by Italian authorities
- Reduction of street lighting hours
- Reduction of hot water temperature in the district heating, from 85°C to 75°C
- Heating and ventilation switched off during the Christmas holidays until 08.01.2023
- Cooling the Sport Hall stopped from 22.07.2022 to 08.08.2022
- 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)

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.

Table 4.2 Buildings' final energy consumption, 2014-22

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target 2019-23	Target 2019-30
Part A - MWh/p												
Brussels		7.16	7.47	7.17	6.83	6.75	6.39	5.42	5.27	4.30	5.75	3.83
Luxembourg		6.43	16.43	18.87	14.88	11.74	12.24	11.87	10.37	9.81	12.12	7.96
JRC Petten		23	24	23	23	26	23	19	20	18	22	20
JRC Geel		51	50	53	56	53	50	44	48	38	48	46
JRC Karlsruhe		64	71	68	69	73	77	66	75	70	77	77
JRC Seville		9.13	8.98	8.05	8.11	6.87	6.29	5.91	6.55	6.68	6.23	3.40
JRC Ispra		44	45	43	43	43	41.7	37	39	30	40	37
Grange		12.69	13.47	12.57	11.62	10.75	11.56	9.88	8.57	8.25	8.90	7.51
Commission		**10.85**	**12.40**	**12.18**	**11.29**	**10.83**	**10.40**	**9.07**	**8.99**	**7.50**	**9.60**	**7.90**
Part B - kWh/m²												
Brussels		171	180	178	172	176	170	150	151	134	162	128
Luxembourg		131	342	364	296	326	346	343	318	309	329	208
JRC Petten		340	313	312	291	317	292	236	241	207	287	283
JRC Geel		363	321	311	293	272	258	233	248	197	251	239
JRC Karlsruhe		491	546	507	512	536	561	475	532	489	555	550
JRC Seville		376	355	337	345	310	301	291	318	335	299	120
JRC Ispra		404	406	384	373	377	376	341	363	284	362	339
Grange		183	195	193	176	155	164	138	123	121	126	107
Commission		**235**	**256**	**250**	**235**	**241**	**239**	**216**	**221**	**196**	**227**	**187**

4.1.3 Final energy consumption data (per capita, and per square meter)

Table 4.2 presents the energy consumption data as per capita and per square meter format. 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.

Case study 4.1 "Level-ing up JRC buildings' performances

Level(s) is the European Framework for Sustainable Buildings i.e. 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** initiative.

There are two ongoing sustainable practices of Level(s) at the JRC:

- In **JRC Seville**, 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.
- In **JRC Geel**, Level(s) is used for the refurbishment of the conference building (B100). This cocreation project involved JRC Geel staff to define the building design with flexible and multiple functionalities. Level(s) (europa.eu)

4.1.4 Total renewable energy consumption (MWh)

The proportion of Commission's energy from renewable sources has remained a relatively stable proportion of the total energy consumption, the total amount following the overall downward trend (as overall energy consumption), as shown in **Table 4.3**.

Table 4.3 Total renewable energy consumption (MWh)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		104 875	104 273	106 440	103 916	104 266	103 927	89 282	79 968	73 040
Luxembourg		18 756	38 262	40 167	31 187	28 338	28 743	27 848	26 739	33 801
JRC Petten		148	208	230	227	3 124	2 930	2 647	2 532	2 467
JRC Geel						9 392	9 276	8 197	8 102	7 612
JRC Karlsruhe		3 681	4 833	4 640	4 855	5 603	6 273	5 687	3 953	3 606
JRC Seville		597	427	381	429	486	313	1 798	2 106	2 292
JRC Ispra		4 629	6 173	5 069	5 486	10 416	8 400	10 859	12 995	16 901
Grange		171	209	240	260	300	302	242	213	366
Commission		**132 857**	**154 385**	**157 165**	**146 360**	**161 924**	**160 164**	**146 560**	**136 608**	**140 085**
Commission (as % of total energy)		**37**	**37**	**37**	**36**	**42**	**41**	**41**	**38**	**46**
Commission (% non ren. energy con)		**63**	**63**	**63**	**64**	**58**	**59**	**59**	**62**	**54**

Note: Site generated renewable energy details is reported in Annex 1

In 2022 in **Brussels**, the reduction in renewable energy consumed is linked to the overall decrease of 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 consumptions.

In 2022 in **Luxembourg**, the increase in renewable energy consumption is linked to the fact that renewable electricity accounted for 97% of total supplied electricity compared to 83% in 2021, as the owner of Drosbach building shifted to a green electricity contract.

In 2022 in **JRC Geel**, the 6% reduction in renewable energy consumed is linked to the overall decrease of energy used.

JRC Ispra the renewable energy in 2022 increased by 30% compared to previous year mainly due to the doubling of the electricity purchased from outside, considered 100% "green", as well as the increase in the energy produced by the PV plants (+16%). 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 2022 Ispra site renewable energy consumption (MWh) contributions including all third parties (and VELA 10-11 laboratories) is 18 853 MWh.

JRC Petten In 2022 JRC Petten saw a slight decrease of electricity consumption by 5% compared to 2021, whereas the site generated renewable energy by photovoltaic panels "PV" increased by 29%.

In JRC Seville, the upgrade of the HVAC systems made by the building owner, aimed at ensuring the safe recycling of air after the COVID pandemic (HEPA filters, UV disinfection), increased its inherent complex management, with considerable impact on the overall environmental performance of those systems. This caused a poor result in the adoption of the energy saving regulations in force since September 2022 (i.e. set temperatures of 19 and 27 degrees). Nevertheless, the building owner continues to introduce energy saving measures in the building that are expected to yield better performance in 2023 (e.g. higher efficiency transformers).

4.1.5 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.
- District heating supplies **Luxembourg** and the JRC sites in **Karlsruhe and Geel**
- 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

4.1.6 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 at two sites in the following years.
- **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.
- **JRC Ispra** will further increase its renewable site energy consumption in the next few years by installing other PV systems (2MW 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 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 (+38% of peak capacity compared to 2021);
  - cooling energy from lake water heat exchange;
  - thermal and cooling energy recovered through the heat pumps located in buildings 59x, 46i and 58;
  - cooling energy produced from the geothermal heat pump located building 102.

4.2 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 **24%**, from 53 ktonnes CO_2e in 2021 to 40 ktonnes in 2022.

Brussels emissions are relatively low considering its energy consumption reflecting that electricity is supplied from renewable sources. **Brussels** and **JRC Ispra** together accounted for nearly two thirds of CO_2e emissions in 2022, with JRC Seville and Grange responsible for very small amounts. All the larger sites reduced emissions in 2022.

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. The grid supplies a small amount of electricity and the site is therefore responsible for a significantly greater proportion of the total emissions. Part of the emissions are produced carrying out tests, including vehicles emission tests (VELA laboratory) needed to support more sustainable EU environmental regulations. 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 2022 Ispra site values for CO_2 emissions related to buildings' energy consumption including all third parties (and VELA 10-11 laboratories) is 14905 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 and a slightly lower increase in emissions per square metre achieving the 2023 target for just the latter. The data show that in the last year there was a small increase for most of the sites, mainly due to the slow 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 gradually since all sites have been included in reporting in 2011 and had met both 2014-20 targets by 2018. There are relatively few actions that directly target reducing CO_2e emissions from buildings, as this is often an additional benefit of actions that reduce energy consumption.

Table 4.4 Emissions from buildings' energy consumption at Commission EMAS sites (tCO_2e), 2014-2022

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels	17 837	19 605	18 405	17 807	18 201	18 529	16 888	18 707	14 149
Luxembourg	2 458	7 121	8 938	7 159	6 818	7 879	7 772	7 484	5 582
JRC Petten	2 977	2 939	2 579	2 491	813	751	562	572	466
JRC Geel	5 299	4 817	4 669	4 381	1 267	1 083	1 029	1 291	706
JRC Karlsruhe	6 165	6 440	6 093	6 955	6 853	6 527	5 210	5 538	5 661
JRC Seville	676	799	697	739	607	566	114	125	121
JRC Ispra	23 143	22 631	21 437	21 090	20 836	21 516	17 322	18 874	13 362
Grange	796	848	771	666	542	548	475	426	343
Total	**59 351**	**65 200**	**63 588**	**61 289**	**55 937**	**57 399**	**49 371**	**53 019**	**40 389**

Table 4.5 Emissions from buildings' energy consumption at Commission EMAS sites (tCO_2e/p), 2014-2022

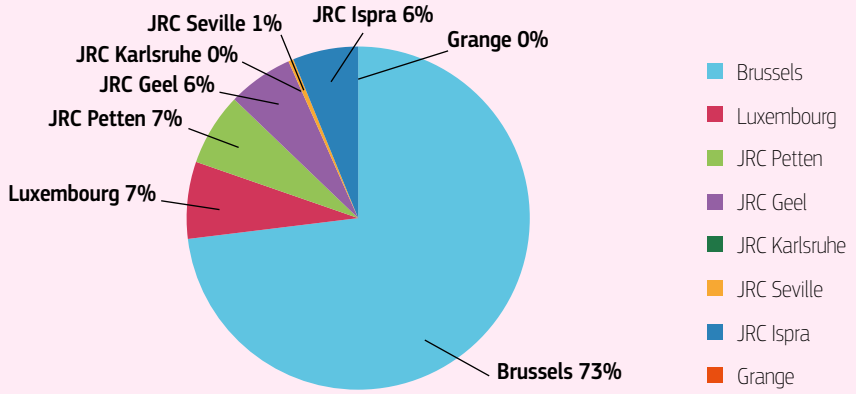
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels	0.69	0.76	0.69	0.66	0.67	0.64	0.56	0.61	0.46
Luxembourg	0.61	1.53	1.92	1.50	1.36	1.53	1.48	1.35	0.98
JRC Petten	10.56	10.57	9.35	9.47	3.28	3.02	2.27	2.38	2.02
JRC Geel	15.32	14.69	15.77	16.53	4.89	4.13	3.87	4.91	2.67
JRC Karlsruhe	19.27	20.00	18.80	21.60	21.62	20.72	16.86	18.16	18.50
JRC Seville	2.34	2.82	2.32	2.29	1.78	1.54	0.30	0.32	0.30
JRC Ispra	9.90	9.86	9.49	9.26	9.12	9.23	7.18	7.63	5.36
Grange	4.44	4.71	4.06	3.54	3.03	3.11	2.75	2.39	1.88
Total	**1.77**	**1.91**	**1.82**	**1.72**	**1.56**	**1.52**	**1.26**	**1.32**	**0.99**

4.3 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 2022



The evolution of refrigerant emissions from 2018-22 is shown in **Table 4.6**.

Table 4.6 Refrigerant emissions at Commission EMAS sites (tCO_2e), 2018-2022

	2018	2019	2020	2021	2022
Brussels	847	572	899	1 145	731
Luxembourg	218	89	211	336	73
JRC Petten	46	42	2.40	28	69
JRC Geel	98	278	143	195	62
JRC Karlsruhe					0
JRC Seville	27				5
JRC Ispra	37	208	540	315	62
Grange	34		7.88	11.79	
Total	**1 308**	**1 188**	**1 803**	**2 031**	**1 000**

4.3a 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 three quarters owing to the large number of staff working in buildings with HVAC systems.

In **Luxembourg**, total losses reduced significantly, as a defective installation in Ariane building was replaced. In 2022, loses of R134a, R404a and R449a gases were reported in 5 installations during yearly control.

Even if **JRC Geel** made efforts to reduce F gas leaks, it could not avoid leakages from several cooling systems (R134A, SF6, ISCEON89, R449A, R32). JRC Geel had to decommission two faulty equipments including a freeze dryer that is currently under refurbishment to replace the cooling system for the use of CO_2 (GWP 1) instead of ISCEON89 (GWP 3 805).

In **JRC Ispra**, total losses reduced significantly in 2018 but increased in 2019 and 2020 and decreased in 2021. 2022 losses were significantly lower than those of the previous years. The 62 tonnes of CO_2e losses recorded in 2022 originated from 2 out of the 500 monitored equipment, both installed in laboratories. VELA labs are in the process of replacing R404a and R507c gas with refrigerants with lower GWP.

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

JRC Petten recorded an increase in refrigerant losses in 2022. A significant number of installation were removed from service and replaced with more energy efficient units.

Grange didn't experience any gas losses in 2022 under the F-gases maintenance schedule.

Table 4.7 Fixed asset (embodied) emission for Commission buildings, (2018-2022)

		2018	2019	2020	2021	2022
Brussels		847	572	899	1 145	731
Luxembourg		218	89	211	336	73
JRC Petten		46	42	2.40	28	69
JRC Geel		98	278	143	195	62
JRC Karlsruhe						0
JRC Seville		27				5
JRC Ispra		37	208	540	315	62
Grange		34		7.88	11.79	
Total		**1 308**	**1 188**	**1 803**	**2 031**	**1 000**

4.4 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 (**Table 4.7**) are subject to the following considerations:

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 m^2 by 2030.

Luxembourg

In Luxembourg, fixed asset emissions for buildings account for 4 188 tCO_2e, reduced 2.5% since 2021 as MAEU was abandoned. This value should change in the next years as more buildings are removed from the portfolio and new (MERP and JM02) will be added.

JRC

In **JRC Ispra**, fixed asset emissions account for 2 822 tonnes CO_2e. 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% since 2019 and 0.5% since 2021 with respect to last year.

In **JRC Karlsruhe**, fixed asset emissions are based on the generic factor ("not specified - offices" (m^2)), which is unchanged since 2016.

4.5 Non CO_2 emissions to air

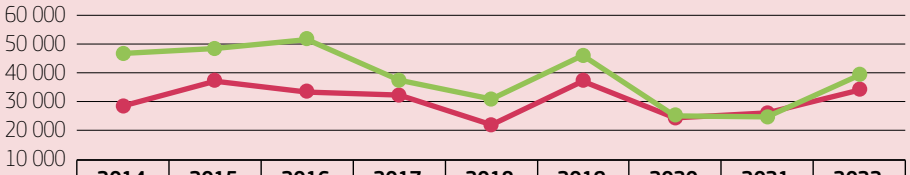
Considerations are as follows at the JRCs sites where calculations have been presented for several years:

At **JRC Geel**, the emissions from air pollutants (SO_2, NO_2, etc.) are rather limited and relatively stable due to the fact that most of the buildings are heated by natural gas and hot water. The other sources of emissions arise from the use/test of the emergency generators, which run less than 100 hours/year. In 2022, the total air emissions was reduced by 29% from 0,482 in 2021 to 0,342 tonnes.

In **JRC Ispra**, **Figure 4.3** shows that total emissions from the trigeneration plant in 2022 have increased compared to last year due to the aging of the engines and the depletion of the catalyst filters installed in 2021. 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 NOx, assuming the continuous operation of the plant for the entire year.

These values were respected also during 2022 and will be communicated to the interested parties. On top of this, several actions were carried out between the end of 2022 and beginning of 2023 to limit the trigeneration plant emissions, i.e. the installation of new catalyst filters on three of the engines and the extraordinary maintenance of one of the engines. To be noted that the site has planned to replace the existing trigeneration plant with a new highly efficient trigeneration plant as of 2024.

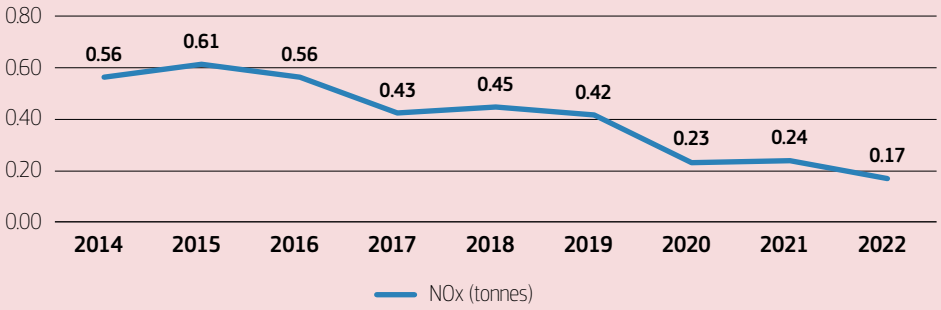
Figure 4.3 NO_x, CO total emissions from Ispra trigeneration plant



	2014	2015	2016	2017	2018	2019	2020	2021	2022
NOx (kg)	28 498	37 292	33 507	32 317	21 962	37 322	24 450	26 040	34 240
CO (kg)	46 835	48 489	51 800	37 376	30 887	46 093	25 240	24 800	39 320

At **JRC Petten**, NOx emissions are generated by heating installation as by-product of the combustion, especially when the temperatures are high. Compared to 2021, the NOx emissions are estimated to have decreased in 2022 by 28% (**Figure 4.4**).

Figure 4.4 Estimated NO_x emissions (tonnes) at JRC Petten

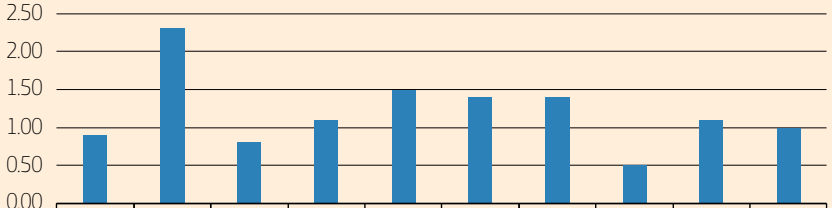


JRC Seville's non-CO_2 air emissions are mainly resulting from the building's energy consumption due to the gas feeding the boilers. Calculation multiplies the gas consumption by the maximum concentration of NO_2 emissions, announced by the manufacturer (NOx <56mg/kWh).

4.6 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 obligations of the site is the monitoring of the alpha emissions. As shown in the figure below, the alpha emissions are rather stable and well below the limit of 888 kBq (**Figure 4.5**).

Figure 4.5 Atmospheric emissions containing α emitting aerosols at JRC Geel

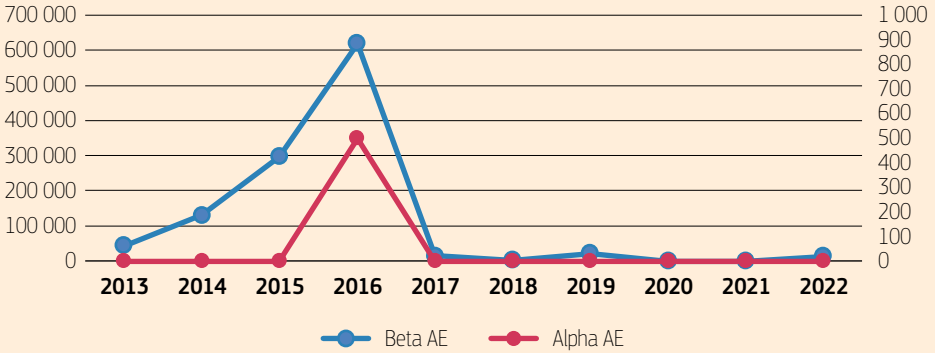


	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
α aerosols (kBq)	0.90	2.30	0.80	1.10	1.50	1.40	1.40	0.50	1.10	1.00

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**)
Note: The maximum values of the y axes in the graph below are well below the limits for beta-aerosols (left axis) of 4 000 000 Bq/y and alpha aerosols (right axis) of 100 000 Bq/y; the value "0" means below the detection limit.

Figure 4.6 JRC Karlsruhe exhaust air: Aerosols declaration to authorities (Bq/y)

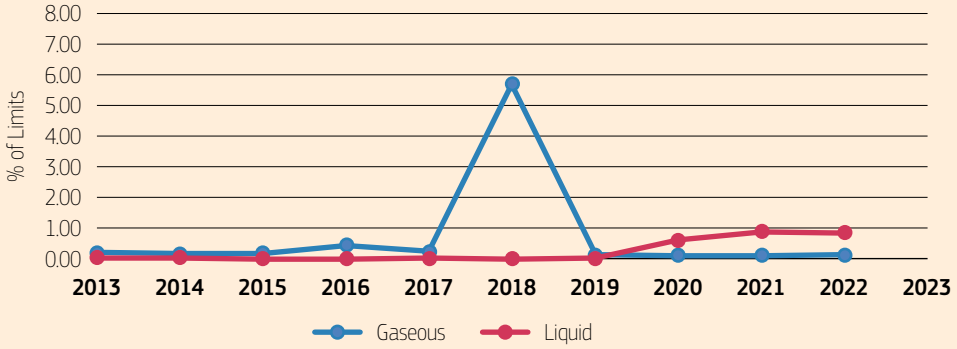


JRC Ispra, as established in the operational provisions for nuclear installations and under Italian law, has set up a program of environmental monitoring in order to detect and record potential radioactive releases and monitor the level of radioactivity in the environment in its surroundings. This uses 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 JRC Ispra 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 authorised 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 authorised discharge limits. Even though the overall authorised discharge limits have been reduced, the total activity released in 2022, both liquid and air, remains well below the authorised limits. The amount of gaseous radioactive releases is equal to 0,14% of the limits and the amount of liquid releases are equal to 0,85% of the limits. The overall releases resulted in negligible doses for the population, quantified well under 1 microSv/year, even under conservative assumptions.

The 2023 target is to keep discharges well under the authorised limits, in line with the values of the last 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 (**Figure 4.7**)

Figure 4.7 Gaseous and liquid effluents at JRC Ispra



5 Reducing mobility emissions through more sustainable modes of transport

Greening The Commission: *The Commission expects that the measures set out in this Communication to reduce emissions linked to staff business trips and use greener methods of transport will reduce the emissions in this area by at least 50% compared to 2019 by 2024.*

5.1 Reducing emissions from professional travel

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

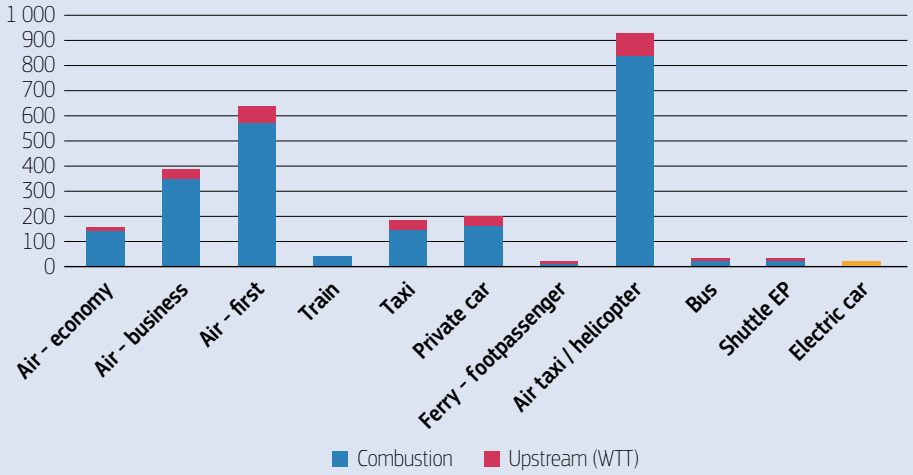
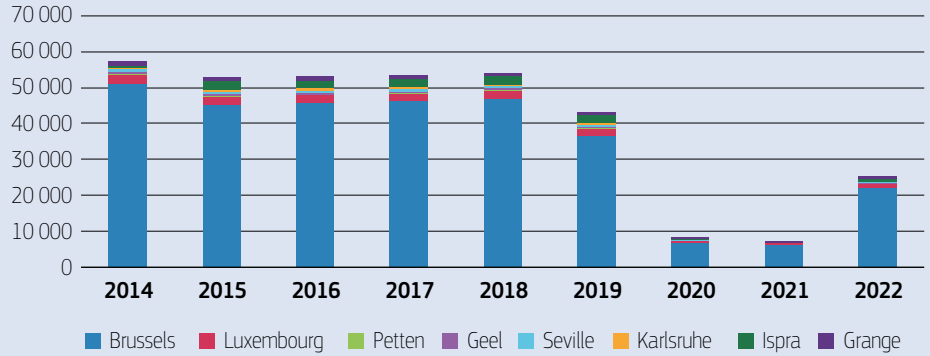


Figure 5.1 highlights in particularly the difference in emissions between different classes of air travel for which the importance of encouraging economy travel is evident where flights are necessary

Figure 5.2 Emissions from staff professional travel *, tCO_2e



(*) Centralised data since 2019.

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

5.1a Background

Data from staff missions has been extracted from the Commission's management system for professional travel (MiPs). It developed the capability to report emissions in 2020 and this new approach has been used to calculate emissions back to 2019. Previously a more complex and less transparent approach was used.

Staff define the geographical parameters and the modes of their travel, and 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 2022 are shown in **Figure 5.1**. These take into account both combustion and upstream (or well to tank) emissions - those associated with extracting the fuel and making it available for use.

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 have pledged to reduce emissions, although fewer than 10 have included quantitative targets in their Annual Management Plans. DG BUDG has also committed to year on year reductions of the budget for professional travel.

Other tools to assist reducing missions emissions include:

- New Guide to Missions (under finalisation in 2023), allowing train travel in certain circumstances when more costly than flying, in development
- Display of emissions by different transport modes on the missions booking tool

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, 2022 saw a strong rebound increasing to nearly 60% 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 off non air travel was 22% and 33% respectively, falling to 12% in 2022.
- Air taxi (ie private charters) accounted for roughly 1% of missions emissions in 2019, but this increased to 19% in 2021 before reducing to 4% in 2022. The reduced availability of commercial services in 2020 and 2021 explains this trend.

Table 5.1 Total professional travel emissions by mode (2019-2022), tCO_2e

	2019	2020	2021	2022
Air travel (economy)	17 054	2 493	2 223	8 867
Air travel (not economy)	22 903	3 870	2 313	13 419
Air taxi (and helicopter)	449	993	1 303	1 122
Rail	656	137	128	387
Non rail surface travel 1 –Commission vehicle fleet	927	338	437	780
Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	1 159	376	414	765
Total	**43 149**	**8 207**	**6 819**	**25 339**

5.1d Carbon emissions intensity by site

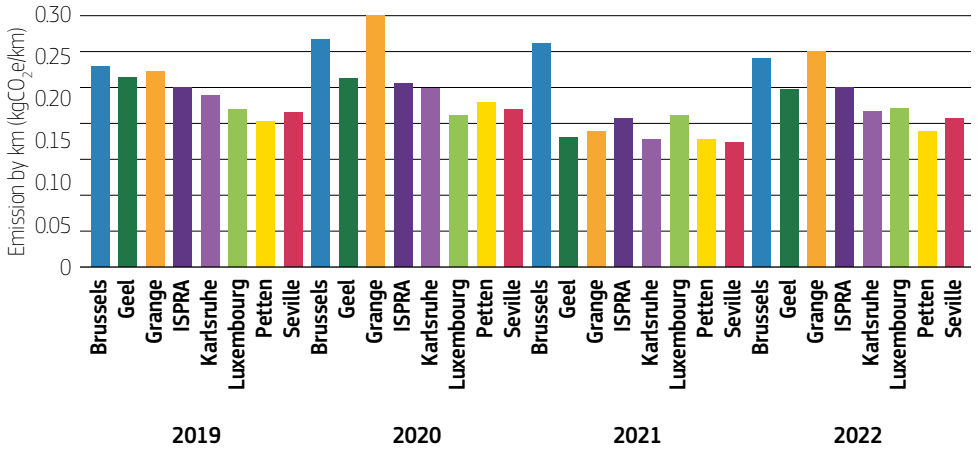
Table 5.2 and **Figure 5.3** display the carbon intensity for the sites between 2019 and 2022, based on the MiPs data. It is evident that Luxembourg, and JRCs Petten, Seville and Karlsruhe have the lowest values (all below 200g CO_2e/km indicative of a greater proportion of surface travel and or predominantly class travel by air.

Carbon intensity is a useful measure that should reduce as staff fly less or convert to surface travel, particularly rail. The Commission value increased in the CIVID pandemic, and the increased used of private charters as commercial services were severely reduced, but has been reducing since.

Table 5.2 Total carbon intensity by site, (2019-2022) $KgCO_2e/km$

	2019	2020	2021	2022
Brussels	0.24	0.27	0.27	0.25
Luxembourg	0.19	0.18	0.18	0.19
JRC Petten	0.17	0.20	0.15	0.16
JRC Geel	0.23	0.23	0.15	0.21
JRC Seville	0.18	0.19	0.15	0.18
JRC Karlsruhe	0.20	0.21	0.15	0.19
JRC Ispra	0.21	0.22	0.18	0.21
Grange	0.23	0.30	0.16	0.26
Commission	**0.23**	**0.26**	**0.25**	**0.24**

Figure 5.3 Emissions intensity per site, $gCO_2e/passenger.km$



5.2 Reducing emissions experts' travel

In 2021 the Commission included emissions for expert travel (covered by the Commission's administrativ budget) for the first time, and has extended the calculations back to 2019. The calculations uses a database describing an expert's country of origin with mode of travel assumed based on distance. The Commission is developing a more automated approach.

The database does not contain a systematic method to allocate meetings by site, although this is being developed. Emissions are therefore allocated to Brussels site. Emissions are summarised in **Table 5.3** which suggests that emissions in 2021 reduced to 2% of their 2019 value before recovering to 39%.

Table 5.3 Total experts' missions emissions (2019-2022) by mode, tCO_2e

	2019	2020	2021	2022
Air	30 919	8 683	722	12 048
Rail	48	9.4	0.6	13
Car	250	38	26	81
Total	**31 216**	**8 730**	**748**	**12 141**

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 2023, the Commission Guidelines will be updated to also address virtual and hybrid events.

Lastly, in the frame of the "greening' we will also investigate the possibility of developing a **common tool for the calculation of the environmental impact** of conference organisation.

5.3 Greener commuting options

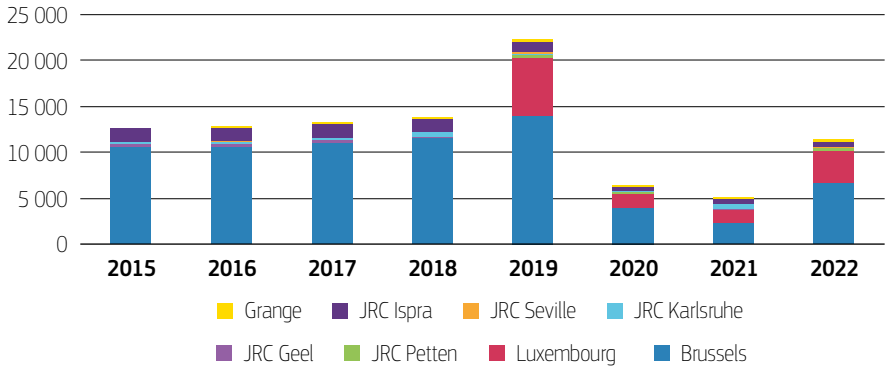
Emissions from staff commuting are presented by site in **Figure 5.4** with data from **Table 5.2**. Data from 2019 onwards has been updated and data collected from a staff survey conducted in 2022 was used to evaluate emissions at several sites. Prior to 2019 not all sites reported commuting emissions.

Table 5.4 Total commuting emissions by site (tonnes)

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels									
Direct	10 672	10 672	10 672	11 046	11 565	11 565	3 325	1 966	5 842
Upstream						*2 351*	*676*	*400*	888
Total	10 672	10 672	10 672	11 046	11 565	13 916	4 001	2 366	6 730
Luxembourg									
Direct						5 296	1 329	1 180	2 936
Upstream						*1 077*	*270*	*240*	580
Total						6 372	1 599	1 420	3 516
JRC Petten									
Direct						256	74	74	182
Upstream						*52*	*15*	*15*	36
Total						308	89	89	218
JRC Geel									
Direct			281	251	246	256	26	58	100
Upstream									
Total			281	251	246	256	26	58	100
JRC Karlsruhe									
Direct			273	273	273	273	78	78	310
Upstream						*55*	*16*	*16*	71
Total			273	273	273	328	94	94	381
JRC Seville									
Direct			76	82	89	155	24	30	84
Upstream						*35*	*5*	*6*	*19*
Total			76	82	89	190	29	36	103
JRC Ispra									
Direct	3 236	1 431	1 409	1 420	1 425	904	318	422	544
Upstream						*192*	*69*	*92*	*119*
Total	3 236	1 431	1 409	1 420	1 425	1 096	388	514	662
Grange									
Direct			14	14	14	303	4.00	4.00	164
Upstream						*67*	*0.81*	*0.81*	36
Total			14	14	14	370	4.81	4.81	200
Total	13 908	12 103	12 725	13 086	13 611	**22 837**	**6 230**	**4 581**	**11 911**

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

Figure 5.4 Evolution of commuting emissions, tCO_2e



5.3a

The Greening communication has ensured at **Corporate level**, the following actions to 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' 'permis environmental', demand for electric bikes 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 developed to allocate parking space (Tool already available in 7 buildings L107, L-51, L130, BREY, BRE2, J-27, CSM1)

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

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 2022, there were 128 requests reimbursed, amounting to 18 227 EUR. In addition, the Commission continues to offer free subscription to Vel'OH!, the self-service bike rental system of Luxembourg City. In 2022, 688 staff members benefited from this measure, with 91 new codes attributed that year. Finally, the "Luxembourg mobility policy" was adopted at the end of 2022.

5.3d JRC

Most JRC sites are located in remote areas (with the exception of JRC Seville), 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 together with showers and bike parking infrastructures. Charging stations for electric vehicles and electric/hybrid service vehicles are also available on most of the JRC sites.

In addition, 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 the latest *EMAS Environmental Awareness and Behaviour Survey* (Nov. 2021), the JRC scored highest with 73% of respondents stating that they "regularly take action for the environment", with high awareness in the area "commuting" (90%).

In **JRC Geel**, the majority of the staff members commute by car due to the remoteness of the site. The CO_2 emission for the commuting is estimated as previous years from a 2016 survey considering the new way of working (teleworking regime). As an incentive to reduce the CO_2 on site, charging stations for electrical vehicles are available for visitors and staff. Bicycles are also provided to facilitate movement between buildings. Moreover, there was promotion for commuting by bike (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 (655 tonnes of CO_2e in 2022). This value is related to a higher presence on site (42% in 2022 vs 35% in 2021). 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 tonnes of CO_2e for the use of JRC buses). In 2020, a *JRC Ispra Transport Survey* in the framework of the Living Labs has been performed. This has been used to calculate relative JRC Ispra commuting mode split. Relevant aspects include that the most commonly used mode of transportation is the car (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 transport, 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 transport hubs in the region.

In **JRC Karlsruhe**, the CO_2 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_2 footprint for commuting 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 bigger city, Alkmaar. JRC Petten organise three buses with different routes between Petten and Alkmaar and surroundings. One bus is driving between Petten and Amsterdam. Furthermore, service bikes (together with showers) are provided, giving the staff the options to cycle within and beyond the fences.

In **JRC Seville** and according to DG HR's pulse mobility survey from 2022, more than 50% of the respondents (representing approximately 40% of the staff) commute to work using an environmentally mode of transportation, i.e. cycling, walking or public transport.

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 2022 and we are hopeful for installation soon.

5.3f Staff participation example: Velomai

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 22 EU institutions, agencies, and bodies as well as delegations around the world compete by registering the rides in the Velomai app.

5.3g Staff campaign example: Mobility week 2022

In 2022, the promotion of soft mobility focused on 2 main periods. One in May to support HR Velomai initiative with organisation of 3 repair workshops, 4 safe cycling training sessions (online and presential) and 3 online information sessions. The Safe cycling sessions and repairs were repeated in September as part of Mobility week with the organisation of the OIB mobility village on the Berlaymont esplanade and the participation of most soft mobility actors in the Brussels region. Altogether 1003 staff members participated in this initiative.

velo mai

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 400, a number exceeded from 2015 to 2019 (**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 44% (**Table 5.7**).

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 is developing a more automated approach to evaluating these emissions.

Figure 5.5 Evolution of Commission vehicle fleet characteristics

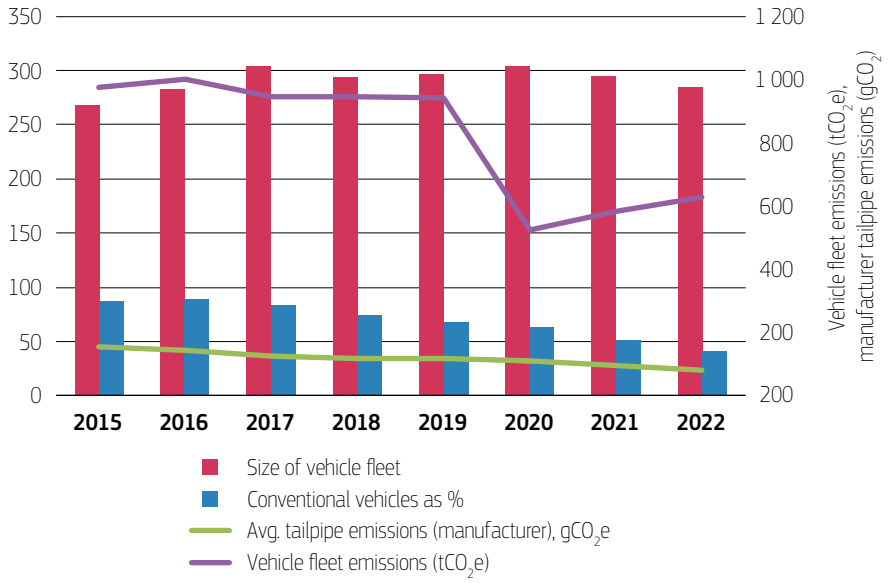


Table 5.6 Number of vehicles in site fleets

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		117	107	129	126	131	129	125	123
Luxembourg		25	30	30	33	32	32	31	30
JRC Petten		3	3	3	4	4	4	4	3
JRC Geel		0	7	7	7	7	7	7	7
JRC Karlsruhe		0	11	12	12	12	12	12	12
JRC Seville	1	0	1	1	1	1	1	1	1
JRC Ispra	104	122	123	121	110	110	119	115	109
Grange		1	1	1	1				
Total	**105**	**268**	**283**	**304**	**294**	**297**	**304**	**295**	**285**

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels	0	10	10	13	33	45	54	76	87
Luxembourg	0	0	0	0	2	9	12	14	15
JRC Petten	0	1	1	1	1	1	1	1	1
JRC Geel	0	0	0	0	0	1	1	1	2
JRC Karlsruhe	0	0	0	1	1	2	2	2	4
JRC Seville	0	0	0	0	0	0	0	0	0
JRC Ispra	3	21	21	34	36	37	42	51	59
Grange	0	0	0	0	0	0	0	0	0
Total	**3**	**32**	**32**	**49**	**73**	**95**	**112**	**145**	**168**
as % of fleet	**3**	**12**	**11**	**16**	**25**	**32**	**37**	**49**	**59**
Conventional vehicles as %	**97**	**88**	**89**	**84**	**75**	**68**	**63**	**51**	**41**

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels	148	145	129	118	116	119	113	94	82
Luxembourg	171	167	161	158	145	142	126	121	110
JRC Petten	168	148	148	148	148	148	148	148	148
JRC Geel									
JRC Karlsruhe	202	172	165	162	157	146	151	151	140
JRC Seville	136	136	136	136	136	136	136	136	136
JRC Ispra	186	158	157	132	111	109	104	91	69
Grange	174	174	174	174	174	0	0	0	0
Total	**185**	**153**	**143**	**127**	**117**	**117**	**110**	**97**	**81**

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 2022, one vehicle was replaced. Currently, 50 % 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_2 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 5.3).

In 2022, the **JRC Geel** Security service's vehicle (conventional petrol based engine) used by the guards to perform inspection rounds and to escort deliveries was replaced by a hybrid model. As a result, JRC Geel decreased its CO_2 emissions related to its car fleet by 16% compared to 2021. To increase sustainability, the car is leased.

JRC Ispra has a service vehicles fleet of 109 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 2022, electric and hybrid vehicles have surpassed conventional vehicles for the first time. 17 recharging points for internal electric vehicles (EVs) have been installed with a a monitoring system that allows site to monitor the EV's electrical consumption (15.29 MWh in 2022 with a 35.6% increase with respect to 2021) and their indirect upstream CO_2 emissions. In an effort to promote sustainable mobility, JRC Ispra has also put in place a service bicycle policy, which comprises a dedicated service which manages 143 service bicycles (of which 46 are electric). In 2022 CO_2 emissions per km, according to manufacturer specifications, decreased by 24.3% due to the removal of older conventional vehicles.

JRC Karlsruhe operates a fleet of 12 vehicles of which five are mostly or only used on the premises. At the beginning of the year, two of the latter were electric cars. In addition, mid-2022, the service cars for the Officer in Charge and for radiation protection on call were also switched to electric cars, i.e., JRC Karlsruhe operated four electric cars at the end of the year. All cars had a combined CO_2 output of 15,3 tonnes in 2022. This is almost the same value as in 2021 (15,2 tonnes). It should be pointed out that the CO_2 emissions of all cars represented only 0,3% of the site's total CO_2 emissions in both 2021 and 2022.

JRC Petten has three 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 JRC Petten.

In **JRC Seville,** a procedure is currently underway to dispose of the only service car on site, which has been unused for the past few years.

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Commission total	965	976	1001	947	947	943	525	585	627

5.5 The evolution of the overall vehicle fleet

Table 5.9 shows 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.

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

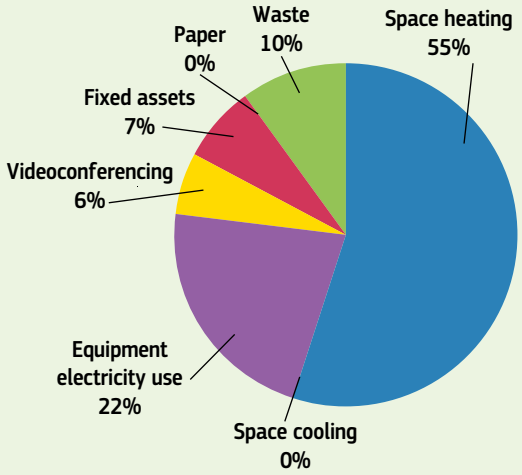
Several actions encompass the IT domain, and a new digital strategy was created in 2022. The emissions associated with IT fixed assets are calculated using the inventory for 18 categories of IT equipment and assuming an amortisation period of four years (see Chapter 7). The resulting Commission level emissions reduced from 11 294 to 6 119 tonnes between 2019 and 2022 (Chapter 3). The reasons for this include a reduction in the number larger equipment items such as laptops, desk top 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 publically 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 scope of reporting for telework was expanded to also include emissions from paper use and waste generation and data extended back to 2018. The breakdown in the components of teleworking emissions is presented in **Figure 6.1**. As in 2021 the largest components were space heating (55%) and equipment electricity use (22%).

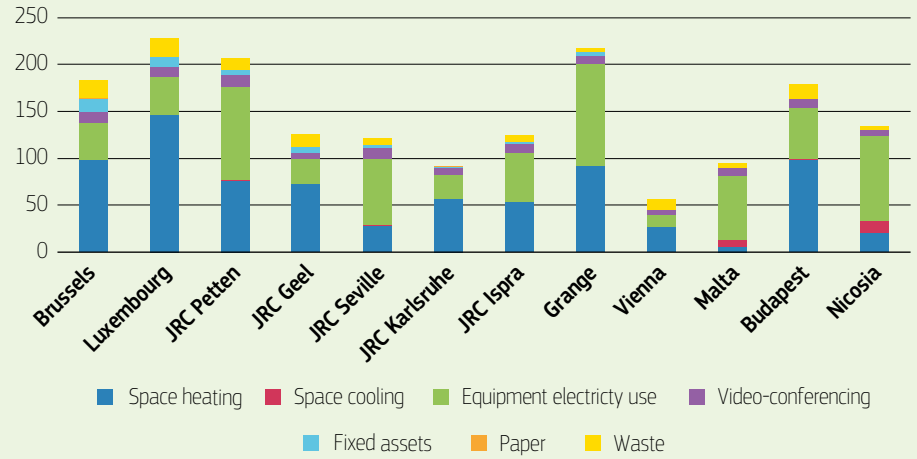
Figure 6.1 Components of teleworking emissions in 2022 (including EC Representations in Member States)



Emmissions from teleworking	Total (all sites) (tonnes CO_2e)	Per teleworker (kg CO_2e)
Space heating	4 119	187.4
Space cooling	11	0.5
Equipment electricty use	1 641	74.7
Videoconferencing	449	20.4
Fixed assests	518	23.6
Paper	13	0.6
Waste	734	33.4
Total	**7485**	**340.6**

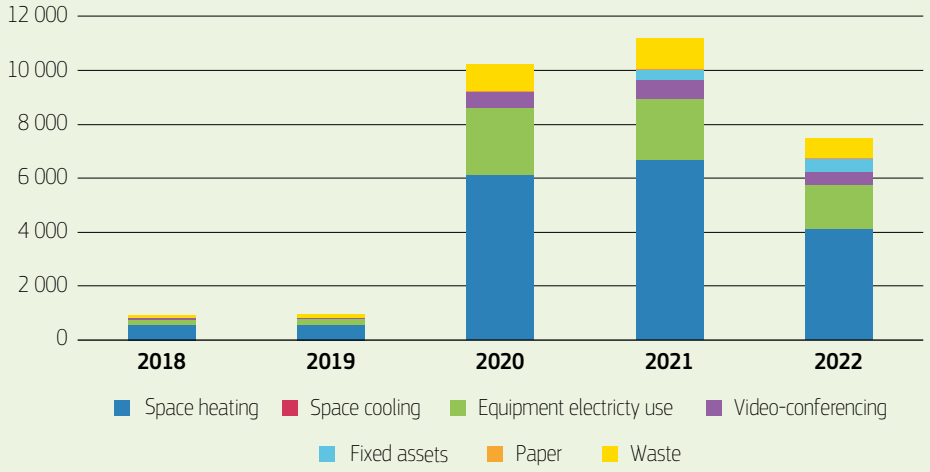
The distribution of teleworking emissions between the sites is shown in **Figure 6.2**.

Figure 6.2 Teleworking emissions at EMAS sites in 2022 ($kgCO_2e$/person)



While climate plays a role, Seville and Valencia have 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



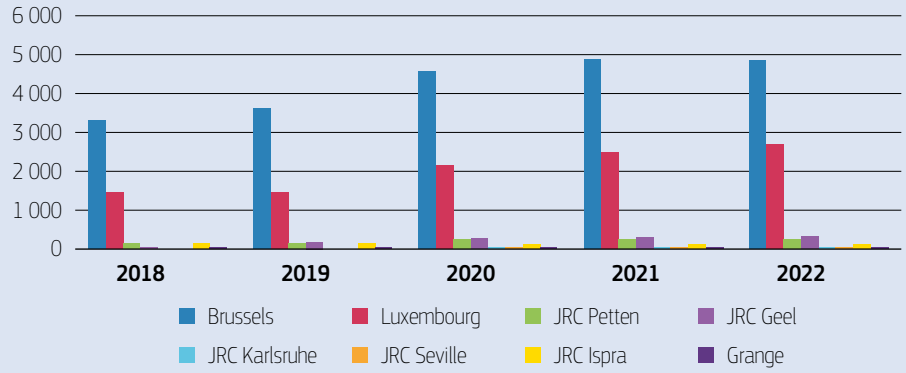
Teleworkers were 6% of staff in 2018, 7% in 2019 and 8% in 2020 before the lockdown. The percentage of teleworkers during the pandemic varied between 50% and 100% from site to site. Greater emissions were observed in 2021 than in 2020 because staff were encouraged to telework for the whole year.

The Commission adopted the Working Time and Hybrid Working Decision in 2022, which allowed most staff a minimum of 20% teleworking, negotiable up to 60%, and following which it accounted for approximately 40% to 60% of working time across the sites.

6.3 Emissions generated by service contracts

The categories of service contract taken into account include security, cleaning, consultants, translators, of to provide the totals shown below in **Figure 6.4**. The data in **Annex 5** suggest that security and cleaning contracts are the largest contributors.

Figure 6.4 Emissions from service contracts (CO_2e)



6.3a Brussels

The increase in Brussels' emissions from 2018 to 2021 is due to more complete reporting

6.3b Luxembourg

The slight increase in Luxembourg figures is mainly due to an increase of "other service contracts", as well as security and cleaning Full Time Equivalent staff, (FTE), and despite the decrease in "service contracts".

6.3c JRC

In **JRC Geel**, the increase in the contract weight in kEUR in 2022 for most of the large contracts (e.g., waste collection, security, catering) had a direct influence on the increase of the estimated CO_2e emission.

In **JRC Ispra,** service contracts emissions are based only on the number of Full Time Equivalent (FTE) staff for the cleaning and security services contracts on site. There was a slight increase in 2022 due to the three-unit increase in FTEs. Emissions accounted for 132 tonnes of CO_2e, 1.7% more than in 2021.

In **JRC Karlsruhe**, emissions from service contracts follow the same approach as in 2021 considering only the FTEs of cleaning and security staff, and are unchanged.

6.3d DG SANTE at Grange

No significant changes were recorded in 2022 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 Auditor's recommended grading scale to show the degree to which tenders incorporate sustainability, as follows:

- **Not green**: Tender documents without environmental considerations or have clauses without impact on purchasing approach
- **For light green to very green** a main difference is in 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 45% 2022. A relatively small proportion of contracts at the larger experimental sites JRC Ispra had any degree of greening. JRC Petten has yet to adopt this approach new GPP criteria.

Table 7.2 provides an overview of the presence of 'green' products in the office supply catalogue, which has accounted for over half the spend since 2020 with the overall Commision 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)

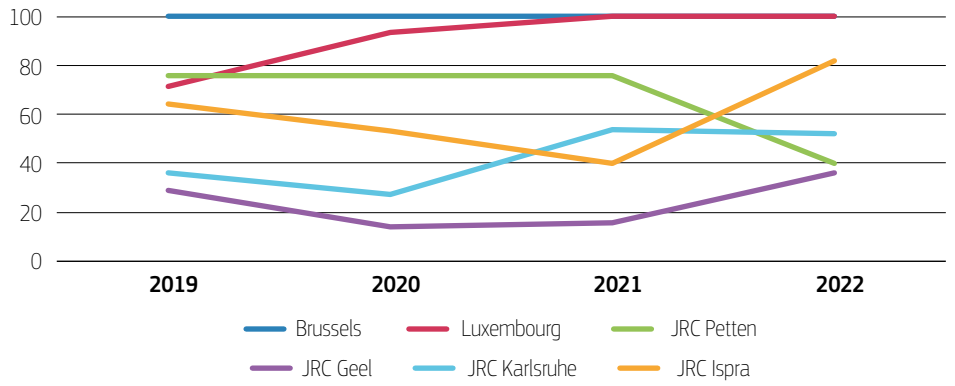


Table 7.1 'Greenness' of procedures, European Court of Auditors (ECA) approach*

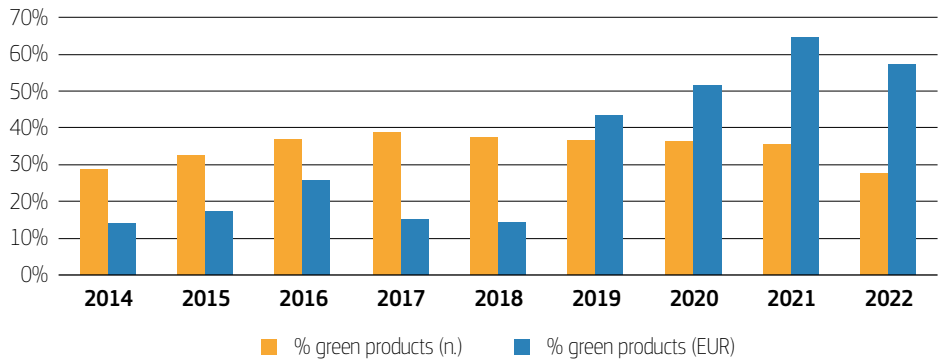
Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Breakdown of number of tender procedures according to ECA 'green' scale										
Not green						134	68	103	102	74
Light green						22	21	23	29	37
Green						31	28	35	34	36
Very green						5	5	3	2	3
Green by nature						4	3	6	0	10
Total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

(*) 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 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Office supply catalogue										
Green products (no)		445	590	683	676	669	411	416	338	288
Green products (EUR)		66 729	79 429	82 402	46 415	44 522	960 374	319 217	363 416	376 851
Total products (no)		1 553	1 806	1 843	1 749	1 788	1 124	1 140	953	1 041
Total products (EUR)		473 508	459 696	323 490	308 450	311 469	2 211 184	621 127	563 705	658 906
% green products (n.)		**29%**	**33%**	**37%**	**39%**	**37%**	**37%**	**36%**	**35%**	**28%**
% green products (EUR)		**14%**	**17%**	**25%**	**15%**	**14%**	**43%**	**51%**	**64%**	**57%**

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



7.1a Brussels

The OIB launched, in cooperation with OXFAM, a new furniture collection made exclusively by upcycling old furniture (see 7.1.e photos for case study 4.1). The workshop hires mostly socially disadvantaged workers, thus also contributing to their participation in the community.

7.1b Luxembourg

All tenders for OIL incorporated GPP in 2022. OIL created a tab on **Circular economy** on its *My OIL EMAS* website created in 2021. It explains the Circular economy in the context of the Green Deal and presents the EU strategy, and tips for officials in Luxembourg with actions to put in place.

7.1c Grange

All tenders for the Grange site incorporate GPP. In 2022 a tender for planting more 5 160 trees was launched that referenced EMAS in the technical specifications. This was followed, in the ECA classification system, by a green by nature tender.

7.1d JRC

Although JRC's core business (e.g. contracts for research studies, freelance services) is other than the GPP priority products - making it challenging to reduce the percentage of non-green contracts - the JRC is 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 there is no specific GPP guidance 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 were applied to contracts that could potentially be "greened" further and the category of "special mention" contracts was introduced in 2019. The results vary each year according to the specific procurement issued (most contracts last for four years). In 2022, GPP criteria were applied to the 100% of contracts where GPP criteria are available and 13 additional contracts were classified as "special mention" (68% of the potential "special mention" contracts).

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.

To raise staff awareness, the Ispra site GPP Correspondent delivered training addressing GPP and related implementation aspects. These addressed the internal procurement networks: reaching 17 members of staff in 2022.

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

To promote sustainable practices in catering services at **JRC Seville** a special attention has been given on 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.

Case study 7.1 Upcycling old furniture in Brussels

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

7.2 Evolution of IT inventory and recycling

The evolution of main categories of IT equipment at Commission level are shown in **Table 7.3**. The categories show a reduction 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 emisssions associated with IT.

Table 7.3 Evolution of the IT inventory from 2018 to 2022 at Commission sites*

Category of equipment	2018	2019	2020	2021	2022	% change 2018-22
Computers and screens						
Desktop PCs	23 908	14 590	13 534	10 238	9 768	- 59
Laptops	28 267	35 890	43 939	43 590	52 056	84
Docking stations	26 074	35 311	42 133	43 100	50 149	92
Flatscreens	61 041	63 714	72 691	71 283	74 432	22
Printers and scanners						
Individual printers	7 361	3 505	2 637	1 869	1 434	- 81
Network printers and copiers	5 911	5 452	5 407	4 665	4 002	- 32
Scanners	495	387	357	343	334	- 33
Fax machines	242	168	145	129	113	- 53
Telephones and faxes						
Simple (portable) phones	160	150	201	124	316	98
Smartphones	9 062	9 314	7 444	6 973	7 111	- 22
Fixed line telephones	43 376	30 884	17 556	18 487	13 259	- 69
Servers and swtiches						
Informatics server	6 160	5 684	5 855	5 447	5 480	- 11
Firewall router switch	2 305	2 490	7 268	7 029	7 186	212
Video equipment						
Projectors	845	673	656	554	552	- 35
Videoconference installations	1 418	1 194	1 273	1 174	1 097	- 23
Televisions	437	523	546	607	612	40

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

7.2a Recycling of IT inventory

Until 2021 DG DIGIT managed contracts for the collection and recycling of IT equipment from Brussels and Luxembourg (**Table 7.4**). New (temporary) arrangements were introduced in 2022. The Commission will be part of the European Parliament's framework agreement until arrangements under a DIGIT organised inter-institutional call for tender should be in place in for second hand use.

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

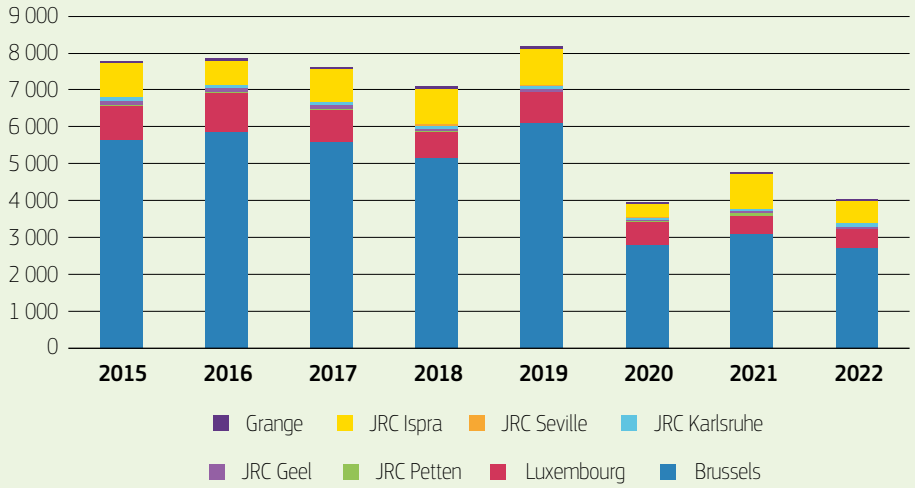
Parameter	Year of collection	2014	2015	2016	2017	2018	2019	2020	2021	2022 [2]
Collected items		27 513	30 918	23 969	18 133	15 988	30 001	31 483	16 763	N.a.
Processed items [1]		27 375	30 918	23 554	18 088	15 988	28 893	31 483	16 763	N.a.
Items for second hand use		24 759	27 952	21 736	14 287	10 549	14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

Note 1: processing could take place in following years, (source DG DIGIT).
Note 2: N.a. data not available, a new multi-institutional contracting framework is under development.

7.3 Improving waste management and sorting

Overall: The trend in 2022 was a decrease in waste generation (**Figure 7.3, Table 7.5**). The 2014-23 and 2014-30 waste reduction target have been met. There is some fluctuation in recent years particularly of sites newer to EMAS implementation.

Figure 7.3 Non-hazardous waste, tonnes



The evolution in hazardous waste generation, and of waste sorting is presented overleaf (**Figures 7.4, 7.5 and Tables 7.6, 7.7**) and in both cases there is a downward trend showing that waste management measures have been effective in recent years.

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

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		6 081	5 654	5 882	5 580	5 158	6 103	2 810	3 116	2 722
tonnes/person		0.222	0.209	0.218	0.198	0.181	0.211	0.094	0.102	0.088
Luxembourg		154	907	1 043	876	702	844	619	466	522
tonnes/person		0.038	0.194	0.224	0.183	0.140	0.164	0.118	0.084	0.092
JRC Petten		30	28	32	36	28	24	16	84	9
tonnes/person		0.105	0.100	0.117	0.136	0.115	0.097	0.066	0.349	0.038
JRC Geel		166	115	108	95	76	65	40	59.19	47.54
tonnes/person		0.479	0.351	0.364	0.358	0.292	0.249	0.151	0.225	0.180
JRC Karlsruhe		107	102	82	80	85	78	60	57	81
tonnes/person		0.333	0.317	0.253	0.248	0.269	0.246	0.194	0.187	0.264
JRC Seville		6	5	18	11	11	16	5	4	11
tonnes/person		0.022	0.019	0.060	0.035	0.031	0.044	0.014	0.010	0.027
JRC Ispra		888	925	641	895	989	1 001	362	958	624
tonnes/person		0.380	0.403	0.284	0.393	0.433	0.429	0.150	0.387	0.250
Grange		45	41	50	38	45	40	15	18	18
tonnes/person		0.251	0.225	0.262	0.204	0.249	0.227	0.088	0.102	0.097
Commission		**7 477**	**7 778**	**7 856**	**7 611**	**7 094**	**8 171**	**3 928**	**4 763**	**4 033**
tonnes/person		**0.212**	**0.219**	**0.223**	**0.208**	**0.191**	**0.216**	**0.101**	**0.119**	**0.100**

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.

7.3b Luxembourg

In 2022 there was a 12% increase in waste production compared to 2021 due to the gradual return to the office. The preparation of the move to the new Post/Mercier building had inevitably an impact in this increase. However targets are met and there is a reduction of 38% compared to 2019. Moreover, there was a significant decrease in unsorted waste (-11%). The good results in recent years are linked to the new central sorting stations in all office buildings. Communication actions continued in 2022 in order to raise awareness about the need to reduce waste and recycle better. Ad hoc interventions were taken if waste management issues were detected through information from various stakeholders (staff, cleaning personnel etc). Data tables were updated to include oil and fat, plastic wrap, ceramic waste, data support and polysterene as non hazardous waste.

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 looks carefully into reducing its waste and increasing awareness on the importance of correct sorting so that recycling can be optimised. Regular communications to staff, who are the critical actors in waste production, is done. In 2022, JRC Geel decreased its non-hazardous waste by 19.8% (from which a 25.7% reduction of residual waste). With regard to hazardous waste, 40% was nuclear waste.

In **JRC Ispra** in 2022, there was a 35% reduction in waste production compared to 2021. The production of almost all categories decreased and in particular metal scrap waste (-58%). The increase in organic waste (from 38 tonnes in 2021 to 62 tonnes in 2022) is an index of inclusion of compostable waste with the organic fraction with consequent reduction of paper and cardboard waste (from 72 tonnes in 2021 to 54 tonnes in 2022). The above reflects the efficiency of the campaign on best disposal practices focused on circular economy.

There was 23% less hazardous waste produced in 2022 than in 2021. There was a slight increase in the percentage residual waste in JRC Ispra, which went from 12% in 2021 to 16% in 2022.

In **JRC Karlsruhe**, for the category "unsorted waste" (or residual waste), the German ordinance on industrial waste (*Gewerbeabfallverordnung*) defines different criteria for waste separation other than those applied under EMAS. This consequently leads to different values so they are not published here.

In 2022 in **JRC Petten**, the non-hazardous waste production decreased by around 89% compared to 2021. The site had a significant increase in 2021 due to the removal of two cranes and bird debris. However, it should be noted that the waste data is not complete as the contractor does not provide data. The published data for JRC Petten is based on "Weegbonnen" which are estimations.

In **JRC Seville**, non-hazardous waste production decreased by 31% compared to 2019. This was partly due to lower staff presence an the office, particularly in 2020 and 2021.

7.3d Grange

Waste generation is an environmental aspect with significant impact. The decrease in 2022 was minimum compared to the previous year (-3.1%). The main culprit was the high level of shredded paper produced as a consequence of a larger number of staff retiring and disposing of large volumes of paper documents (4,57 tonnes).

Figure 7.4 Evolution of hazardous waste generation (tonnes)

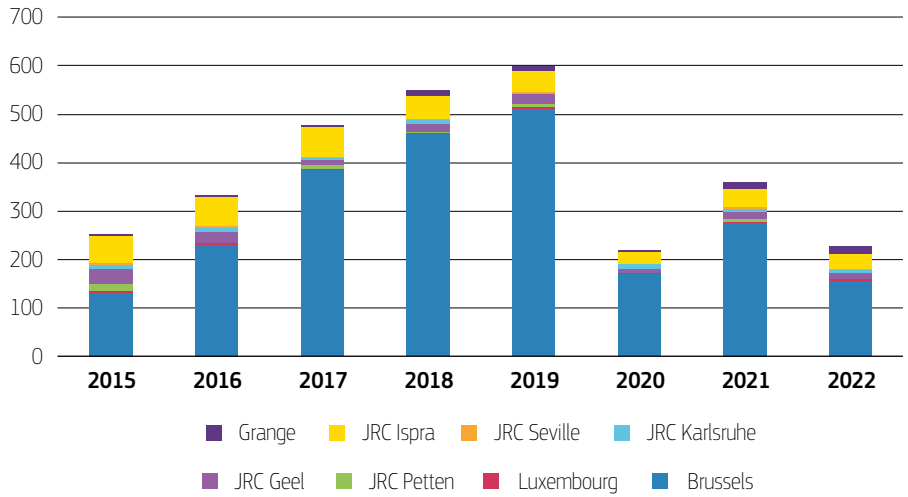
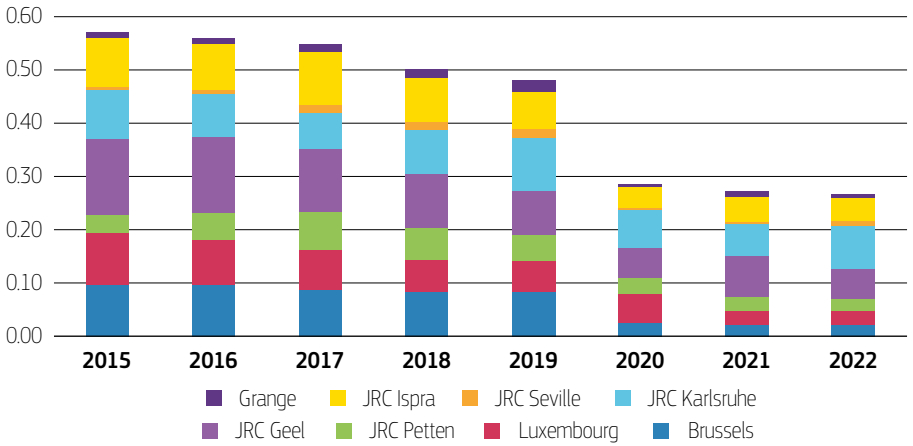


Table 7.6 Total hazardous waste (tonnes; tonnes/person)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		152	132	230	386	461	512	171	277	156
tonnes/person		0.006	0.005	0.009	0.014	0.016	0.018	0.006	0.009	0.005
Luxembourg		0.92	2.27	4.56	2.93	2.23	5.40	3.31	1.96	3.96
tonnes/person		0.0002	0.0005	0.0010	0.0006	0.0004	0.0011	0.0006	0.0004	0.0007
JRC Petten		9.91	14.94	0.00	6.55	1.81	3.53	0.00	6.10	0.00
tonnes/person		0.035	0.054	0.000	0.025	0.007	0.014	0.000	0.025	0.000
JRC Geel		27	30	24	10.09	17.30	21	5.11	14.71	14.68
tonnes/person		0.079	0.093	0.081	0.038	0.067	0.081	0.019	0.056	0.056
JRC Karlsruhe		10.51	10.26	8.23	5.07	6.96	2.59	11.37	7.56	5.17
tonnes/person		0.033	0.032	0.025	0.016	0.022	0.008	0.037	0.025	0.017
JRC Seville		3.37	2.68	2.41	1.13	1.31	2.43	1.10	2.29	1.04
tonnes/person		0.012	0.009	0.008	0.004	0.004	0.007	0.003	0.006	0.003
JRC Ispra		50	57	61	63	48	43	24	39	31
tonnes/person		0.021	0.025	0.027	0.027	0.021	0.019	0.010	0.016	0.012
Grange		0.00	0.04	0.15	0.16	9.02	9.19	0.37	12.14	17.17
tonnes/person		0.000	0.000	0.001	0.001	0.050	0.052	0.002	0.068	0.094
Commission		**254**	**250**	**330**	**475**	**548**	**599**	**217**	**360**	**229**
tonnes/person		**0.007**	**0.007**	**0.009**	**0.013**	**0.015**	**0.016**	**0.006**	**0.009**	**0.006**

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 processes and waste types:

- Incinerated waste - 1. domestic waste, 2.food
- Methanisation - food

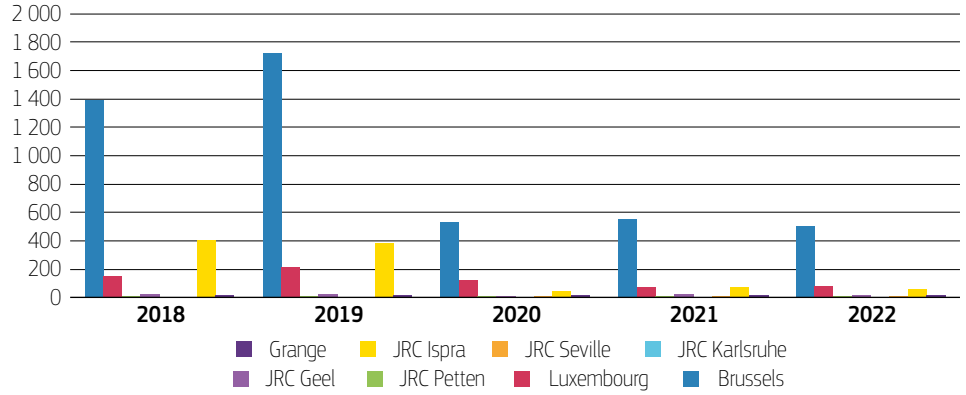
Table 7.7 Residual waste as proportion of total waste at EMAS sites (%, tonnes/person)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		41	45	42	41	42	36	26	20	24
tonnes/person		0.093	0.096	0.096	0.087	0.082	0.083	0.026	0.022	0.023
Luxembourg		55	50	38	41	43	36	44	31	28
tonnes/person		0.021	0.098	0.086	0.075	0.060	0.059	0.052	0.026	0.026
JRC Petten		30	23	43	44	50	44	46	6.69	55
tonnes/person		0.042	0.035	0.051	0.072	0.061	0.049	0.030	0.025	0.021
JRC Geel		29	32	32	30	29	25	34	28	24
tonnes/person		0.162	0.143	0.143	0.120	0.103	0.082	0.058	0.078	0.057
JRC Karlsruhe		31	27	29	25	28	39	31	28	28
tonnes/person		0.113	0.093	0.080	0.067	0.083	0.100	0.071	0.060	0.080
JRC Seville		22	9.12	7.83	36	41	36	23	29	34
tonnes/person		0.008	0.003	0.005	0.014	0.014	0.018	0.004	0.005	0.010
JRC Ispra		24	22	28	24	17.69	15.65	25	12	16
tonnes/person		0.095	0.093	0.087	0.100	0.080	0.070	0.040	0.046	0.043
Grange		5.14	3.71	4.02	5.82	5.29	7.42	4.19	3.17	1.95
tonnes/person		0.013	0.008	0.011	0.012	0.016	0.021	0.004	0.009	0.006
Commission		**237**	**211**	**225**	**248**	**256**	**239**	**233**	**158**	**213**
tonnes/person		**0.084**	**0.095**	**0.093**	**0.085**	**0.078**	**0.078**	**0.031**	**0.024**	**0.025**

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

The evolution of total waste emissions is shown in **Figure 7.6**. Although much site activity resumed in 2022 after the COVID lockdown years of 2020 and 2021, waste emissions were lower in 2022 than in 2021. This is consistent with the overall reduction in waste generation described above and shown in **Table 7.5**.

Figure 7.6 Emissions from waste management (tonnes CO_2e)



8 Biodiversity and food supply

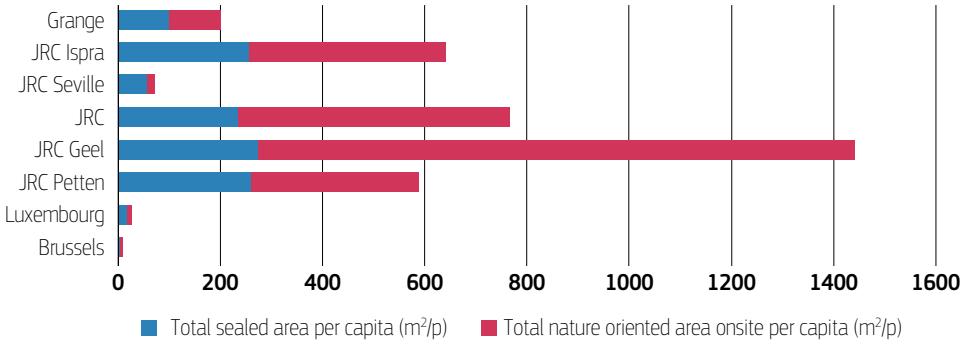
Greening The Commission: *The Commission considers preserving biodiversity as a key element of its greening activities and has already launched several ecosystem and biodiversity programmes, in particular in its non-urban sites.*

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.

8.1 Preserving and restoring nature and biodiversity

Overall: Figure 8.1 shows the different amount of sealed and natural surface area on a per capita basis, indicating that JRC Geel is the most sparsely populated sites, followed by JRCs Karlsruhe, Ispra and Petten occupying several hundreds square meters of land per person. 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**.

Figure 8.1 Sealed and natural space at the EMAS sites in 2022 (m^2/person)



Case study 8.1 JRC Geel's biodiversity actions

8.1a Brussels

OIB put in place the new management approach on biodiversity for the surroundings and buildings of the European Commission in Brussels in October 2022. In 2022, the OIB also launched projects in the BERL and BRE2. The 2023 pilot projects will target the inner courtyards of B-28 and Loi-41 (as part of enhancing the quality of office buildings) and the greening of the roofs of CHAR and ORBAN buildngs. A specific study will be launched for the BERL site, with the objective of enhancing the strategy's visibility.

8.1b Luxembourg

The future Jean Monnet 2 building (JMO2) will benefit from spaces promoting biodiversity as part of the BREEAM Certification. In 2022, an external environmental actor, who is working with OIL as part of the Euroforum rooftop project, was consulted to analyse the JMO2 propositions (flowers, soil, trees, etc.). The project concerning the rooftop of the Euroforum is on hold.

In 2022, a biodiversity strategy was established that includes, for example, a change in the way the grass is mowed (differential management, rather than extensive mowing).

In 2022 the OIL EMAS Team started working together with the CPEs (nursery schools) to develop workshops and events for the educators on sustainability. OIL has also contacted several actors in Luxembourg to define indicators allowing for monitoring the 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 2022 **JRC Geel** implemented actions to preserve and improve its biodiversity (see case study 8.1) proposed, in 2021, by a specialist company operating in this field. JRC Geel installed many bird houses, bee hotels and bat houses on site. An addition initiative by the site's technical services was the creation of bumble bees houses from recycled wood pallets. The bumble bees houses were given to staff to help protect biodiversity at home.

JRC Ispra features 34 hectares and 5 habitats of conservation concern covered by the Habitats Directive. The habitat monitoring plan is in place and so are the relative improvement actions (see case study 8.2). This enables the site to monitor and to enhance biodiversity in time. Projects to restore and protect native trees are planned in order to enhance biodiversity and develop the site's natural heritage.

In **JRC Karlsruhe** almost 70% of the site's surface is non-sealed "natural" areas. A large part of this is natural forested area, such as the surrounding forests, which provides a natural habitat for different species.

JRC Petten is one of the greenest sites of the Commission, with more than 80% of the site left for wildlife to roam free. Part of the site is counted as 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.

Acting on urban sites can prove more complex, but **JRC Seville** is also making progress by identifying actions such as the installation of bird nests around the EXPO building and the development of interpretative signage.

8.1d Grange

A five year land management plan was recently introduced. A large part of the grassland (approximately 3.75 ha) has been allowed to grow into a meadow, in order to allow plants and flowers to grow and provide nectar for insects such as bees, butterflies and hoverflies.

Case study 8.2 JRC Ispra's biodiversity activities

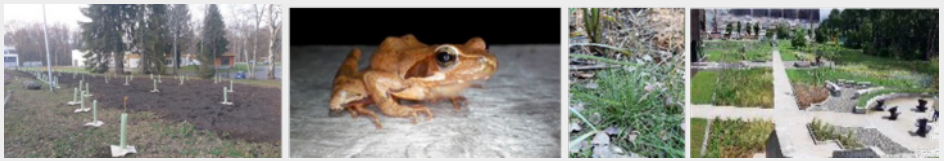
JRC-Ispra has a valuable naturalistic character. The site hosts many interesting species of wildlife and many habitats within its boundaries and aspires to protect and enhance biodiversity and possibly to be regarded as a hot spot of biodiversity in the regional area. The most recent on-site activities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

As a symbolic gesture to preserve the site's green areas and to engage staff, a yearly JRC Tree day was established as a recurring event on 21st November. About 300 native trees and shrubs were planted in 2022.

The flowering plant Eleocharis carniolica (spikerush) is an "endangered" species in Italy. 13 plants were found in 2019, 14 in 2020 and 2021 and has grown to 31 plants found in the wetlands of the JRC-Ispra site in 2022. On the basis of the data collected, some improvement measures for promoting the spread of the Eleocharis carniolica plant, such as turning the soil over, were carried out.

A standardised annual programme was established in 2016 for **monitoring the *Rana latastei* population** (Italian agile frog), using a *capture-mark-recapture* methodology, to evaluate if any protective additional actions are needed.

The population size was estimated in 2016-17 of being about 87 breeding frogs and grew to 176 in 2019, which is a very positive result as it grants a stable *Rana latastei* population, well above the critical level of 50 breeding frogs. The monitoring has been resumed in 2023 following the reopening of the Ispra site after due to the Covid pandemic. In the meantime frogs passages were made in the fence during refurbishment works to help frogs reaching the wet areas.



In the building sectors, measures contributing, directly or indirectly, to protect biodiversity like include green roofs for building 102 and Sport Hall and the landscaping project for building 102, implementing 13 ecological targets in the frame of its BREEAM certification, such as butterfly gardens, batboxes, nests for invertebrates log pyramids and bird nestboxes for birds.

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 2022 sales increased although through a smaller number of outlets overall. This is reflected in **Table 8.1** which shows the quantities of seven food types consumed at Commission sites' canteens since 2019. Although 2022 saw a recovery, total consumption remained less than half the 2019 value. One reason for this is that in Brussels only six canteens have reopened since the COVID pandemic, prior to which there were thirteen.

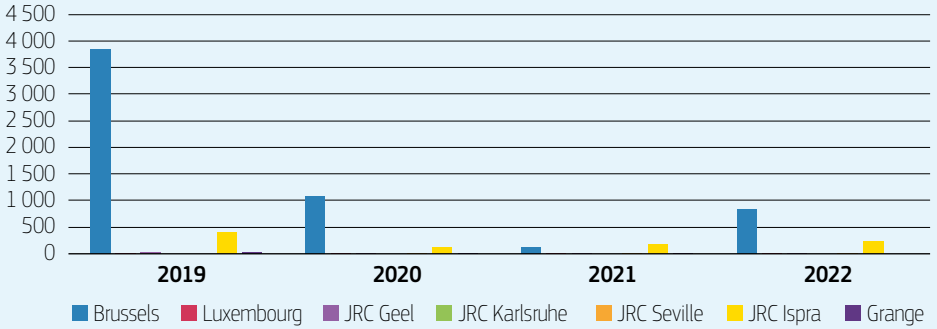
Table 8.1 Annual consumption of seven CO_2 intensive foods (tonnes)

Food item	Factor kg CO_2e/t	2019	2020	2021	2022
i) Beef	28 600	86.26	24.82	5.23	23.16
ii) Pork	5 890	103.72	29.75	8.68	28.67
iii) Chicken	9 220	133.58	36.64	10.21	37.98
iv) Fish	4 752	89.84	27.36	11.08	25.86
v) Milk	1 220	74.75	25.07	9.96	25.14
vi) Other dairy (avg yoghurt/butter)	6 185	36.95	12.09	8.85	19.52
vii) Coffee	3 140	19.23	8.65	8.56	6.54
Total		**544.34**	**164.38**	**62.56**	**166.87**

The Commission measures the consumption of the food types included in **Table 8.1** because these are particularly carbon intensive, and therefore contribute more to the carbon footprint than other food types. Beef is the most carbon intensive foodgroup and the proportion of the total has decreased from 16% in 2019 to 14% in 2022.

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 process towards the certification of Brussels canteens under the 'Good Food' label, developed by the Brussels Capital Region, is currently on hold, awaiting the stabilisation of the catering operation following the COVID pandemic.

8.2b Luxembourg

In Luxembourg, all canteens already hold the *SuperDrecksKëscht fir Betriber.* In 2022, OIL catering continued to participate in ECOBOX, a multi purpose deposit-return scheme developed in Luxembourg for transporting meals (take-away, leftovers, etc.). This initiative reduces the volume of waste, because it reduces not only the number of packages but also the quantity of food waste.

Furthermore in 2022, OIL was consulted as part of the analysis phase of the "sustainable canteen" label project which was coordinated by IMS Luxembourg in partnership with CODUCO on behalf of the Ministry of Agriculture, Viticulture and Rural Development.The analysis phase was completed and submitted to the Ministry, with a summary report presenting our remarks and those of the other stakeholders (service providers, public administrations, collective catering agents and NGOs). However the Ministry decided not to pursue this approach as it was considered unlikely to have a sufficiently significant impact on promoting more responsible and sustainable consumption compared to existing initiatives.

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 when events are organised.

JRC Geel's catering contract includes measures for a fair, healthy and sustainable food system. The contract's technical specifications go beyond the measures implemented in Brussels. For instance, the caterer has a "biogarantie" certificate for a significant proportion of the products used, that should also be seasonal. In addition, the size of meat portions was reduced by 25% There is also an extensive list of sustainable food measures i.e., provision of vegan, organic and fair trade desserts, only glass bottles for beverages, water from dispensers, take away available to reduce food waste, etc.

The large increase of CO_2e emissions from catering in 2022 at JRC Geel is due to the return to high staff attendance at the cafeteria since the end of the Covid-19 restrictions (and similar to 2019 attendance).

In **JRC Ispra**, catering service for staff and childrens' facilities is provided by the OIB, which manages two canteens, the cafeteria, the Club House and coffee-break service for conferences. In 2017, a process to eliminate single use plastic and single-dose food started. Initially, water dispensers were installed and water jugs were provided to customers free of charge. In 2018, plastic was banned from take away and coffee-break, containers and cutlery used for the coffee-break and take away service were replaced with compostable and biodegradable alternatives, or reusable tableware where feasible. To reduce the impact of the whole catering services, changes in the service set-up were made to reduce food waste, like a choice of meals with more vegetables and salad bar on trolleys during coffee-breaks.

JRC Karlsruhe only operates a small cafeteria on its premises, but mainly uses the restaurant facilities of the surrounding research campus (KIT Campus Nord) which 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 awareness by service provider on the effects of catering business on people and the environment, use of seasonal foods from a sustainable origin, less meat and more vegetable, 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/statement on the sustainability of their services (see section 7.1.c).

8.2d Grange

The contractor was not able to provide food data due to IT issues related to stock tools.

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 2022 the Commission's senior management took an active role demonstrating leadership and commitment to the environmental management system and environmental issues in general. Some examples are presented below:

Commission being the first EU Institution to sign the EU Climate Pledge

On 5 April 2022, the Commission adopted a new Communication on "Greening the Commission" including an Action Plan for the Institution to achieve climate neutrality by 2030 and reduce its environmental footprint. As proof of its commitment, on Earth Day 2022 the Commission made a pledge under the European Climate Pact to gradually reduce its greenhouse gas emissions by at least 60% compared to 2005. It will compensate any remaining emissions with high quality certified carbon removals.

EU Green Week 2022 (30/05 - 5/06): EU Green Deal - Make it Real

The 2022 event explored what it will really take to transform to a circular, nature-positive and zero pollution economy. All speakers including **Virginijus Sinkevičius, Commissioner for Environment, Oceans and Fisheries** and, special guest Ruslan Strilets, Ukrainian Minister for the Environment, agreed that it's paramount to stay on the green track, even more so at this very moment.

EU Mobility Week: safe and healthy with sustainable mobility

European Mobility Week 2022, the Commission's awareness-raising campaign promoted clean and sustainable urban transport under this year's theme: 'Better Connections'. As **Commissioner for Transport Adina Vălean** said: *"This year again, around 3,000 cities and towns from more than 40 countries take part in European Mobility Week, demonstrating their commitment to better infrastructure and transport services for better connecting their citizens, within the cities themselves, but also with their regions, and the rest of Europe."*

Third award ceremony rewards innovative, green Commission events

Following the success of the previous two editions, the award ceremony of the 3rd 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.** Commissioner Hahn, in his inspirational video, stated that *"Greening our conferences and events consists an integral part of the Greening the Commission Communication and action plan; is in full alliance with the Green Deal EU climate neutrality targets and safe-guards the Commission's reputation among the front-runners towards the Green Transition."*

9.1b Communication to staff

Corporate seasonal communication campaigns

The EMAS spring campaign "ACT for the GREEN Transition"

In the context of the adoption of the **Greening the Commission Communication**, the EMAS coordination team (HR.D.7) set up a spring campaign aimed at raising awareness on environment-related issues and getting a clearer understanding on how the Commission will become climate neutral by 2030 and how each one of us has a crucial role to play in accomplishing our ambitious environmental targets. A wide range of meetings, workshops and activities took place in the month of May focused on more energy efficienct buildings, sustainable commuting, IT operations and assests, staff engagement and biodiversity. The main highlight was the **"Greening the Commission Learning Challenge"**, which attracted more than 1 000 participants in just a few weeks. Colleagues taking on this challenge during the month of June had access to a considerable amount of different kinds of materials including. Following the sucess of the inititave the Likendin "greening" challenge remains part of the Commission Learning Catalogue, to be further enriched on a regular basis.

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

The campaign addressed circular economy aspects via hands-on **"Train the trainers" upcycling textiles'** workshops (14, 15 and 16/11) and collections of old clothes/textiles and electrical appliances in 12 DGs and services in Brussels, in collaboration with local NGOs and associations and much more such as in-house upcycling and reusing examples, digital mindfulness, paperless and zero waste lifestyle tips and a **Paperless Photo Competition award ceremony** in the presence of **Director General of DG Informatics (DIGIT) Veronica Gaffey and HR.D Director Christian Roques for Workplace & Wellbeing**. The winning contributions will help us to enrich the database of the Paperless Cluster Database and to identify examples to inspire further action for a paperless Commission. An entire **"Green Week at COV2" programme**, between 28 November - 2 December 2022 at Covent Garden, co-organised by 4 Executive Agencies (ERCEA, REA, HaDEA, EISMEA) included a long list of interesting events, such as: sustainable breakfast, Christmas toys' swap flee market, webinars on zero waste lifestyle and sustainable food choices, EMAS basics for all, digital mindfulness and other sustainable@work tips.

Another first, the **Green Transition Multipliers workshop,** took place on 2 December. Some 20 internal greening networks were invited to join forces and find ways to make the Greening Communication and action plan an everyday reality, focusing on how to improve staff involvement and engagement. Innovative green ideas sprouted during the day, to be further cultivated by the green multipliers efforts into promising new greening actions.

VeloMai 2022: How 2,344 participants burned 12 million calories in a month

Velomai, the interinstitutional cycling challenge, has become a well-established tradition. Throughout May, staff competed with colleagues across 12 EU institutions and agencies, and 31 delegations around the world. Under the motto 'Cycling for Peace' and supporting Ukraine, 2 344 participants cycled a total of 473 564km - saving no less than 62 tonnes of carbon dioxide in the process.

Case study 9.1 "When plodding, get plogging!" event in JRC Ispra

In November 2022, JRC Ispra organised a lunchtime plogging event by teaming up with a local environmental association LEGAMBIENTE to reach out to staff and external participants to promote environmental values. The event consisted of picking up litter from the hedges, paths and roads in the areas surrounding the JRC site whilst running, walking, or cycling; thus embracing the Swedish concept of 'plogging'. After the field work, participants gathered in the Ispra Club House to weigh the waste and discuss the value of the event, the volunteering aspects and possible future initiatives and improvements.

Together with the *JRC Science Summit* in the category "internal event", the success of *When plodding, get plogging!* was acknowledged by an EMAS award in 2023 for "the greener and more inclusive team-building action."

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 and Staff Fora, which recorded **1 066 entries** (compared to 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 success of the EMAS internal communication campaigns and the transparent and open dialogue with its staff.

Communication among EMAS correspondents and site coordinators

Overall, **38 of 46 EMAS teams** demonstrated a performance above average (with a score of 6 out of 10 or above), representing **74.5%** of the total Commission population (compared to 77.5% in 2021). This is mainly the result of (i) the noteworthy environmental awareness support by the local volunteer groups (currently active in 4 out of the 8 sites and in 21 DGs/services), (ii) the high number of local EMAS action plans in 22 DGs/services (in relation to 26 in 2021), (iii) the setting up of local environmental actions in 23 DGs/services (in relation to 20 in 2021), (iv) the contacts of the EMAS teams with senior management (currently in all 8 sites and EC Representations and 27 DGs/services, the same as in 2021). This resulted in average performances of **6.8 out of 10** for the EMAS teams in all DGs/servives/sites and **8.5 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 committment to a voluntary 15% reduction in gas consumption across the bloc over the until March 2023. This included:

- The **greening your summer** action
- Communication to staff on the **EMAS highlights** (via the **Great EMAS Online Quiz Game**)
- The **"Keep it Green this Christmas"** campaign
- The **Inter-institutional Green Public Procurement (GPP) helpdesk**

Other corporate communication included

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.

Communication actions initiated by the EMAS Correspondents

EMAS Correspondents organised local environmental actions in the **23 DGs/services** (compared with 20 services in 2021) and in all **6 Executive Agencies**. Typical examples included:

a) **Events/conferences addressing EU Green Deal topics and the upcoming Greening Communication and action plan**
b) **Waste reduction actions**
c) **Sustainable mobility initiatives**
d) **Staff awareness actions**

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, the first Interstitutional Repair Café was a great success. OIL participated in Vélomai, and produced three videos promoting soft mobility in Luxembourg. In addition, OIL Communication team released two new videos during the "Waste Week", about waste management and recycling. Additional activities took place from 21-23 November. These included an autumn cleaning trail in cooperation with the city of Luxembourg and a guided tour of an upcycling workshop.

As for the **JRC's various sites**, Geel saw a campaign to refresh knowledge on waste sorting, colleagues in Ispra decided that Yape, a self-driving delivery robot by an Italian start-up company would deliver and retrieve used items from and to the Stationery Corner, and they also promoted an initiative to donate assets or search for items likely to be reused. And Petten held a workshop on making blankets while colleagues in Seville organised a textile collection through a local charity.

9.2 Training

Table 9.1 Number of different trainings on offer by EMAS site coordinators (for local staff with high environmental impact potential)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		3	3	3	3	3	2	2	2	5
Luxembourg		0	0	NR	3	4	3	4	6	6
JRC Petten		3	7	6	3	3	3	3	4	5
JRC Geel		3	3	3	9	6	11	10	8	20
JRC Karlsruhe		1	1	2	2	2	2	2	2	2
JRC Seville		5	5	27	30	35	15	15	16	2
JRC Ispra		2	1	3	4	6	5	2	7	7
Grange		NA	NA	NA	NA	NA	NA	NA	NA	
Commission		**17**	**20**	**44**	**54**	**59**	**41**	**38**	**45**	**47**

Table 9.2 Number of training beneficiaries (among local staff with high environmental impact potential)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		1 648	1 648	1 648	1 648	1 648	1 648	1 648	100	50
Luxembourg			NR		100	85	56	50	45	50
JRC Petten		62	43	50	55	52	54	6	40	31
JRC Geel		49	49	28	31	42	54	26	85	178
JRC Karlsruhe		320	322	324	322	317	315	309	305	306
JRC Seville		36	54	54	117	150	76	107	94	64
JRC Ispra		340	243	350	347	349	378	66	76	190
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**	**869**

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

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		6.02	6.08	6.12	5.84	5.78	5.69	5.50	0.33	0.16
Luxembourg		0.00	0.00	NR	2.09	1.69	1.09	0.95	0.81	0.88
JRC Petten		22	15.47	18.12	21	21	22	2.43	17	13
JRC Geel		14.16	14.94	9.46	11.70	16.22	21	9.77	32	67
JRC Karlsruhe		100	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
JRC Seville		12.46	19.08	18.00	36	44	21	28	24	15.88
JRC Ispra		14.55	10.59	15.50	15.24	15.27	16.21	2.74	3.07	7.62
Grange		NA	NA	NA	NA	NA	NA	NA	NA	0.00
Commission		**169**	**166**	**167**	**192**	**204**	**186**	**149**	**177**	**205**

Corporate level EMAS training organised during 2022 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 record number of **935 participants** (in 8 sessions, compared 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 (08/03, 15/02 and 16/09), ii) two online EMAS Regulation trainings with a total of 32 participants (30/05 - 02/06 and 20-21/09) also addressing the new EMAS teams in EC Representations , iii) two online training sessions on EMAS internal audits and external verification audits with a total of 25 participants (28/09 and 06/05), also addressing the new EMAS teams in EC Representations. In total, **91 members of the EMAS teams** (in relation to 93 in 2021) have attended an introductory and/or specialised EMAS training.

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 6 sessions with a total of 50 participants in 2022.

In addition, 11 Commission drivers have benefited from a training session, organised by an external contractor.

9.2c JRC

Besides the "EMAS basics" for newcomers and the trainings organised for the EMAS Site Co-ordinators (e.g., EMAS internal or external audits, EMAS regulation) by the EMAS Corporate Team at DG HR, the JRC provides additional trainings to their staff in addition to several communication activities to raise awarness about EMAS (e.g. redesign of the "JRC Environment" page on the JRC intranet in 2022).

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 terms of communication, JRC Geel promoted many communication/actions from DG HR. In addition, JRC Geel communicated internally to the staff and stakeholders relevant environmental actions (for example changes in legal requirements, biodiversity etc.). In addition, at the end of 2022 , the site launched "*What's up meetings*" organised on a monthly basis by the site's Director, as awarness raising on different topics related to Geel, including EMAS, safety etc.

JRC Ispra also organised numerous trainings in 2022. Four 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 (17 Ispra staff members). Moreover, an environmental training for the social Infrastructures staff was held with 51 participants. Lastly, newcomers' sesssions resumed, with three sessions attracting 37 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 special EMAS trainings in 2022 on site but several other trainings also included environmental aspects, for example "Newcomer training for hazardous substances and lab work" or "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 2022, five newcomer sessions (with a total of 31 newcomers/participants) were achieved. 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 for all". 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 for all staff and invited to participate also in different events organised centraly 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 "go to" document for responses 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 subsection. In 2022, following the adoption of the "Greening the Commission Communication and action plan" a new webpage on **"Greening the European Commission"** was created under the New HR Strategy webpages on Europa, including the communication documents and factsheets), as well as relevant press release and Q&A.

Press announcements and Parliamentary questions

Besides the press release, the adoption of Greening the Commission Communication and action plan" (see also section 1.3), the signing of the EU Climate Pact, as well as the highlights of the Commission's environmental performance have all been been promoted through the EMAS in EU Institutions section of the official EMAS website on Europa that is managed by DG ENV.

Communication with external stakeholders

HR.D.7 responded to all **78 external queries** recorded during 2022 (in relation to 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 Interinstitutionnel de Management Environnemental* (GIME).

Interinstitutional Online EMAS Days 2022

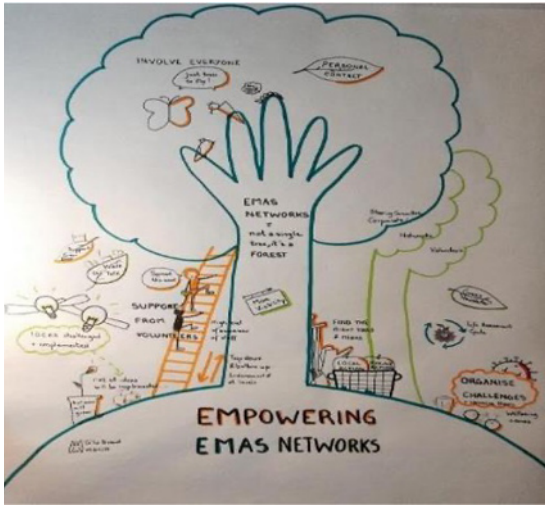
The Interinstitutional EMAS Days 2022 have been by far the most successful and inclusive collaboration event among the EMAS teams of the different EU Institutions and agencies, up to now. **Staff from 12 EU institutions and agencies** met for the first time from 1 to 4 February to debate and share ideas on key areas of environmental sustainability. From gamification of good practice to holistic designs for buildings, the Commission and other EU bodies have an opportunity to join forces to become climate neutral. Senior managers 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 a **common video** inviting EU Institutions and bodies to *"Let's get more sustainable together"*!

Lastly, during 2022 the following external communication initiatives were organised:

- 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 giving technical support
- Setting up a "greener" **EU Open Day 2022** and hosting the European Green Deal Village.

Information for suppliers and sub-contractors

In 2022, 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.



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

JRC Ispra organised an annual "EMAS Round Table" until 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 the Covid-19 pandemic, there was no event 2021 and 2022. A new EMAS Round Table meeting is expected in 2023. There is however a constant dialogue with external parties and, in particular, with national authorities such as the Region, the Province and neigbouring 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 2022, there were 12 dedicated training sessions. For 2023, an extension of the program to reach pre-Covid figures (20 or more sessions) is planned.

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.

10.1a Brussels

In Brussels, each building has a licence called "permis environmental" containing the environmental legilsation 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 autorisations 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). The contractor sends OIL monthly any useful environmental information and/or legislation published. The information about environmental legislation is regularly scruted on the different 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. That 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 will be audited.

Therefore the Luxembourg site complies with the relevant environmental legislation.

10.1c JRC

JRC Geel is a class 1 nuclear facility subjet 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 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 enviromental legilsation applicale 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 took place in February 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, Grange site complies with the relevant environmental legislation.

10.2 Prevention and risk management

10.2a Brussels

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

Out of 2073 reports issued in 2022, 39% had no remarks, while 56% stated minor and 5% major non-conformities.

10.2b Luxembourg

In 2022, 20 fire drills were carried out on the Luxembourg site as follows:

- 2 fire drills in each CPE building (1, 2, 3 and 5)
- 1 fire drill each in other buildings (ARIA, BECH, DRB wing A/B, DRB wing E, DRB wing D, EUFO, FISR, HEI, HTC, LACC, MER,T2)

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 center. 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. Also, 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 (site 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 stock 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 parking area. Italian authorities were informed about this old heritage and were kept up to date in a timely manner, including by means of 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, JRC Ispra opted for the best environmental way forward, and initiated the corresponding soil removal procedure in 2022, including supplying preliminary information to the competent authorities. The intervention awaits the Italian authorities' green light.

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 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.

10.2.d 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.

10.3b 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 has drafted “Instruction OIL SST 23 Vigilance et alerte météorologiques” concerning the risk of flooding (still under analysis).

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 2022, mandatory nuclear emergency exercises and building evacuation tests were carried out. Additionally, a drill for the scenarios of leakage of fuel was carried out in the fuel deposit of the VELA 7 laboratory (Building 16b 24). 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 2022 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 2022, four 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

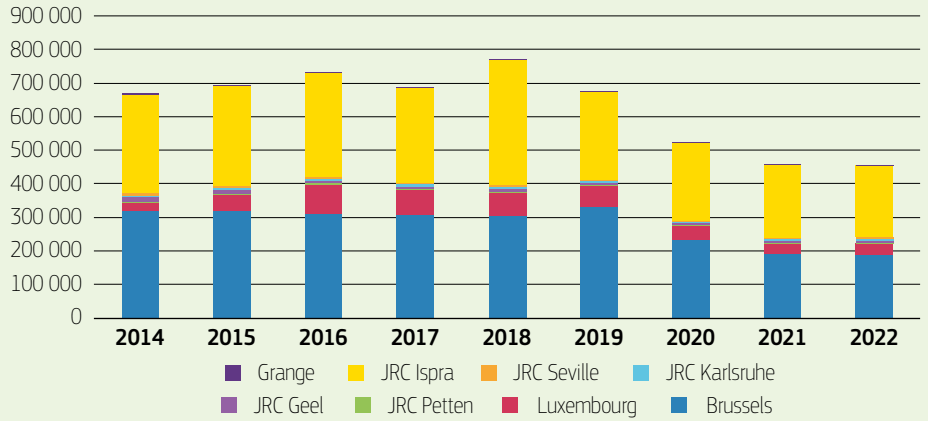
The Emergency Plan was not updated in 2022, but a fire drill took place in March 2022.

11 Water, paper consumption and costs

11.1 Water use

Figure 11.1 shows that Brussels and JRC Ispra are account for most of the water used. But the Commission has reduced its total water consumption by 1% since 2021, and 33% 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 humidfication of air is not required.

Figure 11.1 Water use at the EMAS sites, 2014-2022 (m^3)



11.1a Brussels

Saving measures undertaken since 2015 include improved water management, installation of leak detection systems and loss prevention mechanisms. Water saving devices (tap aerators) have been installed across most of the remaining buildings.

Warmer temperatures during summer months, may require for an increased use of water for cooling and humidification.

11.1b Luxembourg

There is a significant decrease in water consumption during the last years (-54% since 2019). A slight increase compared to 2021 is due to the gradual return to the office. Saving measures include water saving devices (taps) in most of the buildings and regular follow up on water-meters, from the contractors, in order to detect possible leakage. Measures are taken when appropriate. (Data for 2021 is corrected, while data for 2022 includes estimations).

11.1c JRC

JRC Geel increased its water consumption by 18.5 % in 2022 compared to 2021 due to high demand during summer and technical issues with certain valves. However, the installation of additional meters and automatic monitoring via the BMS allows faster detection of abnormalities.

In JRC Ispra, the use of "drinking water" decreased by about 28% between 2014 and 2022 (-2.8% between 2021 and 2022). This was mainly due to the improved water management (including the installation of new water consumption metering devices) and to the identification and repair of various leaks in the network.

In JRC Karlsruhe, a significant part of the used water is used for the humidification of the incoming air of the laboratory wings, which is depending on the weather conditions. Cold and dry weather requires more humidification whereas other weather conditions may need no humidification at all. Weather conditions since autumn 2019 often did not require significant humidification, which might be a result of climate change. Moreover, also for this parameter the floor space is the main indicator and mostly based on technical requirements and scientific activities.

At **JRC Petten**, the water usage increased by around 11.5% in 2022 due to an increased office presence of staff and scientific activities, which can affect the water usage (for example the production of hydrogen).

The consumption trend in **JRC Seville** reflects a slight increase accordingly to higher presence in the office. Nevertheless, the consumption is lower than during the pre-pandemic years.

Case study 11.1 Water use in JRC Ispra

The water used within the JRC Ispra site is taken 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 disinfection, as "drinking water" (toilets, water dispensers, canteens, social and sport areas, etc.).

The objective is to maximise the cooling water since it is a renewable source while reducing the water used for "drinking purposes".

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

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target 2019-23	Target 2019-30
Brussels		322 527	318 692	310 234	308 439	305 889	331 577	232 891	192 045	189 178		
m3/p		**12.57**	**12.40**	**11.68**	**11.36**	**11.22**	**11.53**	**7.78**	**6.28**	**6.12**	10.95	10.37
l/m2		**300**	**299**	**290**	**286**	**294**	**307**	**216**	**180**	**191**	292	276
Luxembourg		21 604	49 016	86 589	72 669	68 366	61 773	41 524	30 131	33 496		
m3/p		**5.34**	**10.50**	**18.61**	**15.18**	**13.63**	**12.02**	**7.92**	**5.42**	**5.88**	**13.23**	**12.02**
l/m2		**108.67**	**218.82**	**359.25**	**301.50**	**377.87**	**340.12**	**228.65**	**165.91**	**185.39**	**357.12**	**289.10**
JRC Petten		3 141	3 250	3 877	2 950	1 984	2 449	2 221	1 343	1 499		
m3/p		**11.14**	**11.69**	**14.05**	**11.22**	**8.00**	**9.83**	**8.99**	**5.60**	**6.52**	9.34	8.85
l/m2		**161**	**152**	**189**	**142**	**99**	**122**	**111**	**67**	**75**	116	110
JRC Geel		12 023	9 861	7 950	7 142	7 503	7 495	6 049	6 143	7 277		
m3/p		**34.7**	**30.1**	**26.9**	**27.0**	**29.0**	**28.6**	**22.7**	**23.4**	**27.6**	**27.8**	**26.5**
l/m2		**246**	**195**	**157**	**142**	**149**	**148**	**119**	**121**	**144**	**144**	**137**
JRC Karlsruhe		6 730	6 717	6 235	6 005	6 058	4 795	3 797	5 118	5 133		
m3/p		**21.0**	**20.9**	**19.24**	**18.65**	**19.11**	**15.22**	**12.29**	**16.78**	**16.77**	14.92	14.61
l/m2		**161**	**161**	**144**	**139**	**140**	**111**	**88**	**119**	**117**	107.7	105.5
JRC Seville		6 281	5 963	5 356	6 474	5 013	4 849	4 981	4 603	5 017		
m3/p		**22**	**21**	**17.85**	**20**	**14.66**	**13.18**	**13.04**	**11.80**	**12.45**	**11.99**	**10.94**
l/m2		**895**	**832**	**748**	**854**	**661**	**630**	**642**	**573**	**624**	**498**	**454**
JRC Ispra		292 866	295 838	309 077	282 182	373 192	261 344	229 855	217 181	211 027		
m3/p		**125**	**129**	**137**	**124**	**163**	**112**	**95**	**88**	**85**	87	80
l/m2		**1 144**	**1 167**	**1 215**	**1 086**	**1 426**	**1 011**	**889**	**818**	**795**	788	718
Grange		4 956	5 069	3 754	3 219	3 241	2 870	1 989	2 296	2 266		
m3/p		**28**	**28**	**19.76**	**17.12**	**18.11**	**16.31**	**11.50**	**12.90**	**12.45**	**13.70**	**13.04**
l/m2		**400**	**409**	**303**	**260**	**261**	**231**	**160**	**185**	**183**	**194**	**185**
Commission		**670 128**	**694 406**	**733 072**	**689 080**	**771 246**	**677 152**	**523 307**	**458 859**	**454 893**		
m3/p		**20**	**20**	**21**	**19.37**	**21**	**18.01**	**13.44**	**11.47**	**11.23**	**16.10**	**15.00**
l/m2		**439**	**447**	**459**	**426**	**486**	**417**	**321**	**282**	**294**	**369**	**339**

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 including especially 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 in the Brussels region.

11.2b Luxembourg

DG ENER in Luxembourg manages a radiation protection laboratory, requiring particular attention to wastewater disposal. No waste water was discharged by DG ENER in 2022. Otherwise, drainage and wastewater for the Luxembourg buildings is managed within the urban collection and treatment facilities in the Luxembourg region.

11.2c JRC

JRC Geel is legally required to monitor its waste water in terms of quantity and quality. Samples and analyses are performed twice a year to ensure that special parameters (lead, etc.) do not exceed the legally defined thresholds. Potentially nuclear-contaminated water is treated and disposed as hazardous waste.

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 7% of the overall amount in 2022). The treatment process includes a biological biodisc phase followed by sedimentation and treatment by Ultra Violet (UV) rays. Treated wastewater is monitored to ensure compliance with the Italian threshold limits for water quality (during 2022 all the parameters are well below the Italian threshold limits) and is finally discharged in the Novellino stream (about 3,5 million mc in 2022). A secondary wastewater discharging system collects only rainwater and soil drainage and conveys them to the Acquanegra stream, without the need for any preventive treatment processes.

In **JRC Karlsruhe**, all waste water is treated by the waste water treatment plant of the KIT Campus Nord before being released into 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 from this measurement is used as a basis for taxation. For monitoring purposes, two separate investigations are conducted each year on four emission points, each located in different laboratories. These results give an indication of whether concentrations comply with legal limits for end of pipe discharge for the site. JRC Petten is complying with the legal 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 discharge to ground and surface water is prevented by primary and secondary containment of all hazardous wastes and hazardous 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 in use.

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)

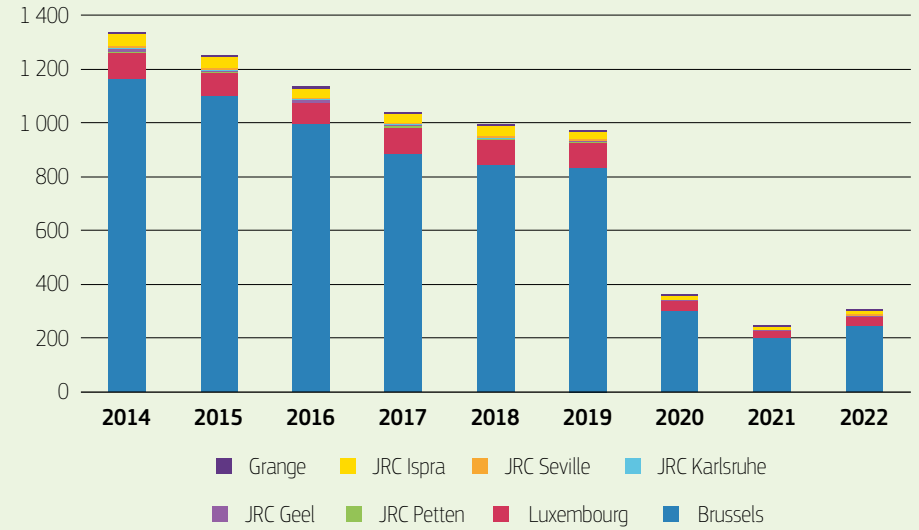


Figure 11.3 Evolution of printshop paper consumption (tonnes/person)

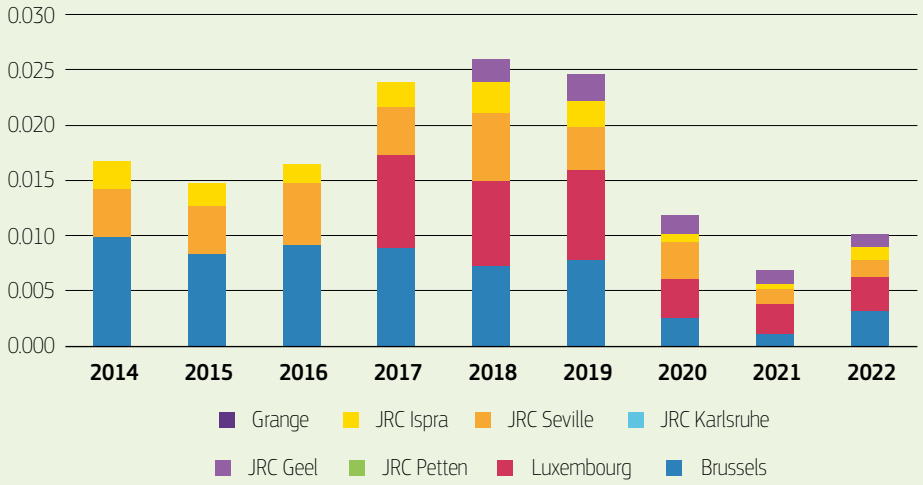


Figure 11.4 Emissions from total paper consumption (tonnes CO_2e)

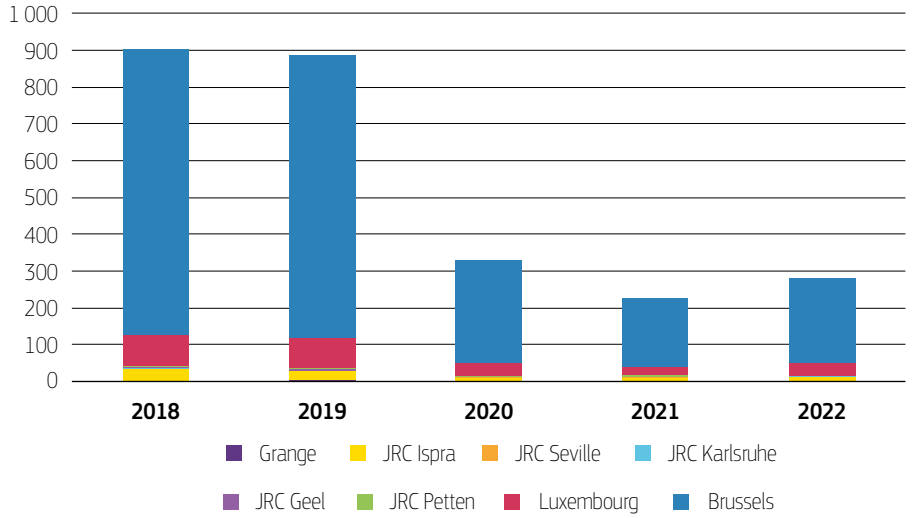


Table 11.2 Total paper consumption (tonnes)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		1 166	1 100	998	886	845	834	304	201	248
Luxembourg		96	86	77	99	93	90	37	26	33
JRC Petten		4.71	5.76	2.42	3.03	2.35	4.76	1.15	1.07	1.48
JRC Geel		7.44	3.57	5.93	3.15	3.62	4.04	1.39	1.68	1.81
JRC Karlsruhe		6.00	4.80	4.80	3.60	3.60	2.10	0.00	1.05	2.24
JRC Seville		4.82	5.00	4.96	5.13	6.41	4.96	2.51	1.45	3.70
JRC Ispra		47	41	35	36	34	29	11.52	10.99	13.05
Grange		1.84	3.54	6.25	3.74	3.30	2.87	1.16	1.06	0.94
Commission		**1 333**	**1 249**	**1 134**	**1 039**	**991**	**972**	**359**	**244**	**305**

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

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target 2019-23	Target 2019-30
Brussels		33	33	28	23	23	21	7.67	5.50	4.91	13	11
Luxembourg		24.06	18.60	16.77	12.35	10.91	9.55	3.58	2.02	2.77	5	4
JRC Petten		15.85	21	8.88	11.67	9.60	19.36	4.73	4.53	6.54	17	15
JRC Geel		20	10.33	19.04	11.30	11.32	12.39	3.62	5.27	5.79	12	11
JRC Karlsruhe		17.81	14.16	14.07	10.62	10.79	7.22	0.00	3.74	7.42	6	6
JRC Seville		12.55	13.48	11.11	11.74	12.77	9.67	3.21	2.39	7.79	9	9
JRC Ispra		16.55	15.84	14.15	13.55	12.22	11.02	4.39	4.26	4.37	3	2
Grange		9.93	20	33	20	19	17	6.8	6.0	5.2	7	5
Commission		**29**	**29**	**25**	**20**	**20**	**18.68**	**6.75**	**4.87**	**4.63**	**11**	**9**

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 65 and 70 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
HR COORD + ECOR Network	939 874	953 874	953 874	981 874	1 051 874	1 065 874	1 079 874	1 114 874	1 197 715
EUR/employee	**27**	**27**	**27**	**27**	**28**	**28**	**28**	**28**	**30**
Brussels	132 000	134 000	134 000	138 000	148 000	150 000	152 000	157 000	342 000
EUR/employee	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**11**
Luxembourg	462 000	469 000	469 000	483 000	370 000	375 000	380 000	392 500	427 500
EUR/employee	**114**	**100**	**101**	**101**	**74**	**73**	**73**	**71**	**75**
JRC Petten	66 000	67 000	67 000	69 000	74 000	75 000	76 000	78 500	171 000
EUR/employee	**234**	**241**	**243**	**262**	**298**	**301**	**308**	**327**	**743**
JRC Geel	66 000	67 000	67 000	69 000	74 000	75 000	76 000	78 500	85 500
EUR/employee	**191**	**204**	**226**	**260**	**286**	**286**	**286**	**298**	**324**
JRC Karlsruhe	71 000	72 000	72 000	74 000	79 000	80 000	81 000	83 500	90 500
EUR/employee	**222**	**224**	**222**	**230**	**249**	**254**	**262**	**274**	**296**
JRC Seville	132 000	134 000	134 000	138 000	148 000	150 000	152 000	157 000	171 000
EUR/employee	**457**	**473**	**447**	**429**	**433**	**408**	**398**	**403**	**424**
JRC Ispra	383 760	368 168	446 200	486 945	491 928	473 595	476 515	475 175	484 605
EUR/employee	**164**	**160**	**198**	**214**	**215**	**203**	**198**	**192**	**194**
Grange	47 400	47 900	48 356	49 356	51 856	56 100	56 600	57 850	42 750
EUR/employee	**265**	**266**	**255**	**263**	**290**	**319**	**327**	**325**	**235**
Commission	**2 300 034**	**2 312 942**	**2 391 430**	**2 489 175**	**2 488 658**	**2 500 569**	**2 529 989**	**2 594 899**	**3 012 570**
EUR/employee	**65**	**65**	**68**	**68**	**67**	**66**	**65**	**65**	**74**

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 are likely to remain high in 2023.

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total buildings energy cost (Eur)	**22 042 873**	**22 106 105**	**20 102 952**	**19 735 558**	**19 998 809**	**21 740 810**	**18 596 571**	**26 126 310**	**50 682 421**
Total buildings energy costs/person	**626**	**624**	**571**	**539**	**538**	**575**	**477**	**653**	**1251**

12 Lessons learned and the way forward

12.1 Lessons learned

a) This report summarises the Commission's overall performance using data from the eight largest Commission sites, and in **Annex 10**, four 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) and continued in 2022 with Nicosia and Budapest. The Executive Agencies are also included within the registration.

b) This report has been simplified to a single volume to which all the sites have contributed replacing the previous approach of separate site annexes and a corporate summary, and which was becoming increasingly difficult to manage.

c) In April 2022, the Commission adopted, along with a new HR Strategy, its Communication on Greening, the main focus of which is to ensure that the Commission becomes carbon neutral in its operations by 2030. It will reduce emissions as much as possible (and at least 38% from 2019 baseline (60% from 2005) and compensate for the remaining emissions through carbon removals. By 2022 the Commission had reduced the carbon footprint by more than 30% since 2019, and is therefore progressing towards its 2030 objective.

d) Core EMAS parameters measuring environmental impact and that have been reported at Commission level for several years continue to fall. These relate to buildings' energy consumption, water use, non hazardous waste generation, buildings energy emissions, and office paper consumption which shows the greatest reduction since 2015 of 85%, compared to 40% to 60% for the other parameters.

e) Further work continues on the carbon footprint, with particular emphasis on ensuring that any methodological changes are incorporated back to 2019, an important baseline. This applies to the calculation of professional travel emissions using centralised (MiPS) data, and the estimation of experts emissions, and of those from teleworking. Emissions from staff professional travel continue to be a very important proportion of the carbon footprint, and have risen substantially since 2021, although they represent 59% of the 2019 value. Fifty of 51 DGs and services have signed a pledge to reduce their professional travel emissions, and therefore support the Greening Communication objective of reducing professional travel emissions by 50% from 2019 to 2024, and a new Guide to Missions is under development.

f) The Commission has reduced the number of buildings and the area they occupy, notably in Brussels where 10 fewer buildings will be included in the EMAS registration. Giving up leases to, or selling, older building stock while moving to newer (better performing) premises offering greater flexibility and dynamic collaborative spaces is one reason for better all-round environmental performance. Another has been the Commission's own target to reduce buildings' energy consumption by 15% in the winter of 2022-2023, mirroring EU Member States' target adopted following Russia's unprovoked invasion of Ukraine. The result of these efforts is improved environmental performance despite greater office presence in 2022.

g) 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.

h) Numerous communication campaigns continue to spread the message to staff about the need to engage in environmentally responsible behaviour, with increasingly active networks of staff developing a local focus of activity interacting with and supporting the efforts of EMAS correspondents in DGs and Services across the Commission, including Executive Agencies and EC Representations in Member States.

12.2 Way forward

a) The Commission will 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 focus will be given in 2023 to two important remaining actions: a new guide to missions to green professional travel, and a new green mobility plan to encourage more sustainable commuting practices.

b) The Commission will develop aspects of the carbon footprint to take greater account of site specificity - for example in relation to fixed assets (embodied emissions) for buildings, or to be more robust in calculations (for example automating the calculation of professional travel emissions).

c) Reducing emissions from staff professional travel will be key to reaching the required overall emissions reduction objective, and DGs/services will be encouraged to develop quantitative local targets where possible.

d) The Commission will continue to work with the European Parliament to extend EMAS registration to more EC Representations in Member States in 2024, focusing first on those where the premises are owned, rather than leased. In 2024 Representations in Sofia, Copenhagen and Den Haag will be added to the four under the current registration.

e) Having developed this simplified report, the Commission will seek to improve online accessibilty.

f) The Commission will continue to rationalise its use of property by acquiring new more energy efficient buildings when necessary to replace older ones, and reduce its overall footprint. 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 will also help contribute to the greening objectives. Furthermore the implementation of dynamic collaborative space layout will reduce office space requirement.

g) Staff engagement and involvement at all levels remain a high priority for the coming years and a critical success factor for the “Greening the Commission” ambitious challenge. Opening up to a larger audience and joining all internal greening networks, via the newly created Green transtion Multipliers Community, will pave the way towards mainstreaming of the greening practices across all EC sites.

h) The Commission will continue to play a leading role among other EU Institutions and bodies and be among the frontrunners on environmental and climate neutrality topics via participation in interinstitutional and international networks.

ANNEXES

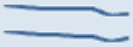
Environmental Statement reporting for 2022

Annex 1. Buildings energy consumption and emissions

Table 1 Electricity supplied to sites (MWh)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		110 435	109 782	108 165	105 949	105 816	105 375	90 523	81 079	74 053
Luxembourg		20 620	38 958	41 727	33 058	31 343	33 804	32 847	31 409	34 302
JRC Petten		3 020	2 910	2 850	2 802	2 906	2 724	2 444	2 345	2 227
JRC Geel		11 730	10 343	10 833	10 301	9 809	9 202	8 096	8 015	7 581
JRC Karlsruhe		11 650	12 236	11 897	11 670	12 260	12 300	10 650	11 360	11 632
JRC Seville		2 252	2 169	2 059	2 177	1 822	1 943	1 798	2 106	2 292
JRC Ispra		2 228	2 488	3 027	4 029	4 480	2 165	5 390	5 133	10 664
Grange		881	850	832	815	795	852	641	565	560
Commission		**162 818**	**179 737**	**181 390**	**170 801**	**169 230**	**168 365**	**152 389**	**142 012**	**143 311**
Electricity (% of total electricity supply covered by 'renewable certificates')										
BX		95	95	98	98	99	99	99	99	99
LX		89	97	95	93	90	84	83	83	97
PE						100	100	100	100	100
GE		0.00	0.00	0.00	0.00	95	100	100	100	100
KA		32	40	39	42	46	51	53	35	31
SE		27	20	19	20	27	16.10	100	100	100
IS		44	40	24	30	44	100	100	100	100
GR		19.40	25	29	32	38	35	38	38	65
Commission		**79**	**83**	**84**	**83**	**90**	**91**	**92**	**90**	**93**

Table 2 Non electricity supplied fuel (MWh), and emissions (tCO_2e)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Mains supplied gas										
Brussels		70 881	80 556	81 180	79 510	78 024	78 309	71 465	80 276	58 705
emissions (combustion)		***12 773***	***14 516***	***14 629***	***14 328***	***14 060***	***14 464***	***13 221***	***14 851***	***10 860***
emissions (well to tank)		***2 555***	***2 903***	***2 926***	***2 866***	***2 812***	***2 752***	***2 509***	***2 818***	***2 061***
Luxembourg		3 361	27 161	36 670	27 875	20 150	19 996	20 690	19 713	12 694
emissions (combustion)		***606***	***4 894***	***6 608***	***5 023***	***3 631***	***3 693***	***3 828***	***3 647***	***2 348***
emissions (well to tank)		***121***	***979***	***1 322***	***1 005***	***726***	***703***	***726***	***692***	***446***
JRC Petten		3 598	3 795	3 543	3 255	3 427	3 105	2 271	2 482	1 904
emissions (combustion)		***648***	***684***	***638***	***587***	***618***	***574***	***420***	***459***	***352***
emissions (well to tank)		***130***	***137***	***128***	***117***	***124***	***109***	***80***	***87***	***67***
JRC Geel		1 673	1 963	1 860	1 791	1 718	1 827	1 812	2 007	1 403
emissions (combustion)		***301***	***354***	***335***	***323***	***310***	***337***	***335***	***371***	***260***
emissions (well to tank)		***60***	***71***	***67***	***65***	***62***	***64***	***64***	***70***	***49***
JRC Seville		387	373	344	435	529	372	461	449	394
emissions (combustion)		***70***	***67***	***62***	***78***	***95***	***69***	***85***	***83***	***73***
emissions (well to tank)		***14***	***13***	***12***	***16***	***19***	***13***	***16***	***16***	***14***
JRC Ispra		97 427	95 227	90 147	88 623	87 071	89 895	78 010	84 518	59 158
emissions (combustion)		***19 578***	***19 136***	***18 115***	***17 834***	***17 533***	***18 101***	***14 432***	***15 636***	***10 944***
emissions (well to tank)		***3 511***	***3 432***	***3 249***	***3 194***	***3 138***	***3 159***	***2 739***	***2 967***	***2 077***
Commission (MWh)		**177 327**	**209 075**	**213 744**	**201 489**	**190 920**	**193 504**	**174 708**	**189 446**	**134 259**
Commission (tCO2e)		***40 367***	***47 187***	***48 091***	***45 434***	***43 127***	***44 038***	***38 454***	***41 698***	***29 551***
Tank supplied gas										
Grange		6.87	6.53	2.68	1.68	40.55	51.20	26.80	2.28	4.08
emissions (combustion)		***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***6.16***	***0.52***	***0.94***
emissions (well to tank)		***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***1.07***	***0.09***	***0.16***
Commission (MWh)		**6.87**	**6.53**	**2.68**	**1.68**	**40.55**	**51.20**	**26.80**	**2.28**	**4.08**
Commission (tCO2e)		***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***7.24***	***0.62***	***1.10***
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
emissions (combustion)		***694***	***437***	***268***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***25.91***
emissions (well to tank)		***154***	***97***	***60***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***5.65***
Luxembourg		0.00	0.00	0.00	3.62	1.50	6.12	6.12	6.12	6.12
emissions (combustion)		***0.00***	***0.00***	***0.00***	***0.98***	***0.41***	***1.63***	***1.63***	***1.63***	***1.63***
emissions (well to tank)		***0.00***	***0.00***	***0.00***	***0.22***	***0.09***	***0.35***	***0.35***	***0.35***	***0.35***
JRC Petten		0.00	0.00	0.00	13.72	0.00	0.00	0.00	0.00	0.00
emissions (combustion)		***0.00***	***0.00***	***0.00***	***3.70***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***
emissions (well to tank)		***0.00***	***0.00***	***0.00***	***0.82***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***
JRC Geel		78	26	27	31.71	35.61	33.35	8.60	27.74	27.70
emissions (combustion)		***21.2***	***6.9***	***7.3***	***8.56***	***9.61***	***8.87***	***2.29***	***7.38***	***7.37***
emissions (well to tank)		***4.7***	***1.5***	***1.6***	***1.90***	***2.14***	***1.93***	***0.50***	***1.61***	***1.61***
JRC Karlsruhe		10.45	10.45	10.45	10.45	10.45	10.45	10.45	10.45	10.00
emissions (combustion)		***2.82***	***2.82***	***2.82***	***2.82***	***2.82***	***2.78***	***2.78***	***2.78***	3.00
emissions (well to tank)		***0.63***	***0.63***	***0.63***	***0.63***	***0.63***	***0.61***	***0.61***	***0.61***	1.00
JRC Seville		0.00	0.00	10.70	0.00	0.00	0.00	0.00	0.00	4.82
emissions (combustion)		***0.00***	***0.00***	***2.89***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***1.28***
emissions (well to tank)		***0.00***	***0.00***	***0.64***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.28***

JRC Ispra		52	44	102	78	91	115	88	77	43
emissions (combustion)		*13.98*	*11.96*	*28*	*21*	*25*	*31*	*23*	*20*	*11*
emissions (well to tank)		*3.11*	*2.66*	*6.13*	*4.71*	*5.48*	*6.67*	*5.10*	*4.47*	*2.49*
Grange		1 383	1 568	1 543	1 360	1 089	1 131	1 041	958	938
emissions (combustion)		*373*	*423*	*417*	*367*	*294*	*301*	*277*	*255*	*249*
emissions (well to tank)		*83*	*94*	*93*	*82*	*65*	*66*	*60*	*56*	*54*
Commission, (MWh)		***4 094***	***3 265***	***2 686***	***1 498***	***1 228***	***1 296***	***1 154***	***1 079***	***1 127***
Commission (tCO2e)		***1 351***	***1 077***	***887***	***494***	***405***	***420***	***374***	***350***	***366***
District heating and cooling										
Luxembourg		1 603	10 244	8 929	9 867	7 140	8 822	8 148	6 007	8369
emissions (combustion)		*69*	*441*	*384*	*424*	*1 178*	*1 544*	*1 279*	*1 111*	*1 699*
emissions (WTT + heat dist'n)		*11*	*70*	*61*	*67*	*186*	*244*	*202*	*176*	*330*
JRC Geel		4 153	3 837	2 937	2 579	2 113	1 913	1 779	2 414	921
emissions (combustion)		*1 109*	*1 024*	*784*	*689*	*564*	*511*	*475*	*644*	*246*
emissions (WTT + heat dist'n)		*175*	*162*	*124*	*109*	*89*	*81*	*75*	*102*	*48*
JRC Karlsruhe		8 839	10 540	9 982	10 423	10 888	11 912	9 826	11 607	9 724
emissions (combustion)		*1 883*	*2 245*	*2 126*	*2 220*	*2 319*	*2 537*	*2 093*	*2 472*	*2 071*
emissions (WTT + heat dist'n)		*297*	*355*	*336*	*351*	*366*	*401*	*331*	*391*	*402*
Commission, (MWh)		***14 595***	***24 621***	***21 848***	***22 868***	***20 141***	***22 647***	***19 753***	***20 028***	***19 014***
Commission (tCO2e)		***3 544***	***4 296***	***3 815***	***3 859***	***4 703***	***5 317***	***4 455***	***4 896***	***4 795***

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

Table 3 Site generated renewable energy (MWh), and emissions tCO_2e

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Site geothermal pumps										
JRC Petten		0.00	0.00	0.00	0.00	0.50	1.10	1.30	1.33	0.00
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*0.02*	*0.05*	*0.06*	*0.06*	*0.00*
JRC Geel		84	75	79	74	74	74	101	86	30
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*3.33*	*3.33*	*4.55*	*3.89*	*1.37*
JRC Ispra		0.00	0.00	0.00	0.00	0.00	0.00	0.00	688	0.00
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*31*	*0.00*
Commission (MWh)		***84***	***75***	***79***	***74***	***75***	***75***	***102***	***776***	***30***
Commission (tCO2e)		***0.00***	***0.00***	***0.00***	***0.00***	***3.35***	***3.38***	***4.61***	***35***	***1.37***
Site biomass										
Luxembourg		404	317	469	429	267	268	519	528	508
emissions (combustion)		*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*8.01*	*8.15*	*5.35*
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*5.07*	*5.09*	*9.85*	*10.23*	*9.84*
Commission, MWh		***404***	***317***	***469***	***429***	***267***	***268***	***519***	***528***	***508***
Commission (tCO2e)		***0.00***	***0.00***	***0.00***	***0.00***	***5.07***	***5.09***	***17.86***	***18.38***	***15.18***
Site photovoltaique panels (PVs)										
Brussels		9.80	26	27	26	28	28	28	28	28
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*1.55*	*1.54*	*1.54*	*1.54*	*1.23*
JRC Petten		148	208	230	227	217	205	201	186	240
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*11.94*	*11.28*	*11.07*	*10.23*	*10.54*
JRC Ispra		52	391	430	591	541	713	727	819	948
emissions (upstream)		*0.00*	*0.00*	*0.00*	*0.00*	*30*	*39*	*40*	*45*	*42*
Commission, MWh		***209***	***625***	***686***	***844***	***786***	***946***	***956***	***1 033***	***1 216***
Commission, (tCO2e)		***0.00***	***0.00***	***0.00***	***0.00***	***43***	***52***	***53***	***57***	***53***
Lake water heat exchange										
JRC Ispra		3 603	4 791	3 892	3 695	3 616	2 917	2 372	2 459	2 522
emissions (upstream)		*36*	*48*	*39*	*37*	*36*	*29*	*24*	*25*	*25*
Commission, MWh		***3 603***	***4 791***	***3 892***	***3 695***	***3 616***	***2 917***	***2 372***	***2 459***	***2 522***
Commission, (tCO2e)		***36***	***48***	***39***	***37***	***36***	***29***	***24***	***25***	***25***
Cooling energy produced by heat pump in bld. 59x										
JRC Ispra						2 819	1 440	1 527	2 593	2 098
emissions (upstream)						*28*	*14*	*15*	*26*	*21*
Commission, MWh		***0.00***	***0.00***	***0.00***	***0.00***	***2 819***	***1 440***	***1 527***	***2 593***	***2 098***
Commission, (tCO2e)		***0.00***	***0.00***	***0.00***	***0.00***	***28***	***14***	***15***	***26***	***21***
Total thermal energy produced by site heat pumps										
JRC Ispra						4 304	2 605	2 370	3 896	2 767
emissions (upstream)						*43*	*26*	*24*	*39*	*28*
Commission, MWh		***0.00***	***0.00***	***0.00***	***0.00***	***4 304***	***2 605***	***2 370***	***3 896***	***2 767***
Commission, (tCO2e)		***0.00***	***0.00***	***0.00***	***0.00***	***43***	***26***	***24***	***39***	***28***
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
emissions (upstream)		*0.00*	*0.00*	*0.11*	*0.08*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Grange		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
emissions (upstream)		*0.00*	*0.00*	*0.00*	*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**
Commission, (tCO2e)		***0.00***	***0.00***	***0.11***	***0.08***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***
Total site generated, MWh		***4 300***	***5 808***	***5 137***	***5 050***	***9 047***	***6 811***	***6 319***	***8 692***	***7 043***
Total site generated, (tCO2e)		***36***	***48***	***39***	***37***	***131***	***116***	***122***	***174***	***123***

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels	1 532	1 522	482	566	434	406	349	313	286
Line losses	130	129	41	48	37	41	31	28	26
Luxembourg	1 522	680	519	589	837	1 364	1 412	1 331	258
Line losses	129	58	44	50	71	136	126	118	23
JRC Petten	2 026	1 953	1 671	1 643	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
JRC Geel	3 343	2 948	3 087	2 936	140	0.00	0.00	0.00	0.00
Line losses	284	251	262	250	11.88	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
Line losses	312	301	284	343	326	326	227	218	264
JRC Seville	546	662	571	594	454	440	0.00	0.00	0.00
Line losses	46	56	49	51	39	44	0.00	0.00	0.00
JRC Ispra	253	327	624	717	511	0.00	0.00	0.00	0.00
Line losses	22	28	53	61	43	0.00	0.00	0.00	0.00
Grange	313	305	241	200	168	165	120	106	35
Line losses	27	26	20	17.03	14.31	16.49	10.66	9.40	3.14
Total	**14 328**	**12 947**	**11 435**	**12 243**	**6 925**	**6 198**	**4 832**	**4 577**	**3 815**

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels	0.00	0.00	0.00	23 923	18 200	18 125	18 087	13 078	12 145
Line losses	0.00	0.00	0.00	2 033	1 547	1 812	1 610	1 164	1 098
Luxembourg	0.00	0.00	0.00	9 296	6 425	6 930	5 058	3 449	3 705
Line losses	0.00	0.00	0.00	790	546	693	450	307	335
JRC Petten	0.00	0.00	0.00	1 370	1 348	1 264	1 017	720	673
Line losses	0.00	0.00	0.00	116	115	126	90	64	61
JRC Geel	0.00	0.00	0.00	2 326	1 687	1 583	1 618	1 293	1 243
Line losses	0.00	0.00	0.00	198	143	158	144	115	112
JRC Karlsruhe	0.00	0.00	0.00	5 253	5 480	5 498	4 249	3 625	3 618
Line losses	0.00	0.00	0.00	446	466	550	378	323	327
JRC Seville	0.00	0.00	0.00	638	448	602	464	323	351
Line losses	0.00	0.00	0.00	54	38	60	41	29	32
JRC Ispra	0.00	0.00	0.00	1 813	1 505	717	1 655	1 363	2 826
Line losses	0.00	0.00	0.00	154	128	72	147	121	255
Grange	0.00	0.00	0.00	34 034	32 834	35 179	21 153	14 995	14 896
Line losses	0.00	0.00	0.00	2 893	2 791	3 518	1 883	1 335	1 347
Total	**0.00**	**0.00**	**0.00**	**85 339**	**73 702**	**76 887**	**58 044**	**42 303**	**43 022**

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Reduction tCO_2e				73 096	65 576	69 379	52 086	36 402	37 469
Reduction due to contracting approach (%)				86	89	90	90	86	87
Reduction as % of reported buildings emissions (Table 4.4)				119	117	121	105	69	93

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
Brussels									
Offshore wind	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.07	0.25
as tCO_2e	0.00	0.00	0.00	0.00	117	118	94	84	304
Onshore wind	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.07	0.25
as tCO_2e	0.00	0.00	0.00	0.00	101	102	80	72	275
Hydro	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.85	0.49
as tCO_2e	0.00	0.00	0.00	0.00	577	583	496	444	234
Photovoltaics (PVs)	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02
as tCO_2e	0.00	0.00	0.00	0.00	62	63	107	96	70
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**857**	**866**	**776**	**695**	**883**

5b

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Luxembourg									
Offshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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	0.50
as tCO_2e	0.00	0.00	0.00	0.00	183	188	179	74	108.91
Photovoltaics (PVs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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	0.50
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	315.32	352
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**183**	**188**	**179**	**389**	**461**

5c

	2014	2015	2016	2017	2018	2019	2020	2021	2022
JRC Petten									
Offshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.94
Onshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.12
Hydro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.32	0.00
Photovoltaics (PVs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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
as tCO_2e	0.00	0.00	0.00	0.00	60	57	51	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**60**	**57**	**51**	**15**	**36**

5d

	2014	2015	2016	2017	2018	2019	2020	2021	2022
JRC Geel									
Offshore wind	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.23	0.15
as tCO_2e	0.00	0.00	0.00	0.00	1.11	1.11	0.55	30	19
Onshore wind	0.00	0.00	0.00	0.00	0.04	0.04	0.01	0.16	0.16
as tCO_2e	0.00	0.00	0.00	0.00	5.39	5.40	1.59	18	19
Hydro	0.00	0.00	0.00	0.00	0.83	0.83	0.81	0.52	0.50
as tCO_2e	0.00	0.00	0.00	0.00	50	50	43	27	25
Photovoltaics (PVs)	0.00	0.00	0.00	0.00	0	0	0.00	0.00	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.86	0.36
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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	0.10	0.10	0.17	0.08	0.19
as tCO_2e	0.00	0.00	0.00	0.00	18.58	18.60	28	14.04	30.27
Other	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.01	0.00
as tCO_2e									*
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**75**	**75**	**73**	**90**	**93**

(*) to be evaluated in the next CO_2 review.

5e

	2014	2015	2016	2017	2018	2019	2020	2021	2022
JRC Karlsruhe									
Offshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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	0.00
as tCO_2e	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	0.00
as tCO_2e	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
as tCO_2e	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
as tCO_2e	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
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total tCO_2e	**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
JRC Seville									
Offshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.90	24	32
Hydro	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.16	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	11.33	2.22	0.00
Photovoltaics (PVs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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
as tCO_2e									*
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**12.22**	**27**	**33**

(*) to be evaluated in the next CO_2 review.

5g

	2014	2015	2016	2017	2018	2019	2020	2021	2022
JRC Ispra									
Offshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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_2e	0.00	0.00	0.00	0.00	26	0.00	0.00	0.00	0.00
Hydro	0.00	0.00	0.00	0.00	0.03	0.05	1.00	0.02	0.00
as tCO_2e	0.00	0.00	0.00	0.00	0.36	0.76	35	0.64	0.00
Photovoltaics (PVs)	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.02
as tCO_2e	0.00	0.00	0.00	0.00	0.00	122	0.00	0.00	12.25
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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_2e	0.00	0.00	0.00	0.00	0.00	0.54	0.00	106	220
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e									
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**27**	**124**	**35**	**107**	**232**

5h

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Grange									
Offshore wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
as tCO_2e	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
as tCO_2e	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	0.00
as tCO_2e	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	0.00
as tCO_2e	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
as tCO_2e	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
as tCO_2e	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
as tCO_2e									
Total proportion	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total tCO_2e	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5i

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Commission				0	1201	1310	1126	1323	1738

Annex 2. Waste production and emissions

WASTE PRODUCTION (tonnes)

Brussels waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Residual waste déchets (20 03 01)		**2 545**	**2 594**	**2 577**	**2 449**	**2 351**	**2 407**	**787**	**670**	**698**
Paper and card (20 01 01)		2 675	2 274	2 349	2 212	2 167	2 398	1 266	1 299	1 218
PMC (15 01 06)		116	123	142	147	144	152	60	31	62
Organics (20 01 08)		311	289	261	243	213	244	79	1.40	145
Glass (20 01 02)		29	26	26	23	28	41	13.80	6.69	16.47
Furniture		404	349	528	506	256	49	32	38	26
Déchets verts bâtiments		0.00	0.00	0.00	0.00	0.00	18.51	23	13.88	4.22
Déchets bois bâtiments		0.00	0.00	0.00	0.00	0.00	167	79	341	138
Déchets métal bâtiments		0.00	0.00	0.00	0.00	0.00	57	46	114	33
Contractor/supplier non haz waste (tonnes)		0.00	0.00	0.00	0.00	0.00	570	425	601	380
Total		**6 081**	**5 654**	**5 882**	**5 580**	**5 158**	**6 103**	**2 810**	**3 116**	**2 722**
ii) Hazardous										
Maintenance of buildings/lifts (13 05)		64	45	122	68	76	123	2.30	96	9
Microfiches		0.00	0.00	0.00	0.00	0.00	4.50	4.50	4.50	0.35
Chemical-fixer-developing agents		0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	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
Paint - toner		0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.16	0.00
Cartriges laserjet-inkjet (08 03 17)		7.35	10.21	10.54	10.65	10.13	8.01	6.83	5.25	3.09
Oil and fat (20 01 25)		1.65	1.12	44.10	234	316	156	2.43	4.77	4.28
Mineral Oil		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diverse chemical waste		0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.56	1.50
Oxfam contract WEEE (20 01 35)		76	72	45	68	56	216	151	153	132
Medical waste (18 01 03)		0.00	0.00	2.44	1.73	1.94	2.55	1.88	2.08	3.47
Contractor/supplier haz waste (tonnes)		0.00	0.00	0.00	0.00	0.00	1.30	2.00	5.60	1.93
Total		**152**	**132**	**230**	**386**	**461**	**512**	**171**	**277**	**156**

Luxembourg waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Residual waste		**85.81**	**455.53**	**399.84**	**357.67**	**302.61**	**303.97**	**272.54**	**146.41**	**145.80**
Paper and cardboard (20 01 01)		48.63	300.60	298.48	232.72	225.86	179.85	97.58	83.20	83.72
Plastic (20 01 39)		1.68	4.23	8.91	1.31	2.07	3.36	1.35	3.00	1.86
Metals (17045)		0.41	19.77	109.25	84.02	0.43	10.07	1.98	14.05	1.22
Glass (15 01 07)		3.19	10.77	27.32	21.23	25.47	24.28	17.45	2.19	5.36
Storage tins (boîte de conserve)		0.43	0.07	1.50	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
Metal drinks cans		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
Kitchen waste (20 01 08)		9.52	91.72	112.40	93.66	102.17	109.66	104.20	51.05	60.47
Déchets peinture		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Data support		0.00	0.00	0.00	0.27	0.07	0.12	0.00	0.00	0.13
Plastic wrap (15 01 02)		0.00	0.00	0.00	2.20	1.90	1.68	1.60	1.72	1.61
Styropor (polysterene) (15 01 02)		0.00	0.00	0.00	1.52	1.81	1.88	0.87	0.88	1.04
Ceramic waste (17 01 03)		0.00	0.00	0.00	0.30	0.32	0.31	0.25	0.06	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
Contractor/supplier non haz waste		0.00	0.00	0.00	0.00	0.00	13.80	9.65	16.23	43.05
Total		**154.24**	**907.29**	**1 042.63**	**875.73**	**701.80**	**843.96**	**618.87**	**466.31**	**521.64**
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
Used batteries (20 01 33)		0.36	0.02	0.48	0.12	0.42	0.24	0.00	0.00	0.62
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
Cartridges (80312)		0.00	0.38	1.69	1.31	0.72	0.20	0.15	0.18	0.42
Electric and electronic waste, cables etc (20 01 35)		0.14	0.69	0.00	0.00	0.02	3.06	1.62	0.10	0.98
Chemical products (16 01 07)		0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.21
Oil filters		0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Contractor/supplier haz waste		0.000	0.000	0.000	0.000	0.000	0.761	0.107	0.150	0.046
Total		**0.92**	**2.27**	**4.56**	**2.93**	**2.23**	**5.40**	**3.31**	**1.96**	**3.96**

JRC Petten waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Household waste		**11.90**	**9.72**	**14.00**	**18.88**	**15.05**	**12.10**	**7.44**	**6.02**	**4.82**
Paper and cardboard		12.90	8.73	10.70	10.20	7.13	6.16	3.67	4.44	3.77
Wood		1.08	3.06	1.20	1.74	1.00	1.76	3.04	0.92	0.00
Glass		0.01	0.27	0.90	0.00	0.71	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
Grit (from shredder)		0.00	0.00	0.00	0.00	0.00	1.47	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
other (waste from birds, ...)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	51	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**
ii) Hazardous										
Batteries		0.05	0.14	0.00	0.18	0.13	0.03	0.00	0.35	0.00
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
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
Solvent		0.05	0.08	0.00	0.03	0.17	0.04	0.00	0.02	0.00
Spray cans		0.04	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Medical waste		0.00	0.04	0.00	0.01	0.03	0.01	0.00	0.04	0.00
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
Asbestos material		0.00	0.02	0.00	0.00	0.00	0.07	0.00	0.05	0.00
Developer		0.20	0.74	0.00	0.24	0.00	0.00	0.00	0.00	0.00
Cleanser		0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Metal containing waste		0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.04	0.00
Contractor/supplier haz waste		4.96	7.47	0.00	0.00	0.90	0.73	0.00	3.05	0.00
Total		**9.91**	**14.94**	**0.00**	**6.55**	**1.81**	**3.53**	**0.00**	**6.10**	**0.00**

JRC Geel waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Residual; mixed (070299, 080318, 191210, 191212, 200301, 200307)		**56**	**47**	**42**	**32**	**27**	**22**	**15**	**20**	**15**
Building, brick and stone (170102, 170301)		22	0.00	4.50	4.26	4.26	0.00	0.00	4.90	2.72
Paper and cardboard (200101)		33	14.64	14.84	21	20	16.41	9.50	10.50	9.16
Metal (191202, 200140)		38	33	22	22	15	11.28	6.30	9.50	11.46
Wood (170201, 200138)		16.28	11.88	15.46	8.22	4.74	7.20	2.70	6.90	3.42
Glass (200102, 150107)		0.04	7.83	2.14	1.19	0.98	0.89	0.30	0.40	0.19
Packaging waste: PMD (150106)		1.16	0.54	0.69	0.95	0.67	0.89	0.70	1.20	0.79
Swill (200108)		0.00	0.00	0.76	5.49	3.57	6.40	5.00	4.80	4.07
Wine samples (020304)		0.00	0.00	4.45	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
Contractor/supplier non haz waste		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
Non Dangerous frying oil cat 3. (Eural code 200125)					0.00	0.36	0.34	0.34	0.17	0.30
Total		**166**	**115**	**108**	**95**	**76**	**65**	**40**	**59**	**48**
ii) Hazardous										
Radioactive waste		4.49	1.36	1.40	0.00	1.49	4.65	3.36	1.72	6.16
Biological waste (180103)		6.36	3.60	4.46	4.27	2.48	2.32	0.98	1.98	1.02
Electric & electronic, AEEA (160213,160214, 200136)		7.34	9.34	5.92	3.12	6.20	3.54	0.00	9.24	4.14
Asbestos (170605)		0.02	0.00	0.25	0.24	0.08	0.73	0.02	0.03	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
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
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
Waste from thermal processes (100804)		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
Cooling gasses (140601)		0.03	0.07	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
Antifreeze, PCB (160114, 160209)		0.00	7.36	1.93	0.00	0.00	5.03	0.00	0.13	0.00
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
Batteries and accumulators (160601, 200133)		0.06	0.96	0.01	0.03	0.66	0.80	0.07	0.34	0.07
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
Waste from mechanical processes (191211)		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
Contractor/supplier haz waste		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
Expired medicines, dangerous (Eural code 070513)					0.00	0.65	0.00	0.00	0.00	0.00
Total		**27.44**	**30.38**	**23.86**	**10.09**	**17.30**	**21.22**	**5.11**	**14.71**	**14.68**

JRC Karlsruhe waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Municipal waste (200301)		**36**	**30**	**26**	**22**	**26**	**31**	**22**	**18.40**	**24**
Paper and cardboard (150101)		18.00	21	18.00	19.31	27	27	18.00	18.60	27
Wood (170201)		15.38	14.42	5.60	8.26	3.80	5.92	3.50	6.20	4.10
Glass		0.00	0.82	0.82	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
Plastic (150102, 200139)		4.10	3.32	1.63	3.89	3.89	1.75	2.00	1.80	1.52
Green waste (200201)		0.00	0.00	0.00	0.00	1.25	0.50	1.00	0.50	0.20
Contractor/supplier non haz waste		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**
ii) Hazardous										
Batteries (200133*)		0.00	0.00	0.00	0.00	0.94	0.00	0.40	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
Filters (150202*)		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.40	0.80	0.00
Medical waste		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Fluorescent lamps (200121*)		0.21	0.17	0.12	0.11	0.09	0.11	0.00	0.11	0.00
Fire extinguisher		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00
Lead-acid battery (160601*)		0.90	0.70	0.91	1.79	1.79	0.00	1.14	1.08	0.61
Mercury containing objects		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00
Asbestos from dismantling works (170605*)		3.32	1.84	0.00	0.00	0.25	0.14	0.00	0.00	0.20
Insulating glass fibre (170603*)		0.18	0.30	4.88	0.00	0.46	0.76	1.21	2.98	0.00
Electrical equipment (WEEE; 200135*)		5.20	7.25	2.32	3.03	1.72	1.38	4.64	1.59	3.96
Other hazardous waste		0.00	0.00	0.00	0.00	0.00	0.00	3.58	1.00	0.40
Contractor/supplier haz waste		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00
Total		**10.51**	**10.26**	**8.23**	**5.07**	**6.96**	**2.59**	**11.37**	**7.56**	**5.17**

JRC Seville waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
20 01 08 Household waste		**2.20**	**0.74**	**1.61**	**4.49**	**4.96**	**6.59**	**1.46**	**1.77**	**4.07**
20 01 01 Paper and cardboard		1.54	0.89	6.81	5.23	3.27	4.61	1.61	1.34	2.16
20 01 38 Wood		0.81	0.76	2.78	0.44	1.43	0.54	0.50	0.00	1.80
20 01 02 Glass		0.13	0.14	0.08	0.16	0.05	0.05	0.01	0.03	0.08
20 01 40 Metal (scrap) -		1.73	2.60	6.42	0.22	0.09	1.80	0.60	0.00	1.42
20 01 39 Plastic		0.00	0.35	0.37	0.48	0.62	1.88	0.86	0.52	1.14
Nespresso capsules		0.00	NR	0.08	0.24	0.26	0.58	0.11	0.08	0.16
20 01 11 Textiles		0.00	0.00	0.00	0.00	0.00	0.00	0.08	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		**6.41**	**5.48**	**18.15**	**11.27**	**10.67**	**16.05**	**5.23**	**3.74**	**10.83**
ii) Hazardous										
16 06 02 Batteries		0.06	0.05	0.05	0.00	0.07	0.04	0.01	0.00	0.03
Laboratory mixed waste		NA	NA	NA	NA	NA	NA	NA	NA	NA
Waste oil		NR	NR	NR	NR	NR	NR	NR	NR	NR
Filters		NR	NR	NR	NR	NR	NR	NR	NR	NR
Paint		NR	NR	NR	NR	NR	NR	NR	NR	NR
Solvent		NR	NR	NR	NR	NR	NR	NR	NR	NR
Spray cans		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
20 01 21 Fluorescent lamps		0.11	0.07	0.06	0.06	0.08	0.22	0.27	0.46	0.06
Fire extinguisher		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
Mercury containing objects		NR	NR	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Asbestos material		NR	NR	NR	NR	NR	NR	NR	NR	NR
Developer		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
20 01 35 Electrical equipment (WEEE)		3.16	2.52	2.05	0.89	1.07	2.08	0.76	1.81	0.93
18 01 09 Medicaments		0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
Contractor/supplier haz waste		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**

JRC Ispra waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Mixed urban waste		**222**	**214**	**196**	**228**	**184**	**163**	**97**	**115**	**107**
Paper and cardboard		138	114	90	138	83	96	50	72	54
Wood		50	85	57	138	77	40	37	46	34
Glass		31	21	24	31	23	22	17	16	9
Metal (scrap)		371	416	196	271	527	567	114	447	186
Plastic		33	27	26	29	27	26	13	11	12
Organic waste		44	48	52	59	69	87	33	38	62
Street cleaning		151	137	135	128	124	88	76	106	76
Other		108	173	102	133	134	97	87	106	84
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**
ii) Hazardous										
Batteries		0.00	0.38	0.22	0.42	0.19	0.79	0.11	0.41	0.74
Laboratory mixed waste (tonnes)		5.83	5.36	10.02	6.00	5.17	5.93	4.47	7.38	3.88
Waste oil		2.63	9.28	6.33	5.46	17.63	11.32	4.20	12.96	13.24
Filters		0.24	2.92	2.52	4.20	4.48	2.68	1.33	3.10	1.45
Paint		0.31	0.32	1.39	0.54	1.23	0.18	1.75	1.31	1.83
Solvent		1.19	0.00	0.00	0.88	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
Medical waste		3.02	2.60	1.55	1.97	1.87	1.51	1.50	1.57	1.45
Fluorescent lamps		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Fire extinguisher		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lead-acid battery		7.63	11.10	9.58	8.83	5.34	3.78	0.50	1.59	3.05
Mercury containing objects		0.01	0.00	0.02	0.05	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
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
Waste containing PCB		0.87	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
Other hazardous waste		0.24	0.09	0.21	0.08	2.29	1.92	0.80	0.30	0.59
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**

SANTE at Grange waste (tonnes)

i) Non hazardous	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Household waste, landfill (20.03.01)		**2.31**	**1.51**	**2.01**	**2.25**	**2.84**	**3.65**	**0.65**	**1.53**	**1.04**
Recyclables (20.01.39-40)		3.10	3.17	1.95	2.32	2.61	4.03	2.17	1.01	1.92
Cardboard (20.01.01)		2.44	3.75	1.29	1.36	1.03	2.36	0.00	1.04	0.30
Paper (20.01.01)		11.95	5.08	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
Compost (20.01.08)		10.30	10.31	8.96	5.96	7.08	8.91	2.87	0.73	2.09
Recovery*		14.57	16.62	18.79	20.08	24.66	14.22	5.92	11.10	7.67
Glass (20.01.02)		0.00	0.07	0.13	0.00	0.07	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
Recycling base units (16.02.14)		0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00
Contractor/supplier non haz waste		45	41	50	38	45	40	15	18	18
Total		**45**	**41**	**50**	**38**	**45**	**40**	**15**	**36**	**35**
ii) Hazardous										
Fridges & Freezers (20.01.23*)		NA	NA	0.09	0.07	0.00	0.00	0.03	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
CRT Monitors /Televisions (16.02.13*)		NA	NA	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Fluorescent tubes (20.01.21*)		NA	NA	NA	NA	0.04	0.05	0.08	0.00	0.05
Oily water from oil/water separators (13.05.07*)		NA	NA	NA	NA	8.94	8.92	0.00	11.86	16.46
Batteries (20.01.33*)		NA	NA	NA	NA	NA	0.08	0.12	0.01	0.14
Toner (08.03.17*)		NA	NA	NA	NA	NA	0.08	0.03	0.01	0.13
Other discarded containing hazardous (16.02.13*)		NA	NA	NA	NA	NA	0.02	0.00	0.22	0.48
Contractor/supplier haz waste		NA	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.79
Total		**0.00**	**0.04**	**0.15**	**0.16**	**9.02**	**9.19**	**0.37**	**12.14**	**18.04**

EMISSIONS FROM WASTE MANAGEMENT (waste (tonnes), emissions (tonnes t CO_2e))

Brussels

C) Waste disposal categories (tonnes)	2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste	2 351	2 407	787	670	698
t CO2e of incinerated domestic	**851**	**871**	**285**	**243**	**261**
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**
iii) Methanisation - food	213	244	79	1.40	145
t CO2e of methanisation food	**18.49**	**21**	**6.87**	**0.12**	**12.59**
iv) Recycled/reused - paper	2 167	2 398	1 266	1 299	1 218
t CO2e of recycled paper	**72**	**79**	**46**	**47**	**44**
v) 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**
vi) Recycled/reused - wood	0.00	167	79	341	138
t CO2e of recycled wood	**0.00**	**6**	**3**	**12**	**5**
vii) Recycled/reused - glass	28	41	13.80	6.69	16.47
t CO2e of recycled glass	**0.91**	**1.34**	**0.50**	**0.24**	**0.59**
viii) Recycled/reused - plastic PMC	144	152	60	31	62
t CO2e of recycled PMC	**127**	**133**	**52**	**28**	**55**
ix) Recycled/reused - others…	0.00	694	526	767	444
t CO2e of recycled other	**0.00**	**248**	**18.92**	**28**	**15.97**
x) Hazardous waste - all types	461	512	171	277	156
t CO2e of hazardous waste	**325**	**361**	**121**	**195**	**110**
xi) 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**
TOTAL (tonnes CO2e)	**1 394**	**1 721**	**533**	**553**	**504**

Luxembourg

C) Waste disposal categories (tonnes)	2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste	302.61	303.97	272.54	146.41	145.80
t CO2e of incinerated domestic	**110**	**110**	**99**	**53**	**55**
ii) Incinerated waste - food	0.00	0.00	0.00	0.00	0.00
t CO2e of incinerated food	**.00**	**.00**	**.00**	**.00**	**.00**
iii) Methanisation - food	102.17	109.66	104.20	51.05	60.47
t CO2e of methanisation food	**8.89**	**9.54**	**9.04**	**4.43**	**5.25**
iv) Recycled/reused - paper	225.86	179.85	97.58	83.20	83.72
t CO2e of recycled paper	**7.45**	**5.94**	**3.51**	**3.00**	**3.01**
v) 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**
vi) Recycled/reused - wood	6.59	10.62	8.11	13.62	3.78
t CO2e of recycled wood	**0.22**	**0.35**	**0.29**	**0.49**	**0.14**
vii) Recycled/reused - glass	25.47	24.28	17.45	2.19	5.36
t CO2e of recycled glass	**0.84**	**0.80**	**0.63**	**0.08**	**0.19**
viii) Recycled/reused - plastic PMC	15.42	16.26	8.08	8.45	10.13
t CO2e of recycled PMC	**13.57**	**14.31**	**7.09**	**7.41**	**8.89**
ix) Recycled/reused - others…	23.67	199.33	110.91	161.38	212.39
t CO2e of recycled other	**8.45**	**71.16**	**3.99**	**5.81**	**7.65**
x) Hazardous waste - all types	2.23	5.40	3.31	1.96	3.96
t CO2e of hazardous waste	**1.58**	**3.81**	**2.34**	**1.39**	**2.8**
xi) 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**
TOTAL (tonnes CO2e)	**151**	**216**	**126**	**76**	**82**

JRC Petten

C) Waste disposal categories (tonnes)		2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste		15.00	15.00	7.40	6.02	4.82
t CO2e of incinerated domestic		**5.43**	**5.43**	**2.68**	**2.18**	**1.80**
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**
iii) Methanisation - food		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**
iv) Recycled/reused - paper		5.00	5.00	1.85	4.44	**3.77**
t CO2e of recycled paper		**0.17**	**0.17**	**0.07**	**0.16**	**0.14**
v) Recycled/reused - cardboard		2.13	2.13	1.85	1.85	0.00
t CO2e of recycled cardboard		**0.07**	**0.07**	**0.07**	**0.07**	**0.00**
vi) Recycled/reused - wood		1.00	1.00	3.00	1.56	**0.00**
t CO2e of recycled wood		**0.03**	**0.03**	**0.11**	**0.06**	**0.00**
vii) Recycled/reused - glass		0.70	0.70	0.00	0.00	0.00
t CO2e of recycled glass		**0.02**	**0.02**	**0.00**	**0.00**	**0.00**
viii) Recycled/reused - plastic PMC		0.00	0.00	0.00	0.05	**0.15**
t CO2e of recycled PMC		**0.00**	**0.00**	**0.00**	**0.05**	**0.13**
ix) 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**
x) Hazardous waste - all types		0.90	0.90	0.00	3.05	**0.00**
t CO2e of hazardous waste		**0.64**	**0.64**	**0.00**	**2.16**	**0.00**
xi) 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**
TOTAL (tonnes CO2e)		**6.36**	**6.36**	**2.92**	**4.66**	**2.07**

JRC Geel

C) Waste disposal categories (tonnes)		2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste		27	22	15.35	20	15.15
t CO2e of incinerated domestic		**9.65**	**7.79**	**5.56**	**7.38**	**5.67**
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**
iii) Methanisation - food		3.57	6.40	4.84	4.84	4.07
t CO2e of methanisation food		**0.31**	**0.56**	**0.42**	**0.42**	**0.35**
iv) Recycled/reused - paper		8.93	8.79	3.92	2.89	**1.99**
t CO2e of recycled paper		**0.29**	**0.29**	**0.14**	**0.10**	**0.07**
v) Recycled/reused - cardboard		10.58	7.62	5.55	7.59	7.18
t CO2e of recycled cardboard		**0.35**	**0.25**	**0.20**	**0.27**	**0.26**
vi) Recycled/reused - wood		4.74	7.20	2.72	6.90	**3.42**
t CO2e of recycled wood		**0.16**	**0.24**	**0.10**	**0.25**	**0.12**
vii) Recycled/reused - glass		0.98	0.89	0.26	0.37	0.19
t CO2e of recycled glass		**0.03**	**0.03**	**0.01**	**0.01**	**0.01**
viii) Recycled/reused - plastic PMC		0.67	0.89	0.70	1.19	**0.79**
t CO2e of recycled PMC		**0.59**	**0.78**	**0.61**	**1.04**	**0.69**
ix) Recycled/reused - others...		19.64	11.86	6.72	14.99	14.75
t CO2e of recycled other		**7.01**	**4.23**	**0.24**	**0.54**	**0.53**
x) Hazardous waste - all types		17.30	21.22	5.23	14.71	**8.51**
t CO2e of hazardous waste		**12.21**	**14.98**	**3.70**	**10.39**	**6.01**
xi) 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**
TOTAL (tonnes CO2e)		**31**	**29**	**10.98**	**20**	**13.72**

JRC Karlsruhe

C) Waste disposal categories (tonnes)		2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste		0.00	0.00	0.00	0.00	0.00
t CO2e of incinerated domestic		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
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**
iii) Methanisation - food		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**
iv) Recycled/reused - paper		0.00	0.00	0.00	0.00	0.00
t CO2e of recycled paper		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) 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**
vi) Recycled/reused - wood		0.00	0.00	0.00	0.00	0.00
t CO2e of recycled wood		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vii) 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**
viii) Recycled/reused - plastic PMC		0.00	0.00	0.00	0.00	0.00
t CO2e of recycled PMC		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ix) 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**
x) Hazardous waste - all types		0.00	0.00	0.00	0.00	0.00
t CO2e of hazardous waste		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
xi) 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**
TOTAL (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

JRC Seville

C) Waste disposal categories (tonnes)		2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste		0.00	0.00	0.00	0.00	0.00
t CO2e of incinerated domestic		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
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**
iii) Methanisation - food		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**
iv) Recycled/reused - paper		0.00	0.00	0.10	0.10	**2.16**
t CO2e of recycled paper		**0.00**	**0.00**	**0.00**	**0.00**	**0.08**
v) 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**
vi) Recycled/reused - wood		0.00	0.00	0.50	0.50	**1.80**
t CO2e of recycled wood		**0.00**	**0.00**	**0.02**	**0.02**	**0.06**
vii) Recycled/reused - glass		0.00	0.00	0.00	0.00	0.08
t CO2e of recycled glass		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
viii) Recycled/reused - plastic PMC		0.00	0.00	0.50	0.50	**1.14**
t CO2e of recycled PMC		**0.00**	**0.00**	**0.44**	**0.44**	**1.00**
ix) Recycled/reused - others...		0.00	0.00	0.60	0.60	1.58
t CO2e of recycled other		**0.00**	**0.00**	**0.02**	**0.02**	**0.06**
x) Hazardous waste - all types		0.00	0.00	1.09	1.09	**0.20**
t CO2e of hazardous waste		**0.00**	**0.00**	**0.77**	**0.77**	**0.14**
xi) Landfill (probably mostly projects)		0.00	0.00	0.00	0.00	4.07
t CO2e of landfill		**0.00**	**0.00**	**0.00**	**0.00**	**0.13**
TOTAL (tonnes CO2e)		**0.00**	**0.00**	**1.25**	**1.25**	**1.48**

JRC Ispra

C) Waste disposal categories (tonnes)	2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste	13.54	10.00	0.00	0.00	0.00
t CO2e of incinerated domestic	**4.90**	**3.62**	**0.00**	**0.00**	**0.00**
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**
iii) Methanisation - food	69	87	34	38	62
t CO2e of methanisation food	**6.00**	**7.57**	**2.94**	**3.34**	**5.37**
iv) Recycled/reused - paper	83	96	50	72	**54**
t CO2e of recycled paper	**2.74**	**3.16**	**1.81**	**2.59**	**1.94**
v) 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**
vi) Recycled/reused - wood	77	40	37	46	**34**
t CO2e of recycled wood	**2.53**	**1.30**	**1.33**	**1.67**	**1.22**
vii) Recycled/reused - glass	23	22	17.20	15.80	9.30
t CO2e of recycled glass	**0.77**	**0.72**	**0.62**	**0.57**	**0.33**
viii) Recycled/reused - plastic PMC	27	26	12.58	11.38	**11.62**
t CO2e of recycled PMC	**23**	**23**	**11.03**	**9.98**	**10.19**
ix) Recycled/reused - others...	924	882	360	752	440
t CO2e of recycled other	**330**	**315**	**12.96**	**27**	**15.85**
x) Hazardous waste - all types	48	43	24	39	**31**
t CO2e of hazardous waste	**34**	**31**	**17.05**	**27**	**22**
xi) Landfill (probably mostly projects)	31	23	13.91	21	12.31
t CO2e of landfill	**1.04**	**0.76**	**0.46**	**0.70**	**0.41**
TOTAL (tonnes CO2e)	**405**	**385**	**48**	**73**	**57**

Grange

C) Waste disposal categories (tonnes)	2018	2019	2020	2021	2022
i) Incinerated waste - domestic waste	24.66	14.22	14.22	14.22	7.67
t CO2e of incinerated domestic	**8.93**	**5.15**	**5.15**	**5.15**	**2.87**
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**
iii) Methanisation - food	7.08	8.91	8.91	8.91	2.09
t CO2e of methanisation food	**0.62**	**0.78**	**0.77**	**0.77**	**0.18**
iv) Recycled/reused - paper	6.37	6.79	6.79	6.79	4.57
t CO2e of recycled paper	**0.21**	**0.22**	**0.24**	**0.24**	**0.16**
v) Recycled/reused - cardboard	1.03	2.36	2.36	2.36	0.30
t CO2e of recycled cardboard	**0.03**	**0.08**	**0.08**	**0.08**	**0.01**
vi) Recycled/reused - wood	0.00	0.00	0.00	0.00	**0.00**
t CO2e of recycled wood	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vii) Recycled/reused - glass	0.07	0.00	0.00	0.00	0.00
t CO2e of recycled glass	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
viii) Recycled/reused - plastic PMC	2.61	4.03	4.03	4.03	**1.92**
t CO2e of recycled PMC	**2.30**	**3.55**	**3.54**	**3.54**	**1.68**
ix) 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**
x) Hazardous waste - all types	0.52	9.55	9.55	9.55	**17.17**
t CO2e of hazardous waste	**0.37**	**6.74**	**6.75**	**6.75**	**12.13**
xi) Landfill (probably mostly projects)	2.84	3.65	3.65	3.65	1.04
t CO2e of landfill	**0.09**	**0.12**	**0.12**	**0.12**	**0.03**
TOTAL (tonnes CO2e)	**12.55**	**16.64**	**16.65**	**16.65**	**17.07**

Radioactive waste and wastewater

JRC Karlsruhe

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Nuclear waste volume (m³)	179	152	108	127	127	74	44	31.9	71	55
Evolution (%)		-15.08	-29	17.59	0.00	-42	-41	-28	123	-23
Activity (TBq)	13	2	10	9	5	7	2	0.25	0.45	0.62
Evolution (%)		-85	400	-10.00	-44	40	-71	-88	80	38

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 2013 are shown in the previous table. 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 2022, more than 13 tonnes were processed and released as conventional waste

JRC Geel radioactive waste

JRC-Geel is reporting its data on radioactive waste within the category hazardous waste (line 114 of this spreadsheet).

Annex 3. Fixed assets (IT, buildings)

Brussels

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022
i) Not specified - offices (total, m^2)	**1 031 971**	**1 056 659**	**1 056 659**	**1 065 711**	**992 390**
Not specified - offices (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**19 198**	**19 594**	**19 288**	**18 592**	**18 388**
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**
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**
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**
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**
vi) Concrete - parking underground (total, m^2)	**477 720**	**484 328**	**484 328**	**484 678**	**417 466**
Concrete - parking underground (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**9 079**	**9 137**	**8 893**	**8 372**	**7 708**
vii) Concrete - restaurants (total, m^2)	**12 449**	**12 449**	**12 449**	**12 449**	**10 315**
Concrete - restaurants (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**189**	**189**	**200**	**190**	**168**
Total annualised emissions (tonnes CO2e)	**28 466**	**28 920**	**28 381**	**27 154**	**26 264**

B) Fixed assets IT	2018	2019	2020	2021	2022
i) Desktop PC (Total No.)	**14 847**	**7 035**	**5 329**	**3 155**	**2 519**
Amortised (No)	5 096	3 161	2 879	1 712	1 626
Annualised emissions (tonnes CO2e)	**1 251**	**497**	**104**	**61**	**38**
ii) Docking stations (Total No)	**18 499**	**27 121**	**32 054**	**32 462**	**37 511**
Amortised (No)	3 284	726	1 918	2 180	5 208
Annualised emissions (tonnes CO2e)	**628**	**1 089**	**1 115**	**1 120**	**1 195**
iii) Flat screens (Total No)	**42 757**	**45 609**	**51 292**	**49 838**	**51 997**
Amortised (No)	22 186	25 402	32 969	31 470	30 498
Annualised emissions (tonnes CO2e)	**3 944**	**3 875**	**1 075**	**1 078**	**1 262**
iv) Laptop (Total No)	**20 397**	**27 654**	**32 692**	**31 964**	**35 380**
Amortised (No)	3 330	1 617	2 463	1 720	7 702
Annualised emissions (tonnes CO2e)	**5 461**	**1 015**	**1 181**	**1 181**	**1 081**
v) individual printers (Total No)	**3 414**	**2 692**	**1 930**	**1 469**	**1 102**
Amortised (No)	2 435	1 935	1 518	1 125	952
Annualised emissions (tonnes CO2e)	**27**		**12.80**	**10.69**	**4.66**
vi) Network printers and copiers (Total No)	**4 748**	**4 133**	**4 093**	**3 409**	**2 796**
Amortised (No)	2 365	2 097	2 175	1 683	2 315
Annualised emissions (tonnes CO2e)	**1 752**	**1 496**	**1 407**	**1 266**	**353**
vii) Fax machines (Total No)	**135**	**83**	**73**	**65**	**59**
Amortised (No)	133	81	73	65	59
Annualised emissions (tonnes CO2e)	**0.74**	**0.74**	**0.00**	**0.00**	**0.00**
viii) Scanners (Total No)	**320**	**266**	**249**	**253**	**244**
Amortised (No)	252	217	220	193	157
Annualised emissions (tonnes CO2e)	**25**	**18**	**11**	**22**	**32**
ix) Telephones (simple) (No)	**79**	**65**	**96**	**52**	**35**
Amortised (No)	76	51	88	52	35
Annualised emissions (tonnes CO2e)					
x) Telephones (smartphones and iphones, Total No)	**7 630**	**8 022**	**6 206**	**5 909**	**5 891**
Amortised (No)	1 833	1 738	1 220	1 235	1 608
Annualised emissions (tonnes CO2e)	**43**	**46**	**36**	**34**	**31**
xi) Fixed telephones (Total No)	**35 200**	**24 091**	**12 518**	**13 387**	**8 403**
Amortised (No)	33 711	23 648	12 239	12 655	8 203
Annualised emissions (tonnes CO2e)	**6.33**	**1.88**	**1.19**	**3.11**	**0.85**

xii) Informatics server (Total No)	**1 067**	**957**	**842**	**652**	**488**
Amortised (No)	691	672	637	447	328
Annualised emissions (tonnes CO2e)	**241**	**43**	**31**	**31**	**24**
xiii) Projectors (Total No)	**468**	**363**	**315**	**277**	255
Amortised (No)	333	302	262	253	213
Annualised emissions (tonnes CO2e)	**3.17**	**1.43**	**1.25**	**0.56**	**1.52**
xiv) Videoconference installations (Total No)	**906**	**735**	**713**	**628**	590
Amortised (No)	696	512	479	433	449
Annualised emissions (tonnes CO2e)	**77**	**28**	**29**	**24**	**18**
xv) Televisions (Total No)	**76**	**74**	**51**	**121**	132
Amortised (No)	62	60	39	97	113
Annualised emissions (tonnes CO2e)	**5.13**	**1.75**	**1.50**	**3.00**	**2.38**
xvi) Firewall router switch (from 2019), Total No		**78**	**1 263**	**907**	995
Amortised (No)		53	997	476	559
Annualised emissions (tonnes CO2e)	**0.00**	**0.50**	**5.37**	**8.70**	**8.80**
xvii) Tablet, classical 9 to 11 inch, (Total No)			**1 440**	**1 266**	1 262
Amortised (No)			442	409	452
Annualised emissions (tonnes CO2e)	**0.00**	**0.00**	**15.77**	**13.54**	**12.80**
Total annualised emissions (tonnes CO2e)	**13 465**	**8 113**	**5 027**	**4 858**	**4 064**

Luxembourg

A) Fixed assets buildings, construction type	**2018**	**2019**	**2020**	**2021**	**2022**
i) Not specified - offices (total, m^2)	**177 507**	**177 507**	**177 490**	**177 490**	**176 561**
Not specified - offices (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**3 280**	**3 280**	**3 280**	**3 280**	**3 170**
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**
Concrete - industrial buildings (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**94**	**113**	**113**	**113**	**113**
vi) Concrete - parking underground (total, m^2)	**50 121**	**50 121**	**50 121**	**50 121**	**50 121**
Concrete - parking underground (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**905**	**905**	**905**	**905**	**905**
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**	**4 188**

B) Fixed assets IT	**2018**	**2019**	**2020**	**2021**	**2022**
i) Desktop PC (Total No.)	**2 639**	**1 597**	**1 211**	**915**	**738**
Amortised (No)	1 078	1 015	577	584	548
Annualised emissions (tonnes CO2e)	**200**	**75**	**27**	**14**	**8**
ii) Docking stations (Total No)	**4 240**	**5 230**	**6 185**	**6 429**	**6 979**
Amortised (No)	389	224	175	544	1 227
Annualised emissions (tonnes CO2e)	**159**	**206**	**222**	**218**	**213**
iii) Flat screens (Total No)	**10 486**	**10 685**	**11 440**	**11 596**	**11 564**
Amortised (No)	4 082	6 311	7 505	8 085	7 923
Annualised emissions (tonnes CO2e)	**1 228**	**839**	**231**	**206**	**214**
iv) Laptop (Total No)	**4 885**	**5 583**	**6 337**	**6 155**	**6 367**
Amortised (No)	857	385	322	396	1 535
Annualised emissions (tonnes CO2e)	**1 289**	**203**	**235**	**225**	**189**
v) individual printers (Total No)	**578**	**484**	**366**	**166**	**125**
Amortised (No)	402	339	247	117	124
Annualised emissions (tonnes CO2e)	**4.84**	**0.00**	**3.70**	**1.52**	**0.03**

vi) Network printers and copiers (Total No)		**692**	**619**	**587**	**550**	**513**
Amortised (No)		304	245	279	268	475
Annualised emissions (tonnes CO2e)		**285**	**275**	**226**	**207**	**28**
vii) Fax machines (Total No)		**30**	**31**	**26**	**25**	**20**
Amortised (No)		19	19	26	25	20
Annualised emissions (tonnes CO2e)		**4.04**	**4.41**	**0.00**	**0.00**	**0.00**
viii) Scanners (Total No)		**64**	**47**	**42**	**38**	**35**
Amortised (No)		52	40	33	30	30
Annualised emissions (tonnes CO2e)		**4.41**	**2.57**	**3.31**	**2.94**	**1.83**
ix) Telephones (simple) (No)			**1**	**1**	**1**	**1**
Amortised (No)			1	1	1	1
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
x) Telephones (smartphones and iphones, Total No)		**896**	**886**	**718**	**632**	**676**
Amortised (No)		264	236	130	153	192
Annualised emissions (tonnes CO2e)		**4.74**	**4.71**	**4.26**	**3.47**	**3.51**
xi) Fixed telephones (Total No)		**6 578**	**5 207**	**3 209**	**3 256**	**3 135**
Amortised (No)		5 550	4 687	3 189	3 256	3 065
Annualised emissions (tonnes CO2e)		**4.37**	**2.21**	**0.09**	**0.00**	**0.30**
xii) Informatics server (Total No)		**3 063**	**3 005**	**3 172**	**2 937**	**3 233**
Amortised (No)		1 338	1 049	1 183	1 140	1 608
Annualised emissions (tonnes CO2e)		**1 106**	**293**	**298**	**270**	**244**
xiii) Projectors (Total No)		**104**	**84**	**84**	**72**	**71**
Amortised (No)		53	53	66	62	61
Annualised emissions (tonnes CO2e)		**1.20**	**0.73**	**0.42**	**0.24**	**0.00**
xiv) Videoconference installations (Total No)		**285**	**256**	**263**	**258**	**226**
Amortised (No)		181	172	196	215	205
Annualised emissions (tonnes CO2e)		**38**	**11**	**8**	**5**	**3**
xv) Televisions (Total No)		**73**	**73**	**68**	**85**	**69**
Amortised (No)		31	32	32	83	69
Annualised emissions (tonnes CO2e)		**15.40**	**5.13**	**4.51**	**0.25**	**0.00**
xvi) Firewall router switch (from 2019), Total No			**126**	**3 613**	**3 324**	**3 414**
Amortised (No)			81	677	845	2 886
Annualised emissions (tonnes CO2e)		**0.00**	**0.91**	**59**	**50**	**11**
xvii) Tablet, classical 9 to 11 inch, (Total No)					**232**	**189**
Amortised (No)					109	54
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**1.94**	**2.13**
Total annualised emissions (tonnes CO2e)		**4 344**	**1 922**	**1 323**	**1 205**	**916**

JRC Petten

A) Fixed assets buildings, construction type		**2018**	**2019**	**2020**	**2021**	**2022**
i) Not specified - offices (total, m^2)		**7 539**	**7 539**	**7 539**	**7 539**	**7 539**
Not specified - offices (amortised, m^2)						
Annualised emissions (tonnes CO2e)		**140**	**140**	**140**	**140**	**140**
ii) Steel - industrial building (total, m^2)		**4 246**	**4 246**	**4 246**	**4 246**	**4 246**
Steel - industrial building (amortised, m^2)						
Annualised emissions (tonnes CO2e)		**33**	**33**	**33**	**33**	**33**
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**
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**
v) Concrete - industrial buildings (total, m^2)		**719**	**719**	**719**	**719**	**719**
Concrete - industrial buildings (amortised, m^2)						
Annualised emissions (tonnes CO2e)		**16.95**	**16.95**	**16.95**	**16.95**	**16.95**
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**
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**
Total annualised emissions (tonnes CO2e)		**190**	**190**	**190**	**190**	**190**

B) Fixed assets IT	2018	2019	2020	2021	2022
i) Desktop PC (Total No.)	430	430	430	430	173
Amortised (No)	224	224	224	224	0
Annualised emissions (tonnes CO2e)	26	26	8.70	8.70	7.31
ii) Docking stations (Total No)	0	0	0	0	240
Amortised (No)	0	0	0		0
Annualised emissions (tonnes CO2e)	0.00	0.00	0.00	0.00	8.88
iii) Flat screens (Total No)	385	385	385	385	480
Amortised (No)	131	131	131	131	0
Annualised emissions (tonnes CO2e)	49	49	14.91	14.91	28.17
iv) Laptop (Total No)	219	219	219	219	240
Amortised (No)	71	71	71	71	1
Annualised emissions (tonnes CO2e)	47	5.77	5.78	5.78	9.34
v) individual printers (Total No)	21	21	21	21	1
Amortised (No)	0	0	0	0	0
Annualised emissions (tonnes CO2e)	0.58	0.00	0.65	0.65	0.03
vi) Network printers and copiers (Total No)	31	31	31	31	32
Amortised (No)	0	0	0	0	0
Annualised emissions (tonnes CO2e)	23	23	23	23	23
vii) Fax machines (Total No)	3.00	3.00	3.00	3.00	1.00
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	1.10	1.10	1.10	1.10	0.37
viii) Scanners (Total No)	0.00	0.00	0.00	0.00	1.00
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	0.00	0.00	0.00	0.00	0.37
ix) Telephones (simple) (No)	37	37	37	37	240
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	0.19	0.19	0.15	0.15	0.99
x) Telephones (smartphones and iphones, Total No)	17	17	17	17	84
Amortised (No)	2.00	2.00	2.00	2.00	0
Annualised emissions (tonnes CO2e)	0.11	0.11	0.11	0.11	0.61
xi) Fixed telephones (Total No)	417	417	417	417	300
Amortised (No)	116	116	116	116	0
Annualised emissions (tonnes CO2e)	1.28	1.28	1.28	1.28	1.28
xii) Informatics server (Total No)	71	71	71	71	60
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	46	10.65	10.65	10.65	9.00
xiii) Projectors (Total No)	4.00	4.00	4.00	4.00	10.00
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	0.09	0.09	0.09	0.09	0.36
xiv) Videoconference installations (Total No)	15.00	15.00	15.00	15.00	13.00
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	5.50	1.88	1.88	1.88	1.63
xv) Televisions (Total No)	20	20	20	20	15
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	7.33	2.50	2.50	2.50	1.88
xvi) Firewall router switch (from 2019), Total No	206	206	206	206	107
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	4.16	4.16	4.16	4.16	2.16
xvii) Tablet, classical 9 to 11 inch, (Total No)	0.00	0.00	0.00	0.00	8.00
Amortised (No)	0.00	0.00	0.00	0.00	0
Annualised emissions (tonnes CO2e)	0.00	0.00	0.00	0.00	0.13
Total annualised emissions (tonnes CO2e)	211	126	75	75	95.97

A) Fixed assets buildings, construction type	2018	2019	2020	2021	2022
i) Not specified - offices (total, m^2)	**9 964**	**9 964**	**9 964**	**9 964**	**9 964**
Not specified - offices (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**108**	**108**	**108**	**108**	**108**
ii) Steel - industrial building (total, m^2)	1 630	1 632	1 633	1 632	1 632
Steel - industrial building (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**8.97**	**8.98**	**8.98**	**8.98**	**8.98**
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**
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
Concrete - industrial buildings (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**526**	**526**	**528**	**528**	**528**
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**
Concrete - restaurants (amortised, m^2)					
Annualised emissions (tonnes CO2e)	**6.10**	**6.10**	**6.10**	**6.10**	**6.10**
Total annualised emissions (tonnes CO2e)	**649**	**649**	**651**	**651**	**651**

B) Fixed assets IT	2018	2019	2020	2021	2022
i) Desktop PC (Total No.)	**584**	**570**	**557**	**617**	**677**
Amortised (No)	333	311	322	322	357
Annualised emissions (tonnes CO2e)	**32**	**33**	**10**	**12**	**14**
ii) Docking stations (Total No)	**0**	**0**	**405**	**445**	**557**
Amortised (No)	36	36	5.00	5.00	5.00
Annualised emissions (tonnes CO2e)	**-1.49**	**-1.49**	**14.80**	**16.28**	**20.42**
iii) Flat screens (Total No)	**785**	**891**	**1000**	**1078**	**1154**
Amortised (No)	299	276	263	263	263
Annualised emissions (tonnes CO2e)	**93**	**118**	**43**	**48**	**52**
iv) Laptop (Total No)	**172**	**174**	**386**	**342**	**687**
Amortised (No)	36	31	36	36	37
Annualised emissions (tonnes CO2e)	**44**	**6**	**14**	**12**	**25**
v) individual printers (Total No)	**70**	**59**	**65**	**17**	**20**
Amortised (No)	21	16	22	22	22
Annualised emissions (tonnes CO2e)	**1.35**	**0.00**	**1.34**	**-0.16**	**-0.06**
vi) Network printers and copiers (Total No)	**68**	**73**	**72**	**75**	**73**
Amortised (No)	1.00	5.00	4.00	4.00	4.00
Annualised emissions (tonnes CO2e)	**49**	**50**	**50**	**52**	**51**
vii) Fax machines (Total No)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortised (No)	0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
viii) Scanners (Total No)	**3.00**	**3.00**	**2.00**	**2.00**	**3.00**
Amortised (No)	3.00	2.00	2.00	2.00	2.00
Annualised emissions (tonnes CO2e)	**0.00**	**0.37**	**0.00**	**0.00**	**0.37**
ix) Telephones (simple) (No)	**44**	**45**	**49**	**16.00**	**22.00**
Amortised (No)	1.00	2.00	6.00	6.00	6.00
Annualised emissions (tonnes CO2e)	**0.22**	**0.22**	**0.18**	**0.04**	**0.07**
x) Telephones (smartphones and iphones, Total No)	**22**	**22**	**45**	**45**	**50**
Amortised (No)	2.00	2.00	2.00	2.00	2.00
Annualised emissions (tonnes CO2e)	**0.15**	**0.15**	**0.31**	**0.31**	**0.35**
xi) Fixed telephones (Total No)	**762**	**762**	**762**	**785**	**791**
Amortised (No)	640	640	640	640	640
Annualised emissions (tonnes CO2e)	**0.52**	**0.52**	**0.52**	**0.62**	**0.64**
xii) Informatics server (Total No)	**130**	**74**	**44**	**43**	**43**
Amortised (No)	46	4.00	4.00	4.00	4.00
Annualised emissions (tonnes CO2e)	**54**	**10.50**	**6.00**	**5.85**	**5.85**

xiii) Projectors (Total No)		**27**	**29**	**30**	**30**	**30**
Amortised (No)		17.00	17.00	17.00	17.00	17.00
Annualised emissions (tonnes CO2e)		**0.24**	**0.28**	**0.31**	**0.31**	**0.47**
xiv) Videoconference installations (Total No)		**12.00**	**12.00**	**13.00**	**14.00**	**14.00**
Amortised (No)		10.00	10.00	10.00	10.00	10.00
Annualised emissions (tonnes CO2e)		**0.73**	**0.25**	**0.38**	**0.50**	**0.50**
xv) Televisions (Total No)		**60**	**60**	**63**	**60**	**65**
Amortised (No)		57	57	57	57	57
Annualised emissions (tonnes CO2e)		**1.10**	**0.38**	**0.75**	**0.38**	**1.00**
xvi) Firewall router switch (from 2019), Total No		**1 307**	**1 374**	**1 461**	**1 856**	**1 959**
Amortised (No)		507	550	448	448	448
Annualised emissions (tonnes CO2e)		**16.14**	**16.62**	**20**	**28**	**30**
xvii) Tablet, classical 9 to 11 inches		**0.00**	**0.00**	**10.00**	**10.00**	**6.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.16**	**0.16**	**0.09**
Total annualised emissions (tonnes CO2e)		**291**	**234**	**162**	**177**	**202**

JRC Karlsruhe

A) Fixed assets buildings, construction type		**2018**	**2019**	**2020**	**2021**	**2022**
i) Not specified - offices (total, m^2)		**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**
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**
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**
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**
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**
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**
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**
Total annualised emissions (tonnes CO2e)		**111**	**111**	**111**	**111**	**111**

B) Fixed assets IT		**2018**	**2019**	**2020**	**2021**	**2022**
i) Desktop PC (Total No.)				**1 104**	**995**	**1 167**
Amortised (No)						83
Annualised emissions (tonnes CO2e)				**47**	**42**	**46**
ii) Docking stations (Total No)				**48**	**298**	**396**
Amortised (No)						
Annualised emissions (tonnes CO2e)				**1.78**	**11.03**	**14.65**
iii) Flat screens (Total No)				**1 231**	**1 270**	**1 360**
Amortised (No)						
Annualised emissions (tonnes CO2e)				**72**	**75**	**80**
iv) Laptop (Total No)				**468**	**572**	**949**
Amortised (No)		0.00	0.00	0.00	0.00	39.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**18**	**22**	**36**
v) individual printers (Total No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vi) Network printers and copiers (Total No)		**0.00**	**0.00**	**88**	**92**	**88**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**65**	**68**	**65**

vii) Fax machines (Total No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
viii) Scanners (Total No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ix) Telephones (simple) (No)		**0.00**	**0.00**	**16.00**	**16.00**	**16.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.07**	**0.07**	**0.07**
x) Telephones (smartphones and iphones, Total No)		**0.00**	**0.00**	**17**	**19**	**25**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.12**	**0.14**	**0.18**
xi) Fixed telephones (Total No)		**0.00**	**0.00**	**600**	**600**	**600**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**2.55**	**2.55**	**2.55**
xii) Informatics server (Total No)		**0.00**	**0.00**	**95**	**100**	**91**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**14.25**	**15.00**	**13.65**
xiii) Projectors (Total No)		**0.00**	**0.00**	**17**	**17**	17
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.40**	**0.40**	**0.62**
xiv) Videoconference installations (Total No)		**0.00**	**0.00**	**9.00**	**9.00**	9.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**1.13**	**1.13**	**1.13**
xv) Televisions (Total No)		**0.00**	**0.00**	**42**	**42**	42
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**5.26**	**5.26**	**5.26**
xvi) Firewall router switch (from 2019), Total No		**0.00**	**0.00**	**0.00**	**0.00**	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
xvii) Tablet, classical 9 to 11 inches		**0.00**	**0.00**	**0.00**	**0.00**	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**227**	**242**	**264**

JRC Seville

A) Fixed assets buildings, construction type		**2018**	**2019**	**2020**	**2021**	**2022**
i) Not specified - offices (total, m^2)		**0.00**	**0.00**	**5 898**	**5 926**	**5 926**
Not specified - offices (amortised, m^2)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**77**	**77**	**77**
ii) Steel - industrial building (total, m^2)		**0.00**	**0.00**	**424**	**424**	**424**
Steel - industrial building (amortised, m^2)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**2.33**	**2.33**	**2.33**
iii) Steel - parking underground (total, m^2)		**0.00**	**0.00**	**1 376**	**1 376**	**1 376**
Steel - parking underground (amortised, m^2)						0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**6.05**	**6.05**	**6.05**
iv) Steel - restaurants (total, m^2)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Steel - restaurants (amortised, m^2)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**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)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**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)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**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)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**85**	**85**	**85**

B) Fixed assets IT		2018	2019	2020	2021	2022
i) Desktop PC (Total No.)		0.00	0.00	171	67	93
Amortised (No)		0.00	0.00	0.00	0.00	92
Annualised emissions (tonnes CO2e)		0.00	0.00	7.22	2.83	0.04
ii) Docking stations (Total No)		0.00	0.00	380	400	230
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	14.06	14.80	8.51
iii) Flat screens (Total No)		0.00	0.00	809	822	924
Amortised (No)		0.00	0.00	0.00	0.00	637
Annualised emissions (tonnes CO2e)		0.00	0.00	47	48	17
iv) Laptop (Total No)		0.00	0.00	546	527	1149
Amortised (No)		0.00	0.00	0.00	0.00	218
Annualised emissions (tonnes CO2e)		0.00	0.00	21	21	36
v) individual printers (Total No)		0.00	0.00	33	7.00	5.00
Amortised (No)		0.00	0.00	0.00	0.00	5.00
Annualised emissions (tonnes CO2e)		0.00	0.00	1.03	0.22	0.00
vi) Network printers and copiers (Total No)		0.00	0.00	41	37	36
Amortised (No)		0.00	0.00	0.00	0.00	34.00
Annualised emissions (tonnes CO2e)		0.00	0.00	30	27	1.47
vii) Fax machines (Total No)		0.00	0.00	0.00	0.00	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.00	0.00	0.00
viii) Scanners (Total No)		0.00	0.00	1.00	1.00	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.37	0.37	0.00
ix) Telephones (simple) (No)		0.00	0.00	0.00	0.00	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.00	0.00	0.00
x) Telephones (smartphones and iphones, Total No)		0.00	0.00	42	42	59
Amortised (No)		0.00	0.00	0.00	0.00	47
Annualised emissions (tonnes CO2e)		0.00	0.00	0.30	0.30	0.09
xi) Fixed telephones (Total No)		0.00	0.00	8.00	8.00	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.03	0.03	0.00
xii) Informatics server (Total No)		0.00	0.00	45	46	20
Amortised (No)		0.00	0.00	0.00	0.00	10.00
Annualised emissions (tonnes CO2e)		0.00	0.00	6.75	6.90	1.50
xiii) Projectors (Total No)		0.00	0.00	15.00	15.00	12.00
Amortised (No)		0.00	0.00	0.00	0.00	11.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.35	0.35	0.04
xiv) Videoconference installations (Total No)		0.00	0.00	18.00	18.00	18.00
Amortised (No)		0.00	0.00	0.00	0.00	11.00
Annualised emissions (tonnes CO2e)		0.00	0.00	2.25	2.25	0.88
xv) Televisions (Total No)		0.00	0.00	9.00	9.00	0.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	1.13	1.13	0.00
xvi) Firewall router switch (from 2019), Total No		0.00	0.00	1.00	1.00	35.00
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.02	0.02	0.71
xvii) Tablet, classical 9 to 11 inches		0.00	0.00	15.00	15.00	15.00
Amortised (No)		0.00	0.00	0.00	0.00	5.00
Annualised emissions (tonnes CO2e)		0.00	0.00	0.24	0.24	0.16
Total annualised emissions (tonnes CO2e)		0.00	0.00	133	125	67

A) Fixed assets buildings, construction type		2018	2019	2020	2021	2022
i) Not specified - offices (total, m^2)		**156 736**	**137 763**	**138 989**	**143 712**	**164 565**
Not specified - offices (amortised, m^2)						15 586
Annualised emissions (tonnes CO2e)		**2 038**	**1 791**	**1 807**	**1 868**	**1 937**
ii) Steel - industrial building (total, m^2)		634	2 536	2 536	2 536	2 536
Steel - industrial building (amortised, m^2)						0
Annualised emissions (tonnes CO2e)		**3.49**	**13.95**	**13.95**	**13.95**	**13.95**
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**
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**
v) Concrete - industrial buildings (total, m^2)		98 547	83 582	84 757	53 898	92 438
Concrete - industrial buildings (amortised, m^2)						43 481
Annualised emissions (tonnes CO2e)		**1 626**	**1 379**	**1 398**	**889**	**808**
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**
vii) Concrete - restaurants (total, m^2)		**5 796**	**5 796**	**5 796**	**5 737**	**5 796**
Concrete - restaurants (amortised, m^2)						59
Annualised emissions (tonnes CO2e)		**64**	**64**	**64**	**63**	**63**
Total annualised emissions (tonnes CO2e)		**3 731**	**3 248**	**3 283**	**2 835**	**2 822**

B) Fixed assets IT		2018	2019	2020	2021	2022
i) Desktop PC (Total No.)		**5 172**	**4 801**	**4 607**	**4 046**	**4 392**
Amortised (No)		3 325	3 303	3 469	3 186	3 492
Annualised emissions (tonnes CO2e)		**237**	**192**	**48**	**36**	**38**
ii) Docking stations (Total No)		**3 335**	**2 852**	**2 865**	**2 839**	**3 971**
Amortised (No)		2 316	1 751	1 812	1 554	1 682
Annualised emissions (tonnes CO2e)		**42**	**45**	**39**	**48**	**85**
iii) Flat screens (Total No)		**6 210**	**5 734**	**6 130**	**5 879**	**6 558**
Amortised (No)		4 232	4 324	4 249	4 388	4 751
Annualised emissions (tonnes CO2e)		**379**	**270**	**110**	**88**	**106**
iv) Laptop (Total No)		**2 457**	**2 091**	**3 017**	**3 579**	**7 063**
Amortised (No)		1 505	1 226	1 333	1 395	1 548
Annualised emissions (tonnes CO2e)		**305**	**34**	**66**	**85**	**215**
v) individual printers (Total No)		**3 258**	**230**	**203**	**170**	**165**
Amortised (No)		304	220	194	168	157
Annualised emissions (tonnes CO2e)		**81**	**0**	**0**	**0**	**0**
vi) Network printers and copiers (Total No)		**322**	**561**	**461**	**437**	**435**
Amortised (No)		252	320	221	208	407
Annualised emissions (tonnes CO2e)		**51**	**177**	**176**	**168**	**21**
vii) Fax machines (Total No)		**72**	**49**	**42**	**35**	**33**
Amortised (No)		72	49	42	35	33
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
viii) Scanners (Total No)		**108**	**71**	**63**	**49**	**51**
Amortised (No)		92	57	52	43	44
Annualised emissions (tonnes CO2e)		**5.88**	**5.15**	**4.04**	**2.21**	**2.57**
ix) Telephones (simple) (No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
x) Telephones (smartphones and iphones, Total No)		**430**	**312**	**343**	**278**	**299**
Amortised (No)		310	180	215	180	198
Annualised emissions (tonnes CO2e)		**0.90**	**0.96**	**0.93**	**0.71**	**0.73**
xi) Fixed telephones (Total No)		**54**	**42**	**42**	**34**	**30**
Amortised (No)		48	37	37	29	28
Annualised emissions (tonnes CO2e)		**0.03**	**0.02**	**0.02**	**0.02**	**0.01**
xii) Informatics server (Total No)		**1 807**	**1 557**	**1 564**	**1 579**	**1 533**
Amortised (No)		1 112	924	912	1 001	1 101
Annualised emissions (tonnes CO2e)		**446**	**95**	**98**	**87**	**65**

xiii) Projectors (Total No)		**233**	**187**	**185**	**132**	**152**
Amortised (No)		206	152	143	111	128
Annualised emissions (tonnes CO2e)		**0.63**	**0.82**	**0.99**	**0.49**	**0.87**
xiv) Videoconference installations (Total No)		**173**	**151**	**223**	**210**	**215**
Amortised (No)		77	109	115	106	111
Annualised emissions (tonnes CO2e)		**35**	**5**	**14**	**13**	**13**
xv) Televisions (Total No)		**203**	**292**	**331**	**305**	**330**
Amortised (No)		145	140	146	119	158
Annualised emissions (tonnes CO2e)		**21**	**19.00**	**23**	**23**	**22**
xvi) Firewall router switch (from 2019), Total No		**792**	**706**	**724**	**735**	**676**
Amortised (No)		540	478	473	525	523
Annualised emissions (tonnes CO2e)		**5.08**	**4.60**	**5.06**	**4.24**	**3.09**
xvii) Tablet, classical 9 to 11 inches		**0.00**	**0.00**	**137**	**158**	**166**
Amortised (No)		0.00	0.00	70	92	104
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**1.06**	**1.04**	**0.98**
Total annualised emissions (tonnes CO2e)		**1 610**	**850**	**586**	**556**	**573**

Grange

A) Fixed assets buildings, construction type		**2018**	**2019**	**2020**	**2021**	**2022**
i) Not specified - offices (total, m^2)		**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**
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**
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**
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**
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**
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**
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**
Total annualised emissions (tonnes CO2e)		**215**	**215**	**215**	**215**	**215**

B) Fixed assets IT		**2018**	**2019**	**2020**	**2021**	**2022**
i) Desktop PC (Total No.)		**236**	**157**	**125**	**13.00**	**9.00**
Amortised (No)		137	81	124	13.00	9.00
Annualised emissions (tonnes CO2e)		**13**	**10**	**0.04**	**0.00**	**0.00**
ii) Docking stations (Total No)		**0.00**	**108**	**196**	**227**	**265**
Amortised (No)		0.00	5.00	6.00	37.00	32.00
Annualised emissions (tonnes CO2e)		**0.00**	**4.25**	**7.03**	**7.03**	**8.62**
iii) Flat screens (Total No)		**418**	**410**	**404**	**415**	**395**
Amortised (No)		318	292	377	371	287
Annualised emissions (tonnes CO2e)		**19.18**	**23**	**1.58**	**2.58**	**6.34**
iv) Laptop (Total No)		**137**	**169**	**274**	**232**	**221**
Amortised (No)		45	45	46	49	38
Annualised emissions (tonnes CO2e)		**29**	**4.84**	**8.91**	**7.15**	**7.15**
v) individual printers (Total No)		**20**	**19.00**	**19.00**	**19.00**	**16.00**
Amortised (No)		10.00	9.00	19.00	19.00	16.00
Annualised emissions (tonnes CO2e)		**0.28**	**0.00**	**0.00**	**0.00**	**0.00**
vi) Network printers and copiers (Total No)		**50**	**35**	**34**	**34**	**29**
Amortised (No)		28	25	27	27	29
Annualised emissions (tonnes CO2e)		**16.17**	**7.35**	**5.14**	**5.14**	**0.00**

vii) Fax machines (Total No)		**2.00**	**2.00**	**1.00**	**1.00**	**0.00**
Amortised (No)		2.00	2.00	1.00	1.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
viii) Scanners (Total No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortised (No)		0.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ix) Telephones (simple) (No)		**0.00**	**2.00**	**2.00**	**2.00**	**2.00**
Amortised (No)		0.00	2.00	2.00	2.00	2.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
x) Telephones (smartphones and iphones, Total No)		**67**	**55**	**56**	**31**	**27**
Amortised (No)		39	32	29	12.00	18.00
Annualised emissions (tonnes CO2e)		**0.21**	**0.17**	**0.20**	**0.14**	**0.07**
xi) Fixed telephones (Total No)		**365**	**365**	**0.00**	**0.00**	**0.00**
Amortised (No)		365	365	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
xii) Informatics server (Total No)		**22**	**20**	**22**	**19.00**	**12.00**
Amortised (No)		17.00	16.00	16.00	16.00	9.00
Annualised emissions (tonnes CO2e)		**3.21**	**0.60**	**0.90**	**0.45**	**0.45**
xiii) Projectors (Total No)		**9.00**	**6.00**	**6.00**	**7.00**	5.00
Amortised (No)		7.00	6.00	6.00	7.00	5.00
Annualised emissions (tonnes CO2e)		**0.05**	**0.00**	**0.00**	**0.00**	**0.00**
xiv) Videoconference installations (Total No)		**27**	**25**	**19.00**	**22**	12.00
Amortised (No)		24	22	16.00	21	11.00
Annualised emissions (tonnes CO2e)		**1.10**	**0.38**	**0.38**	**0.13**	**0.13**
xv) Televisions (Total No)		**5.00**	**4.00**	**4.00**	**7.00**	1.00
Amortised (No)		5.00	4.00	4.00	7.00	1.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
xvi) Firewall router switch (from 2019), Total No		**0.00**	**0.00**	**0.00**	**0.00**	0.00
Amortised (No)		35.00	0.00	0.00	0.00	0.00
Annualised emissions (tonnes CO2e)		**-0.71**	**0.00**	**0.00**	**0.00**	**0.00**
xvii) Tablet, classical 9 to 11 inches		**0.00**	**0.00**	**3.00**	**1.00**	0.00
Amortised (No)		0.00	0.00	2.00	1.00	0.00
Annualised emissions (tonnes CO2e)		**0.00**	**0.00**	**0.02**	**0.00**	**0.00**
Total annualised emissions (tonnes CO2e)		**82**	**50**	**24**	**23**	**23**

Annex 4. Emissions from refrigerant loss

Brussels refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
R410A		99	129	126	25	105	161	91	143	95
as t CO2e		**190**	**248**	**241**	**47**	**202**	**309**	**175**	**275**	**181**
R134A		65	80	407	254	145	0	294	556	209
as t CO2e		**85**	**104**	**529**	**330**	**189**	**0**	**382**	**723**	**272**
R407C		181	176	310	108	226	162	211	91	166
as t CO2e		**293**	**285**	**501**	**175**	**366**	**262**	**342**	**147**	**269**
R417A		0.00	0.00	0.00	0.00	5.00	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**
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**
R407D		0.00	0.00	0.00	0.00	5.00	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**
R404A		64	32	11	50	13	0.00	0.00	0.00	2.10
as t CO2e		**253**	**126**	**43**	**197**	**52**	**0.00**	**0.00**	**0.00**	**8.27**
Total (t CO2e)		**821**	**763**	**1 315**	**749**	**847**	**572**	**899**	**1 145**	**731**

Luxembourg refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
R410A		0.00	11.95	6.25	13.65	13.50	1.50	0.00	2.75	0.00
as t CO2e		**0.00**	**22.94**	**12.00**	**26.21**	**25.92**	**2.88**	**0.00**	**5.28**	**0.00**
R134A		0.00	234.40	14.52	4.21	87.33	56.27	137.70	201.00	15.50
as t CO2e		**0.00**	**304.72**	**18.88**	**5.47**	**113.53**	**73.15**	**179.01**	**261.30**	**20.15**
R404A		0.00	17.66	12.70	18.40	13.00	3.20	8.00	17.57	13.30
as t CO2e		**0.00**	**69.58**	**50.04**	**72.50**	**51.22**	**12.61**	**31.52**	**69.24**	**52.40**
R407C		0.00	5.85	2.50	2.60	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**
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**
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**
R449A								**0.00**	**0.00**	4.80
as t CO2e								**0.00**	**0.00**	**6.71**
Total (t CO2e)		**0.00**	**406.72**	**84.96**	**108.39**	**217.83**	**88.64**	**210.53**	**335.82**	**72.55**

JRC Petten refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
R410A		0.00	0.00	40	23	0.00	15	1.25	14.81	14.00
as t CO2e		**0.00**	**0.00**	**76**	**44**	**0.00**	**28**	**2.40**	**28**	**27**
R407C		6.75	0.00	2.96	0.00	0.00	8.60	0.00	0.00	26
as t CO2e		**10.94**	**0.00**	**4.80**	**0.00**	**0.00**	**13.93**	**0.00**	**0.00**	**42**
R507A		0.00	5.00	0.00	17	8.47	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**
ISCEON 89		0.00	0.00	0.00	0	5.00	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**
R407D		0.00	0.00	0.00	0	5.00	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**
Total (t CO2e)		**10.94**	**11.20**	**81**	**82**	**46**	**42**	**2.40**	**28**	**69**

JRC Geel refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
R410A		2.60	1.43	2.02	5.08	4.45	0.00	3.74	33.25	0.00
as t CO2e		**4.99**	**2.75**	**3.88**	**9.75**	**8.54**	**0.00**	**7.18**	**63.84**	**0.00**
R134A		8.00	0.00	13.66	6.95	25.66	0.00	0.00	2.00	8.09
as t CO2e		**10.40**	**0.00**	**17.76**	**9.04**	**33.36**	**0.00**	**0.00**	**2.60**	**10.52**
R404A		46	15.21	8.31	8.49	0.00	5.89	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**
R407C		0.00	13.55	0.00	0.00	6.42	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**21.95**	**0.00**	**0.00**	**10.40**	**0.00**	**0.00**	**0.00**	**0.00**
R507A		0.00	0.00	0.00	0.55	7.52	37.85	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**
R227A		0.00	0.00	0.00	0.00	0.00	49.00	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**
RSF_6		0.00	0.00	0.23	0.23	0.00	1.71	4.50	2.93	0.97
as t CO2e		**0.00**	**0.00**	**5.41**	**5.41**	**0.00**	**40.19**	**105.75**	**68.86**	**22.80**
ISCEON 89		0.00	0.00	0.00	0.00	7.54	0.003	8.00	14.05	2.75
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**28.69**	**0.01**	**30.44**	**53.46**	**10.46**
R449A		0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.41	11.86
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**6.16**	**16.57**
R32										2.02
as t CO2e										**1.37**
Total (t CO2e)		**196**	**85**	**60**	**59**	**98**	**278**	**143**	**195**	**62**

JRC Karlsruhe refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
R22		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**
R410A		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**
R134A		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**
Total (t CO2e)		**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
R134A			36	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**
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**
R407D		0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	3.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**8.14**	**0.00**	**0.00**	**0.00**	**4.88**
Total (t CO2e)		**0.00**	**47**	**0.00**	**0.00**	**27**	**0.00**	**0.00**	**0.00**	**4.88**

JRC Ispra refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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**
R134A		60	0.00	360	30	0.00	0.00	138	187	48
as t CO2e		**78**	**0.00**	**468**	**39**	**0.00**	**0.00**	**179**	**243**	**62**
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**
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**
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**
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**
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**
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**
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**
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**
Total (t CO2e)		**92**	**513**	**1 410**	**161**	**37**	**208**	**540**	**315**	**62**

DG SANTE at GRANGE refrigerant loss

Refrigerant loss (kg)	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
R404A		0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.88**	**7.88**	**0.00**
R407C			2.65	0.00	0.00	4.00	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**
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**
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**
R459A		0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.91**	**0.00**
Total (t CO2e)		**0.00**	**4.29**	**0.00**	**0.00**	**34**	**0.00**	**7.88**	**11.79**	**0.00**

NOx, CO_2 total emissions from Ispra trigeneration plant

		2014	2015	2016	2017	2018	2019	2020	2021	2022
NOx (kg)		28 498	37 292	33 507	32 317	21 962	37 322	24 450	26 040	34 240
CO (kg)		46 835	48 489	51 800	37 376	30 887	46 093	25 240	24 800	39 320

NOx total emissions (tonnes) at JRC Petten

		2014	2015	2016	2017	2018	2019	2020	2021	2022
NOx (tonnes)		0.56	0.61	0.56	0.43	0.45	0.42	0.23	0.24	0.17

Atmospheric emissions containing α emitting aerosols

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
α aerosols (kBq)	0.90	2.30	0.80	1.10	1.50	1.40	1.40	0.50	1.10	1.00

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

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Gaseous	0.21	0.18	0.19	0.45	0.25	5.70	0.13	0.11	0.11	0.14
Liquid	0.04	0.05	0.00	0.01	0.02	0.01	0.02	0.62	0.89	0.85

Annex 5. Biodiversity and emissions from food, service contracts and paper

BIODIVERSITY

Total use of land (m^2)

Site	Trend 2020-22	2020	2021	2022
Brussels		285 928	285 928	241 966
m2/p		**9.56**	**9.34**	**7.82**
Luxembourg		138 339	138 339	138 339
m2/p		**26**	**25**	**24**
JRC Petten		332 500	332 500	332 500
m2/p		**1 346**	**1 385**	**1 446**
JRC Geel		380 316	380 316	380 316
m2/p		**1 430**	**1 446**	**1 441**
JRC Karlsruhe		72 000	72 000	72 000
m2/p		**233**	**236**	**235**
JRC Seville		12 094	12 094	12 094
m2/p		**32**	**31**	**30**
JRC Ispra		1 592 231	1 592 231	1 592 231
m2/p		**660**	**643**	**638**
Grange		90 000	90 000	90 000
m2/p		**520**	**506**	**495**
Commission		**2 903 408**	**2 907 184**	**2 863 268**
m2/p		**75**	**73**	**71**

Total sealed area (m^2)

Site	Trend 2020-22	2020	2021	2022
Brussels		181 864	181 864	163 031
m2/p		**6.08**	**5.94**	**5.27**
Luxembourg		104 029	104 029	104 029
m2/p		**19.85**	**18.71**	**18.26**
JRC Petten		59 909	59 909	59 909
m2/p		**243**	**250**	**260**
JRC Geel		70 512	72 110	72 110
m2/p		**265**	**274**	**273**
JRC Karlsruhe		72 000	72 000	72 000
m2/p		**233**	**236**	**235**
JRC Seville		23 487	23 487	23 487
m2/p		**61**	**60**	**58**
JRC Ispra		650 028	644 657	642 116
m2/p		**270**	**260**	**257**
Grange		18 000	18 000	18 000
m2/p		**104**	**101**	**99**
Commission		**1 179 830**	**1 177 161**	**1 155 790**
m2/p		**30**	**29**	**29**

Nature oriented area offsite (m^2)

Site	Trend 2020-22	2020	2021	2022
Brussels		0	0	0
m2/p		**0.00**	**0.00**	**0.00**
Luxembourg		0	0	0
m2/p		**0.00**	**0.00**	**0.00**
JRC Petten		197 000	197 000	197 000
m2/p		**798**	**821**	**857**
JRC Geel		0	0	0
m2/p		**0.00**	**0.00**	**0.00**
JRC Karlsruhe		0	0	0
m2/p		**0.00**	**0.00**	**0.00**
JRC Seville		0	0	0
m2/p		**0.00**	**0.00**	**0.00**
JRC Ispra		0	0	0
m2/p		**0.00**	**0.00**	**0.00**
Grange		18 000	18 000	18 000
m2/p		**104**	**101**	**99**
Commission		**215 000**	**215 821**	**215 857**
m2/p		**5.52**	**5.39**	**5.33**

FOOD/CATERING

Brussels

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		0.00	70	19.72	2.17	15.18
as t CO2e		**0.00**	**1 991**	**564**	**62**	**434**
ii) Pork		0.00	82	23	2.54	17.80
as t CO2e		**0.00**	**481**	**136**	**14.98**	**105**
iii) Chicken		0.00	106	30	3.29	23
as t CO2e		**0.00**	**502**	**142**	**15.64**	**109**
iv) Fish		0.00	63.0	17.85	1.96	13.74
as t CO2e		**0.00**	**604.17**	**164.58**	**18.10**	**126.72**
v) Milk		0.00	50	14.28	1.00	9.00
as t CO2e		**0.00**	**61**	**17.42**	**1.22**	**10.98**
vi) Other dairy (average yoghurt/butter)		0.00	28	7.82	0.70	6.33
as t CO2e		**0.00**	**171**	**48**	**4.35**	**39**
vii) Coffee		0.00	13.8	3.91	0.27	2.46
as t CO2e		**0.00**	**43**	**12.28**	**0.86**	**7.73**
TOTAL CO2e		**0.00**	**3 852**	**1 085**	**117**	**833**

Luxembourg

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		0.00	11.60	3.60	1.67	5.44
as t CO2e		**0.00**	**331.76**	**102.85**	**47.82**	**155.53**
ii) Pork		0.00	13.60	3.00	0.85	3.64
as t CO2e		**0.00**	**80.10**	**17.67**	**5.02**	**21.43**
iii) Chicken		0.00	17.60	3.46	2.30	6.61
as t CO2e		**0.00**	**83.60**	**16.42**	**10.92**	**31.42**
iv) Fish		0.00	10.50	5.00	2.73	4.80
as t CO2e		**0.00**	**100.70**	**46.10**	**25.12**	**44.22**
v) Milk		0.00	8.40	7.22	4.91	8.56
as t CO2e		**0.00**	**10.25**	**8.80**	**5.99**	**10.45**
vi) Other dairy (average yoghurt/butter)		0.00	4.60	2.42	5.66	9.47
as t CO2e		**0.00**	**28.45**	**14.98**	**34.99**	**58.57**
vii) Coffee		0.00	2.30	1.95	0.63	2.30
as t CO2e		**0.00**	**7.22**	**6.12**	**1.99**	**7.22**
TOTAL CO2e		**0.00**	**642**	**213**	**132**	**329**

JRC Petten

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ii) Pork		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iii) Chicken		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Fish		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Milk		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vi) Other dairy (avg yoghurt/butter)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vii) Coffee		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Note: There is no dedicated JRC Petten canteen within the site boundary.

JRC Geel

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		0.47	0.44	0.23	0.18	0.54
as t CO2e		**13.47**	**12.53**	**6.58**	**5.28**	**15.41**
ii) Pork		0.44	0.48	0.23	0.14	0.22
as t CO2e		**2.59**	**2.80**	**1.38**	**0.83**	**1.32**
iii) Chicken		0.60	0.49	0.16	0.12	0.33
as t CO2e		**2.86**	**2.30**	**0.77**	**0.56**	**1.57**
iv) Fish		1.02	0.70	0.32	0.11	0.32
as t CO2e		**9.79**	**6.71**	**2.98**	**1.04**	**2.96**
v) Milk		0.42	0.62	0.61	0.46	0.58
as t CO2e		**0.52**	**0.76**	**0.75**	**0.56**	**0.70**
vi) Other dairy (avg yoghurt/butter)		0.24	0.48	0.14	0.49	0.32
as t CO2e		**1.48**	**2.95**	**0.85**	**3.01**	**1.96**
vii) Coffee		0.12	0.09	0.03	0.01	0.02
as t CO2e		**0.36**	**0.27**	**0.10**	**0.02**	**0.06**
TOTAL CO2e		**31.08**	**28.32**	**13.40**	**11.30**	**23.99**

JRC Karlsruhe

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ii) Pork		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iii) Chicken		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Fish		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Milk		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vi) Other dairy (avg yoghurt/butter)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vii) Coffee		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Note: There is no dedicated JRC Karlsuhe canteen within the site boundary, only a small cafe.

JRC Seville

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ii) Pork		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iii) Chicken		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Fish		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Milk		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vi) Other dairy (avg yoghurt/butter)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
vii) Coffee		0.00	0.00	0.11	0.11	0.16
as t CO2e		**0.00**	**0.00**	**0.35**	**0.35**	**0.49**
TOTAL CO2e		**0.00**	**0.00**	**0.35**	**0.35**	**0.49**

Note: There is no dedicated JRC Seville canteen.

JRC Ispra

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022
i) Beef		7.21	4.08	1.20	1.13	2.00
as t CO2e		**206**	**117**	**34**	**32**	**57**
ii) Pork		9.66	7.57	3.37	5.12	7.00
as t CO2e		**57**	**45**	**19.86**	**30**	**41**
iii) Chicken		10.05	9.42	3.11	4.50	8.00
as t CO2e		**48**	**45**	**14.75**	**21**	**38**
iv) Fish		15.31	15.03	4.07	6.16	7.00
as t CO2e		**147**	**144**	**38**	**57**	**65**
v) Milk		11.52	11.33	2.96	3.59	7.00
as t CO2e		**14.05**	**13.82**	**3.61**	**4.38**	**8.54**
vi) Other dairy (avg yoghurt/butter)		5.67	4.04	1.70	2.00	3.40
as t CO2e		**35**	**25**	**10.54**	**12.37**	**21**
vii) Coffee		3.27	2.59	2.53	7.42	1.60
as t CO2e		**10.25**	**8.12**	**7.95**	**23**	**5.02**
TOTAL CO2e		**517**	**397**	**129**	**181**	**236**

Grange

A) Catering consumption (tonnes)	Trend 2018-22	2018	2019	2020	2021	2022*
i) Beef		0.00	0.55	0.08	0.08	N.a
as t CO2e		**0.00**	**15.59**	**2.23**	**2.23**	
ii) Pork		0.00	0.48	0.02	0.02	N.a
as t CO2e		**0.00**	**2.80**	**0.13**	**0.13**	
iii) Chicken		0.00	0.48	0.00	0.00	N.a
as t CO2e		**0.00**	**2.27**	**0.00**	**0.00**	
iv) Fish		0.00	0.61	0.12	0.12	N.a
as t CO2e		**0.00**	**5.83**	**1.07**	**1.07**	
v) Milk		0.00	4.01	0.00	0.00	N.a
as t CO2e		**0.00**	**4.89**	**0.00**	**0.00**	
vi) Other dairy (avg yoghurt/butter)		0.00	0.24	0.00	0.00	N.a
as t CO2e		**0.00**	**1.47**	**0.01**	**0.01**	
vii) Coffee		0.00	0.45	0.12	0.12	N.a
as t CO2e		**0.00**	**1.43**	**0.37**	**0.37**	
TOTAL CO2e		**0.00**	**34.27**	**3.80**	**3.80**	**0.00**

(*) Data exceptionally not available (N.a) owing to contractor IT issues, new contract under preparation.

SERVICE CONTRACTS

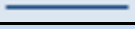
Brussels

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		678	672	579	594	622
as t CO2e		**380**	**377**	**325**	**333**	**349**
ii) Cleaning (FTE)		373	378	356	350	362
as t CO2e		**440**	**446**	**420**	**413**	**427**
iii) Service contracts - consultants (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Other service contracts - (kEUR)		22 411	25 354	22 411	24 275	23 842
as t CO2e		**2 465**	**2 789**	**3 810**	**4 127**	**4 053**
TOTAL CO2e		**3 285**	**3 612**	**4 555**	**4 872**	**4 829**

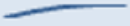
Luxembourg

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		250	261	169	177	200
as t CO2e		**140**	**146**	**95**	**99**	**112**
ii) Cleaning (FTE)		143	87	78	82	91
as t CO2e		**169**	**103**	**92**	**97**	**107**
iii) Service contracts - consultants (kEUR)		0.00	0.00	0.00	1 558.0	487
as t CO2e		**0**	**0**	**0**	**265**	**83**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0**	**0**	**0**	**0**	**0**
v) Other service contracts - (kEUR)		10 295	11 047	11 610	11 959	14 035
as t CO2e		**1 132**	**1 215**	**1 974**	**2 033**	**2 386**
TOTAL CO2e		**1 441**	**1 464**	**2 160**	**2 494**	**2 688**

JRC Petten

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		4.12	4.12	4.12	4.12	4.12
as t CO2e		**2.31**	**2.31**	**2.31**	**2.31**	**2.31**
ii) Cleaning (FTE)		3.77	3.77	3.77	3.77	3.77
as t CO2e		**4.44**	**4.44**	**4.44**	**4.44**	**4.44**
iii) Service contracts - consultants (kEUR)		500	500	500	500	500
as t CO2e		**55**	**55**	**85**	**85**	**85**
iv) Service contracts - translators (kEUR)		898	898	898	898	898
as t CO2e		**99**	**99**	**153**	**153**	**153**
v) Other service contracts - (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL CO2e		**160**	**160**	**244**	**244**	**244**

JRC Geel

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		18.00	18.00	18.00	18.00	18.00
as t CO2e		**10.10**	**10.10**	**10.10**	**10.10**	**10.10**
ii) Cleaning (FTE)		7.63	7.63	7.63	7.63	7.63
as t CO2e		**9.00**	**9.00**	**9.00**	**9.00**	**9.00**
iii) Service contracts - consultants (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Other service contracts - (kEUR)		7	1 528	1 518	1 731	1 853
as t CO2e		**0.77**	**168**	**258**	**294**	**315**
TOTAL CO2e		**20**	**187**	**277**	**313**	**334**

JRC Karlsruhe

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		0.00	0.00	38.0	38.0	38
as t CO2e		**0.00**	**0.00**	**21.32**	**21.32**	**21.32**
ii) Cleaning (FTE)		0.00	0.00	5.00	5.00	5.00
as t CO2e		**0.00**	**0.00**	**5.90**	**5.90**	**5.90**
iii) Service contracts - consultants (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Other service contracts - (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL CO2e		**0.00**	**0.00**	**27.22**	**27.22**	**27.22**

JRC Seville

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ii) Cleaning (FTE)		0.00	0.00	1.00	1.00	1.00
as t CO2e		**0.00**	**0.00**	**1.18**	**1.18**	**1.18**
iii) Service contracts - consultants (kEUR)		0.00	0.00	69.6	150.9	138
as t CO2e		**0.00**	**0.00**	**11.83**	**25.65**	**23.41**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Other service contracts - (kEUR)		0.00	0.00	0.00	9.59	6.90
as t CO2e		**0.00**	**0.00**	**0.00**	**1.63**	**1.17**
TOTAL CO2e		**0.00**	**0.00**	**13.01**	**28.46**	**25.76**

JRC Ispra

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		50	50	47	42	46
as t CO2e		**28**	**28**	**26**	**24**	**26**
ii) Cleaning (FTE)		90	90	90	90	90
as t CO2e		**106**	**106**	**106**	**106**	**106**
iii) Service contracts - consultants (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Other service contracts - (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL CO2e		**134**	**134**	**133**	**130**	**132**

Grange

B) Service contracts	Trend 2018-22	2018	2019	2020	2021	2022
i) Security (FTE)		9.00	9.00	9.00	9.00	9.00
as t CO2e		**5.05**	**5.05**	**5.05**	**5.05**	**5.05**
ii) Cleaning (FTE)		7.00	7.00	7.00	7.00	7.00
as t CO2e		**8.26**	**8.26**	**8.26**	**8.26**	**8.26**
iii) Service contracts - consultants (kEUR)		71	90	90	90	90
as t CO2e		**7.79**	**9.85**	**15.23**	**15.23**	**15.23**
iv) Service contracts - translators (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
v) Other service contracts - (kEUR)		0.00	0.00	0.00	0.00	0.00
as t CO2e		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL CO2e		**21**	**23**	**29**	**29**	**29**

PAPER

Paper (tonnes per year)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021
Brussels		894	875	750	634	639	608	227	166
tonnes/person		**0.033**	**0.032**	**0.028**	**0.022**	**0.022**	**0.021**	**0.008**	**0.005**
Luxembourg		96.00	85.68	77.00	58.34	54.01	48.44	18.53	11.07
tonnes/person		**0.0237**	**0.0184**	**0.0165**	**0.0122**	**0.0108**	**0.0094**	**0.0035**	**0.0020**
JRC Petten		4.71	5.76	2.42	3.03	2.35	4.76	1.15	1.07
tonnes/person		**0.017**	**0.021**	**0.009**	**0.012**	**0.009**	**0.019**	**0.005**	**0.004**
JRC Geel		7.44	3.57	5.93	3.15	3.09	3.42	0.95	1.37
tonnes/person		**0.022**	**0.011**	**0.020**	**0.012**	**0.012**	**0.013**	**0.004**	**0.005**
JRC Karlsruhe		6.00	4.80	4.80	3.60	3.60	2.10	0.00	1.05
tonnes/person		**0.019**	**0.015**	**0.015**	**0.011**	**0.011**	**0.007**	**0.000**	**0.003**
JRC Seville		3.58	3.76	3.29	3.73	4.31	3.51	1.21	0.92
tonnes/person		**0.012**	**0.013**	**0.011**	**0.012**	**0.013**	**0.010**	**0.003**	**0.002**
JRC Ispra		41	36	32	30	28	24	9.76	9.71
tonnes/person		**0.017**	**0.016**	**0.014**	**0.013**	**0.012**	**0.010**	**0.004**	**0.004**
Grange		1.84	3.54	6.25	3.74	3.30	2.87	1.16	1.06
tonnes/person		**0.010**	**0.020**	**0.033**	**0.020**	**0.018**	**0.016**	**0.007**	**0.006**
Commission		1 054	1 018	881	741	737	697	259	192
tonnes/person		**0.030**	**0.029**	**0.025**	**0.020**	**0.020**	**0.018**	**0.007**	**0.005**

Printshop paper consumption (tonnes)

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021
Brussels		272	225	248	251	206	226	78	35
tonnes/person		**0.010**	**0.008**	**0.009**	**0.009**	**0.007**	**0.008**	**0.003**	**0.001**
Luxembourg		0.00	0.00	0.00	40.31	38.78	41.63	18.19	14.61
tonnes/person		**0.0000**	**0.0000**	**0.0000**	**0.0084**	**0.0077**	**0.0081**	**0.0035**	**0.0026**
JRC Petten		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**
JRC Geel		0.00	0.00	0.00	0.00	0.53	0.63	0.44	0.32
tonnes/person		**0.000**	**0.000**	**0.000**	**0.000**	**0.002**	**0.002**	**0.002**	**0.001**
JRC Karlsruhe		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**
JRC Seville		1.24	1.24	1.67	1.40	2.10	1.45	1.30	0.53
tonnes/person		**0.004**	**0.004**	**0.006**	**0.004**	**0.006**	**0.004**	**0.003**	**0.001**
JRC Ispra		5.82	4.82	3.76	5.06	6.37	5.50	1.76	1.28
tonnes/person		**0.002**	**0.002**	**0.002**	**0.002**	**0.003**	**0.002**	**0.001**	**0.001**
Grange		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**
Commission		279	231	253	298	254	275	99	52
tonnes/person		**0.008**	**0.007**	**0.007**	**0.008**	**0.007**	**0.007**	**0.003**	**0.001**

Purchased paper, used or new (tonnes)

C) Supply contracts	Trend 2018-22	2018	2019	2020	2021	2022
Brussels		845	834	304	201	248
as t CO2e		**776**	**766**	**280**	**185**	**228**
Luxembourg		92.79	90.07	36.72	25.68	37.34
as t CO2e		**85. 27**	**82. 77**	**33. 75**	**23. 6**	**34. 31**
Petten		2.35	2.35	2.35	2.82	0.00
as t CO2e		**2.16**	**2.16**	**2.16**	**2.59**	**0.00**
Geel		3.62	4.05	1.39	1.68	1.81
as t CO2e		**3.33**	**3.72**	**1.28**	**1.55**	**1.66**
Karlsruhe		3.60	2.10	0.00	1.05	2.24
as t CO2e		**3.31**	**1.93**	**0.00**	**0.96**	**2.06**
Seville		0.00	0.00	1.76	1.76	1.33
as t CO2e		**0.00**	**0.00**	**1.61**	**1.61**	**1.22**
Ispra		33.92	29.16	11.52	10.99	13.00
as t CO2e		**31**	**27**	**10.58**	**10.10**	**11.95**
Grange		3.30	2.87	1.16	1.06	0.77
as t CO2e		**3.03**	**2.64**	**1.07**	**0.97**	**0.71**
Commission		**984**	**964**	**359**	**246**	**305**
as t CO2e		**905**	**886**	**330**	**226**	**280**

Annex 6. GPP data and EMAS costs

GPP

Contracts greater than 60 K EUR with additional 'eco' criteria %

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target 2019-23	Target 2019-30
Brussels		80	100	82	93	100	100	100	100	100	100	100
Luxembourg		100	100	93	83	100	71	93	100	100	100	100
JRC Petten		NR	NR	NR	NR	76	76	76	76	40	50	60
JRC Geel		NR	NR	22	33	35	29	14	16	36		
JRC Karlsruhe		8.00	8.00	8.00	28	26	36	27	54	52		
JRC Seville*		1	2	1	1	2	13	15	7	6	17	22
JRC Ispra		32	9	9	10	17	64	53	40	82	90	85
Grange*		2	4	3	3	3	2	2	2	1.00		

NR - Not recorded; *Total number, not % reported prior to 2019

Contracts using GPP procedures

Site	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.00
Luxembourg		11.00	13.00	14.00	15.00	5.00	5.00	14.00	12.00	8.00
JRC Petten		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00
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
JRC Seville		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
JRC Ispra		0.00	0.00	0.00	6.00	15.00	14.00	17.00	14.00	27
Grange		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commission		**11.00**	**13.00**	**14.00**	**21.00**	**20.00**	**19.00**	**31.00**	**26.00**	**59.00**

Greenness (of procedures, ECA approach)

Brussels

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		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
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	2.00	1.00	2.00	0.00	5.00
Total (No)		**0.00**	**0.00**	**0.00**	**0.00**	**26**	**18.00**	**20**	**34**	**20**
Procedures using EU GPP criteria		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Office supply catalogue										
Green products (no)		186	330	364	358	351	110	113	57	51
Green products (EUR)		0.00	0.00	0.00	0.00	0.00	940 701	303 170	339 306	335 040
Total products (no)		514	715	780	750	737	234	238	105	103
Total products (EUR)		0.00	0.00	0.00	0.00	0.00	1 894 255	439 029	414 472	515 605

Luxembourg

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Breakdown of tender procedures according to green scale of ECA										
Not green		0	0	1	3	0	2	1	0	0
Light green		11	13	14	15	1	2	4	6	4
Green		0	0	0	0	3	2	7	6	4
Very green		0	0	0	0	1	1	2	0	0
Green by nature		0	0	0	0	0	0	1	0	0
Total (No)		**11**	**13**	**15**	**18**	**5**	**7**	**15**	**12**	**8**
Procedures using EU GPP criteria		**11**	**13**	**14**	**15**	**5**	**5**	**14**	**12**	**8**
Office supply catalogue										
Green products (no)		94	89	87	118	108	98	102	109	89
Green products (EUR)		66 729	68 944	71 916	43 105	32 960	16 326	12 700	20 763	38 464
Total products (no)		357	391	331	324	309	181	184	198	171
Total products (EUR)		193 508	239 796	137 671	124 593	108 469	149 596	61 057	44 285	56 071

JRC Petten

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Green		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Very green		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Green by nature		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Total (No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**15.00**
Procedures using EU GPP criteria		**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
Green products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR

JRC Geel

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		0.00	0.00	0.00	0.00	4.00	3.00	3.00	4.00	13.00
Green		0.00	0.00	0.00	0.00	4.00	3.00	3.00	5.00	9.00
Very green		0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00	1.00
Green by nature		0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00
Total (No)		**0.00**	**0.00**	**0.00**	**0.00**	**34**	**34**	**51**	**58**	**64**
Procedures using EU GPP criteria		**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
Green products (EUR)		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
Total products (EUR)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

JRC Karlsruhe

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		0.00	0.00	0.00	0.00	7.00	9.00	8.00	14.00	15.00
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**
Procedures using EU GPP criteria		**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
Green products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (no)		NR	NR	NR	NR	NR	NR	NR	NR	NR
Total products (EUR)		NR	NR	NR	NR	NR	NR	NR	NR	NR

JRC Seville

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00
Green		0.00	0.00	0.00	0.00	0.00	1.00	2.00	5.00	1.00
Very green		0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Green by nature		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Total (No)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**13.00**	**15.00**	**7.00**	**1.00**
Procedures using EU GPP criteria		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**
Office supply catalogue										
Green products (no)		NM	NM	NM	NM	NM	NM	NM	NM	NM
Green products (EUR)		NM	NM	NM	NM	NM	NM	NM	NM	NM
Total products (no)		NM	NM	NM	NM	NM	NM	NM	NM	NM
Total products (EUR)		NM	NM	NM	NM	NM	NM	NM	NM	NM

JRC Ispra

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		0.00	0.00	0.00	0.00	9.00	5.00	6.00	3.00	4.00
Green		0.00	0.00	0.00	0.00	5.00	4.00	4.00	2.00	9.00
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
Total (No)		**0.00**	**0.00**	**0.00**	**0.00**	**90**	**18**	**26**	**26**	**20**
Procedures using EU GPP criteria		**0.00**	**0.00**	**0.00**	**6.00**	**15**	**14**	**17**	**14**	**14**
Office supply catalogue										
Green products (no)		165	171	232	200	210	203	201	172	148
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
Total products (EUR)		280 000	191 600	165 726	170 229	184 406	153 221	106 929	90 836	87 230

Grange

Category	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
Light green		0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Green		0.00	0.00	0.00	0.00	1.00	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
Green by nature		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Total (No)		**0.00**	**0.00**	**0.00**	**0.00**	**3.00**	**2.00**	**2.00**	**2.00**	**1.00**
Procedures using EU GPP criteria		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Office supply catalogue										
Green products (no)		NA	NA	NA	NA	NA	NA	NA	NA	NA
Green products (EUR)		NA	10 485	10 485	3 310	11 562	3 347	3 347	3 347	n.a.
Total products (no)		NA	NA	NA	NA	NA	NA	NA	NA	NA
Total products (EUR)		NA	28 301	20 093	13 628	18 594	14 112	14 112	14 112	n.a.

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
Total amount	**1 122 884**	**860 674**	**939 874**	**953 874**	**953 874**	**981 874**	**1 051 874**	**1 065 874**	**1 079 874**	**1 114 874**	**1 197 715**
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
Total per employee	31	25	27	27	27	27	28	28	28	28	30
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**
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
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
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
CONTRACTS (HR COORD)											
Total	**66 884**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**83 252**	**92 865**
External audit	11 121	15 874	15 874	15 874	15 874	15 874	15 874	15 874	15 874	15 874	21 235
Internal Audit	55 763	67 378	67 378	67 378	67 378	67 378	67 378	67 378	67 378	67 378	71 630
Veille Relglementaire											

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brussels									
Electricity (EUR/MWh)	**97**	**90**	**85**	**90**	**90**	**110**	**110**	**125**	**249**
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
Electricity (EUR/p)	390	365	341	336	332	400	333	331	596
Gas (EUR/MWh)	**41**	**41**	**35**	**32**	**32**	**27**	**22**	**75**	**150**
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
Gas (EUR/p)	106	122	106	91	89	72	52	197	285
Fuel (EUR/MWh)	**68**	**45**	**37**	**37**	**37**	**37**	**37**	**37**	**117**
Fuel (EUR)	174 750	72 927	36 860						11 399
Fuel (EUR/p)	6.38	2.69	1.37	0.00	0.00	0.00	0.00	0.00	0.37
Annual direct staff costs (time FTE)	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**2.00**
Annual contract costs	**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**
Electricity (EUR)	1 052 651	1 845 840	1 765 039	1 262 135	1 298 536	1 883 897	2 027 974	1 639 550	3 731 372
Electricity (EUR/p)	260	396	379	264	259	367	387	295	655
Gas (EUR/MWh)	**26**	**26**	**26**	**24**	**26**	**31**	**22**	**21**	**83**
Gas (EUR)	88 364	714 100	958 703	673 456	523 873	627 151	451 253	421 411	1 048 538
Gas (EUR/p)	22	153.01	206.04	140.71	104.44	122.06	86.12	75.81	184.02
Fuel (EUR/MWh)	**100**	**100**	**100**	**100**	**60**	**60**	**31**	**31**	**31**
Fuel (EUR)	0.00	0.00	0.00	362.20	89.70	365.98	190.33	190.33	189.72
Fuel (EUR/p)	0.00	0.00	0.00	0.08	0.02	0.07	0.04	0.03	0.03
Annual direct staff costs (time FTE)	**3.50**	**3.50**	**3.50**	**3.50**	**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**
Petten									
Electricity (EUR/MWh)	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**98**
Electricity (EUR)	223 027	214 904	210 473	206 928	214 608	201 167	180 489	173 186	219 170

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Electricity (EUR/p)	791	773	763	787	865	808	731	722	953
Gas (EUR/MWh)	**34**	**34**	**34**	**34**	**34**	**34**	**34**	**34**	**121**
Gas (EUR)	122 332	129 033	120 461	110 670	116 518	105 582	77 211	84 401	229 697
Gas (EUR/p)	434	464	436	421	470	424	313	352	999
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
Fuel (EUR/p)	0.00	0.00	0.00	5.22	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**
Annual contract costs	**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**
Electricity (EUR)	1 027 269	930 755	956 148	906 670	850 201	1 112 063	902 226	794 204	2 539 123
Electricity (EUR/p)	2 969	2 838	3 230	3 421	3 283	4 245	3 392	3 020	9 618
Gas (EUR/MWh)	**47**	**29**	**22**	**27**	**30**	**24**	**17.17**	**46**	**148**
Gas (EUR)	79 046	56 551	41 701	47 982	51 724	43 313	31 111	91 698	208 067
Gas (EUR/p)	228	172	141	181	200	165	117	349	788
Fuel (EUR/MWh)	**62**	**49**	**35**	**47**	**57**	**57**	**44**	**69**	**104**
Fuel (EUR)	4 848	1 253	941	1 501	2 026	1 896	381	1 908	2 882
Fuel (EUR/p)	14.01	3.82	3.18	5.66	7.82	7.24	1.43	7.25	10.92
Annual direct staff costs (time FTE)	**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**
Karlsruhe									
Electricity (EUR/MWh)	**90**	**90**	**90**	**90**	**90**	**90**	**90**	**90**	**144**
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
Electricity (EUR/p)	3 277	3 420	3 305	3 262	3 481	3 514	3 102	3 352	5 474
District heating (EUR/MWh)	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**70**	**128**
District heating (EUR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1 149 285
District heating (EUR/p)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3 756
Fuel (EUR/MWh)	**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
Fuel (EUR/p)	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**
Annual contract costs	**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**
Electricity (EUR)	306 085	283 358	284 193	285 187	238 652	261 415	234 108	231 428	340 018
Electricity (EUR/p)	1 059	1 001	947	886	698	710	613	593	844
Gas (EUR/MWh)	**62**	**46**	**58**	**52**	**52**	**58**	**53**	**51**	**62**
Gas (EUR)	23 881	17 244	20 024	22 731	27 677	21 569	24 417	22 737	24 448
Gas (EUR/p)	83	61	67	71	81	59	64	58	61

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fuel (EUR/MWh)	**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
Fuel (EUR/p)	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**
Annual contract costs	**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**
Electricity (EUR)	374 745	407 986	473 856	720 748	772 934	455 516	738 646	1 078 803	3 626 720
Electricity (EUR/p)	160	178	210	317	338	195	306	436	1 454
Gas (EUR/MWh)	**39**	**31**	**22**	**25**	**30**	**23**	**17**	**51**	**141**
Gas (EUR)	3 765 554	2 968 460	1 957 302	2 229 755	2 654 795	2 095 452	1 339 432	4 296 895	8 342 461
Gas (EUR/p)	1 612	1 293	867	979	1 162	899	556	1 736	3 345
Fuel (EUR/MWh)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**122.45**
Fuel (EUR)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5 265
Fuel (EUR/p)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11
Annual direct staff costs (time FTE)	**1.85**	**1.85**	**1.85**	**1.85**	**1.85**	**1.85**	**1.85**	**1.85**	**1.85**
Annual contract costs	**139 560**	**120 268**	**198 300**	**231 645**	**218 128**	**196 095**	**195 315**	**184 725**	**168 255**
Grange									
Electricity (EUR/MWh)	**117**	**116**	**116**	**116**	**116**	**116**	**116**	**116**	**314**
Electricity (EUR)	102 991	98 731	96 603	94 613	92 292	98 886	74 414	65 591	175 655
Electricity (EUR/p)	575	549	508	503	516	562	430	368	965
Gas (EUR/MWh)	**646**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**596**
Gas (EUR)	4 437	582	239	150	3 615	4 564	2 389	203	2 430
Gas (EUR/p)	25	3.23	1.26	0.80	20	26	13.81	1.14	13.35
Fuel (EUR/MWh)	**43**	**48**	**48**	**48**	**48**	**48**	**48**	**48**	**113**
Fuel (EUR)	59 176	75 554	74 389	65 561	52 490	54 514	50 176	46 176	105 746
Fuel (EUR/p)	331	420	392	349	293	310	290	259	581
Annual direct staff costs (time FTE)	**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**

Annex 7. Fleet vehicles and travels

FLEET

Brussels

Vehicle fleet and emissions data - Brussels	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	10.00	10.00	13.00	13.00	13.00	13.00	14.00	17.00
Hybrid		0	0	0	0	20.00	32	41	62	70
Euro 6		0	56	74	98	93	73	65	39	36
Euro 5		0	51	23	18.00	0	0	0	0	0
Euro 4		0	0	0	0	0	0	0	0	0
Euro 3		0	0	0	0	0	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	13.00	10.00	10.00	4.00
Semi armoured		0	0	0	0	0	0	0	0	4.00
Avg No fleet vehicles		**0**	**117**	**107**	**129**	**126**	**131**	**129**	**125**	**123**
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
Diesel used (m3)		201	204	198	178	144	132	54	32	32
Petrol used (m3)		6.46	5.33	13.40	22	61	85	73	114	135
Fuel efficiency (litres/100km)		**8.45**	**8.45**	**7.46**	**7.95**	**8.86**	**9.27**	**8.90**	**8.24**	**7.80**
gCO2e/km (manufacturer)		148	145	129	118	116	119	113	94	82
tCO2e diesel combustion		**502**	**510**	**495**	**444**	**360**	**330**	**135**	**79**	**80**
tCO2e diesel upstream		**133**	**135**	**131**	**117**	**95**	**87**	**36**	**21**	**20**
tCO2e petrol combustion		**14.72**	**12.14**	**31**	**50**	**138**	**195**	**168**	**260**	**298**
tCO2e petrol upstream		**3.42**	**2.82**	**7.10**	**11.60**	**32**	**45**	**39**	**60**	**67**
Total tCO2e		**653**	**659**	**663**	**623**	**626**	**657**	**377**	**420**	**464**
gCO2e/km (actual, inc upstream)		**266**	**266**	**234**	**248**	**271**	**280**	**263**	**238**	**217**
Commission vehicles fixed asset emissions (tonnes CO2e)						**116**	**117**	**72**	**88**	**107**

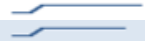
Luxembourg

Vehicle fleet and emissions data - Luxembourg	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	0	0	0	2	4	4	4	4
Hybrid		0	0	0	0	0	5	8	10	11
Euro 6		0	5	12	18	23	21	18	16	14
Euro 5		0	12	11	5	3	1	1	0	0
Euro 4		0	4	3	3	2	1	1	1	1
Euro 3		0	4	4	4	3	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0	0
Avg No fleet vehicles		**0**	**25**	**30**	**30**	**33**	**32**	**32**	**31**	**30**
Total kms		623 890	665 992	771 824	731 060	812 152	781 567	322 876	408 831	543415
Diesel used (m3)		50.50	53.26	62.82	58.63	61.29	54.05	24.45	23.74	28.55
Petrol used (m3)		1.05	1.27	1.46	0.72	3.76	7.91	4.12	9.17	13.82
Fuel efficiency (litres/100km)		**8.26**	**8.19**	**8.33**	**8.12**	**8.01**	**7.93**	**8.85**	**8.05**	**7.80**
gCO2e/km (manufacturer)		171	167	161	158	145	142	126	121	110.0
tCO2e diesel combustion		**126**	**133**	**157**	**147**	**153**	**135**	**61**	**59**	**71**
tCO2e diesel upstream		**33**	**35**	**41**	**39**	**40**	**36**	**16**	**16**	**17**
tCO2e petrol combustion		**2.38**	**2.88**	**3.34**	**1.65**	**8.57**	**18.04**	**9.39**	**20.91**	**30.54**
tCO2e petrol upstream		**0.55**	**0.67**	**0.78**	**0.38**	**1.99**	**4.19**	**2.18**	**4.84**	**6.83**
Total tCO2e		**163**	**172**	**203**	**187**	**204**	**193**	**89**	**101**	**126**
gCO2e/km (actual, inc upstream)		**260**	**258**	**263**	**256**	**251**	**247**	**275**	**246**	**232**
Commission vehicles fixed asset emissions (tonnes CO2e)						**41**	**39**	**16**	**20**	**27**

Petten

Vehicle fleet and emissions data - JRC Petten	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hybrid		0	0	0	0	0	0	0	0	0
Euro 6		0	0	0	0	0	0	0	0	0
Euro 5		0	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Euro 4		0	0	0	0	0	0	0	0	0
Euro 3		0	0	0	0	0	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	0	0	1.00	1.00	1.00	1.00	1.00
Avg No fleet vehicles		**0**	**3.00**	**3.00**	**3.00**	**4.00**	**4.00**	**4.00**	**4.00**	**3.00**
Total kms		4 500	30 513	55 440	61 324	56 473	45 396	21 963	37 109	43 577
Diesel used (m3)		0.10	1.50	2.70	3.41	3.24	2.12	1.49	2.32	2.73
Petrol used (m3)		0.46	1.40	2.19	1.98	1.88	1.40	0.33	0.41	0.92
Fuel efficiency (litres/100km)		**12.45**	**9.49**	**8.82**	**8.79**	**9.07**	**7.74**	**8.26**	**7.34**	**8.38**
gCO2e/km (manufacturer)		168	148	148	148	148	148	148	148	0.00
tCO2e diesel combustion		**0.24**	**3.75**	**6.76**	**8.52**	**8.11**	**5.30**	**3.72**	**5.79**	**0.86**
tCO2e diesel upstream		**0.06**	**0.99**	**1.78**	**2.25**	**2.14**	**1.40**	**0.98**	**1.52**	**0.86**
tCO2e petrol combustion		**1.06**	**3.19**	**4.99**	**4.51**	**4.28**	**3.19**	**0.74**	**0.93**	**2.03**
tCO2e petrol upstream		**0.25**	**0.74**	**1.16**	**1.05**	**1.00**	**0.74**	**0.17**	**0.22**	**0.29**
Total tCO2e		**1.61**	**8.67**	**14.69**	**16.33**	**15.53**	**10.62**	**5.61**	**8.46**	**4.04**
gCO2e/km (actual, inc upstream)		**357**	**284**	**265**	**266**	**275**	**234**	**256**	**228**	**93**
Commission vehicles fixed asset emissions (tonnes CO2e)						**3**	**2**	**1**	**2**	**2**

Geel

Vehicle fleet and emissions data - JRC Geel	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	0	0	0	0	1.00	1.00	1.00	1.00
Hybrid		0	0	0	0	0	0	0	0	1.00
Euro 6		0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Euro 5		0	0	1.00	1.00	1.00	1.00	1.00	1.00	0
Euro 4		0	0	0	0	0	0	0	0	0
Euro 3		0	0	1.00	1.00	1.00	0	0	0	0
Euro 2		0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Avg No fleet vehicles		**0**	**0**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**	**7.00**
Total kms		NR	NR	NR	NR	NR	11 909	6 940	6 708	6 579
Diesel used (m3)		0.85	0.71	0.86	1.04	0.80	0.78	0.92	0.59	0.49
Petrol used (m3)		2.03	2.11	1.73	1.66	1.61	1.16	0.75	0.71	0.59
Propaned used (kg)		158	158	158	126	116	165	121	126	137
Fuel efficiency (litres/100km)							**16.30**	**24**	**19.29**	**16.42**
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**
tCO2e diesel upstream		**0.56**	**0.47**	**0.57**	**0.68**	**0.53**	**0.52**	**0.61**	**0.39**	**0.30**
tCO2e petrol combustion		**4.63**	**4.81**	**3.95**	**3.78**	**3.66**	**2.64**	**1.72**	**1.61**	**1.31**
tCO2e petrol upstream		**1.08**	**1.12**	**0.92**	**0.88**	**0.85**	**0.61**	**0.40**	**0.37**	**0.29**
tCO2e propane combustion		**0.47**	**0.47**	**0.47**	**0.37**	**0.34**	**0.49**	**0.36**	**0.37**	**0.41**
tCO2e propane upstream		**0.08**	**0.08**	**0.08**	**0.06**	**0.06**	**0.08**	**0.06**	**0.06**	**0.07**
Total tCO2e		**8.94**	**8.73**	**8.13**	**8.37**	**7.44**	**6.30**	**5.45**	**4.27**	**3.59**
gCO2e/km (actual, inc upstream)							**529**	**785**	**637**	**545**
Commission vehicles fixed asset emissions (tonnes CO2e)						**0.01**	**0.01**	**0.01**	**0.01**	**0.01**

Karlsruhe

Vehicle fleet and emissions data - JRC Karlsruhe	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	0	0	1.00	1.00	2.00	2.00	2.00	4.00
Hybrid		0	0	0	0	0	0	0	0	0
Euro 6		0	0	0	0	0	2.00	4.00	4.00	2.00
Euro 5		0	0	9.00	9.00	9.00	7.00	5.00	5.00	5.00
Euro 4		0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Euro 3		0	0	0	0	0	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	1.00	1.00	1.00	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0	0
Avg No fleet vehicles		**0**	**0**	**11.00**	**12.00**	**12.00**	**12.00**	**12.00**	**12.00**	**12.00**
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
Petrol used (m3)		11.71	5.87	1.58	1.10	1.35	2.60	1.74	2.13	1.51
Fuel efficiency (litres/100km)		**9.50**	**9.93**	**10.52**	**12.33**	**12.48**	**9.25**	**4.49**	**6.21**	**7.60**
gCO2e/km (manufacturer)		202	172	165	162	157	146	151	151	140
tCO2e diesel combustion		**14.27**	**19.49**	**31**	**36**	**29**	**11.47**	**6.24**	**9.65**	**1.41**
tCO2e diesel upstream		**3.77**	**5.14**	**8.23**	**9.44**	**7.73**	**3.03**	**1.64**	**2.54**	**1.41**
tCO2e petrol combustion		**27**	**13**	**3.6**	**2.5**	**3.1**	**5.9**	**4.0**	**4.9**	**0.2**
tCO2e petrol upstream		**6.20**	**3.11**	**0.84**	**0.58**	**0.72**	**1.38**	**0.92**	**1.12**	**0.48**
Total tCO2e		**51**	**41**	**44**	**48**	**41**	**22**	**13**	**18**	**3**
gCO2e/km (actual, inc upstream)		**278**	**299**	**328**	**386**	**390**	**281**	**135**	**189**	**42**
Commission vehicles fixed asset emissions (tonnes CO2e)						**5**	**4**	**5**	**5**	**4**

Seville

Vehicle fleet and emissions data - JRC Seville	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	0	0	0	0	0	0	0	0
Hybrid		0	0	0	0	0	0	0	0	0
Euro 6		0	0	0	0	0	0	0	0	0
Euro 5		0	0	0	0	0	0	0	0	0
Euro 4		0	0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Euro 3		0	0	0	0	0.00	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0	0
Avg No fleet vehicles		**0**	**0**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Total kms		4 440	4 356	3 192	4 016	3 859	5 521	714	0	0
Diesel used (m3)		0.37	0.34	0.23	0.32	0.26	0.26	0.05	0	0
Petrol used (m3)		0.00	0.00	0.00	0.00	0	0	0	0	0
Fuel efficiency (litres/100km)		**8.23**	**7.74**	**7.33**	**7.92**	**6.63**	**4.71**	**7.50**	**0**	**0**
gCO2e/km (manufacturer)		136	136	136	136	136	136	136	136	136
tCO2e diesel combustion		**0.91**	**0.84**	**0.59**	**0.80**	**0.64**	**0.65**	**0.13**	**0**	**0**
tCO2e diesel upstream		**0.24**	**0.22**	**0.15**	**0.21**	**0.17**	**0.17**	**0.04**	**0**	**0**
tCO2e petrol combustion		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
tCO2e petrol upstream		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total tCO2e		**1.16**	**1.06**	**0.74**	**1.00**	**0.81**	**0.82**	**0.17**	**0**	**0**
gCO2e/km (actual, inc upstream)		**260**	**244**	**232**	**250**	**210**	**149**	**237**	**0.0**	**0.0**
Commission vehicles fixed asset emissions (tonnes CO2e)						**0.2**	**0.3**	**0.0**	**0.0**	**0.0**

Ispra

Vehicle fleet and emissions data - JRC Ispra	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		3.00	21	21	34	36	36	41	50	58
Hybrid		0	0	0	0	0	1.00	1.00	1.00	1.00
Euro 6		0	0	1.00	2.00	2.00	1.00	5.00	5.00	5.00
Euro 5		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	25
Euro 3		43	43	43	29	18	18	18	14	9
Euro 2		7.00	7.00	7.00	5.00	4.00	4.00	4.00	2.00	2.00
Euro 1		9.00	9.00	9.00	7.00	6.00	6.00	6.00	4.00	4.00
Euro 0		2.00	2.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0	0
Avg No fleet vehicles		**104**	**122**	**123**	**121**	**110**	**110**	**119**	**115**	**109**
Total kms		258 622	286 517	240 217	208 053	192 277	200 893	149 008	136 077	145 471
Diesel used (m3)		14.37	13.53	12.08	12.02	10.36	10.55	7.37	7.40	5.63
Petrol used (m3)		14.62	15.03	10.66	8.77	6.93	6.87	4.23	3.51	2.99
Fuel efficiency (litres/100km)		**11.2**	**10.0**	**9.5**	**10.0**	**9.0**	**8.7**	**7.8**	**8.0**	**5.9**
gCO2e/km (manufacturer)		186	158	157	132	111	109	104	91	69
tCO2e diesel combustion		**36**	**34**	**30**	**30**	**26**	**26**	**18**	**19**	**14**
tCO2e diesel upstream		**9.48**	**8.93**	**7.97**	**7.93**	**6.84**	**6.96**	**4.85**	**4.87**	**3.43**
tCO2e petrol combustion		**33**	**34**	**24**	**20**	**16**	**16**	**10**	**8**	**7**
tCO2e petrol upstream		**7.75**	**7.96**	**5.65**	**4.65**	**3.67**	**3.64**	**2.24**	**1.85**	**1.48**
Total tCO2e		**86**	**85**	**68**	**63**	**52**	**53**	**35**	**33**	**26**
gCO2e/km (actual, inc upstream)		**334**	**297**	**284**	**301**	**272**	**262**	**236**	**244**	**176**
Commission vehicles fixed asset emissions (tonnes CO2e)						**10**	**10**	**7.5**	**6.8**	**7.3**

Grange

Vehicle fleet and emissions data - DG SANTE at Grange	Trend 2014-22	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fleet vehicles:										
Full Electric		0	0	0	0	0	0	0	0	0
Hybrid		0	0	0	0	0	0	0	0	0
Euro 6		0	0	0	0	0	0	0	0	0
Euro 5		0	1.00	1.00	1.00	1.00	0	0	0	0
Euro 4		0	0	0	0	0	0	0	0	0
Euro 3		0	0	0	0	0	0	0	0	0
Euro 2		0	0	0	0	0	0	0	0	0
Euro 1		0	0	0	0	0	0	0	0	0
Euro 0		0	0	0	0	0	0	0	0	0
Armoured vehicle		0	0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0	0
Avg No fleet vehicles		**0.00**	**1.00**	**1.00**	**1.00**	**1.00**	**0**	**0**	**0**	**0**
Total kms		7 674	5 155	2 928	2 928	2 928	0	0	0	0
Diesel used (m3)		0	0	0	0	0	0	0	0	0
Petrol used (m3)		0	0	0	0	0	0	0	0	0
Fuel efficiency (litres/100km)		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
gCO2e/km (manufacturer)		174	174	174	174	174	0	0	0	0
tCO2e diesel combustion		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
tCO2e diesel upstream		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
tCO2e petrol combustion		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
tCO2e petrol upstream		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total tCO2e		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
gCO2e/km (actual, inc upstream)		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Commission vehicles fixed asset emissions (tonnes CO2e)						**0**	**0**	**0**	**0**	**0**

TRAVELS

tonnes CO_2e emissions

	2014	2015	2016	2017	2018	NEW CATEGORIES	2019	2020	2021	2022
Brussels						**Brussels**				
Air travel	50 044	44 044	44 507	44 993	45 617	Air travel (economy)	13 795	1 965	1 922	7 420
						Air travel (not economy)	20 607	3 415	2 301	12 369
Air taxi(and helicopter)	132	308	328	501	453	Air taxi(and helicopter)	449	993	1 301	1 122
Rail	132	233	182	175	157	Rail	512	105	108	326
Hired car	178	170	183	117	114	Non rail surface travel 1 – Commission vehicle fleet	578	238	343	599
Private car	505	510	512	481	484	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	613	158	203	438

	2014	2015	2016	2017	2018	NEW CATEGORIES	2019	2020	2021	2022
Total	**50 991**	**45 264**	**45 712**	**46 267**	**46 824**		**36 554**	**6 874**	**6 179**	**22 274**
Luxembourg						**Luxembourg**				
Air travel	2 067	1 752	1 691	1 611	1 878	Air travel (economy)	977	221	195	452
						Air travel (not economy)	446	41	8.22	192
Air taxi(and helicopter)						Air taxi(and helicopter)	0.05	0.00	2.02	0.00
Rail	8.79	9.86	6.23	6.39	5.33	Rail	71	18	13	28
Hired car	396	427	470	421	391	Non rail surface travel 1 – Commission vehicle fleet	234	81	74	144
Private car	126	133	157	145	158	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	386	174	173	240
Total	**2 597**	**2 322**	**2 324**	**2 183**	**2 432**		**2 116**	**536**	**465**	**1 056**
Petten						**Petten**				
Air travel	418	308	197	216	226	Air travel (economy)	131	8.6	3.4	48
						Air travel (not economy)	59	15.28	0.15	11.88
Air taxi(and helicopter)						Air taxi(and helicopter)	0.00	0.00	0.00	0.00
Rail	1.21	2.83	1.11	1.46	1.66	Rail	12.79	2.47	0.29	3.43
Hired car	2.03	3.79	4.34	1.89	0.00	Non rail surface travel 1 – Commission vehicle fleet	3.40	0.12	0.28	0.54
Private car	1.24	6.70	11.35	12.63	12.00	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	12.57	1.76	0.39	4.35
Total	**422**	**321**	**213**	**232**	**239**		**219**	**28**	**4.5**	**69**
Geel						**Geel**				
Air travel	602	395	496	412	413	Air travel (economy)	102	9.5	3.0	26
						Air travel (not economy)	142	14	0.00	32
Air taxi(and helicopter)						Air taxi(and helicopter)	0.00	0.00	0.00	0.00
Rail	1.93	1.51	2.03	1.98	1.29	Rail	6.42	0.97	1.10	2.23
Hired car	0.11	5.51	3.81	4.07	4.21	Non rail surface travel 1 – Commission vehicle fleet	6.73	0.91	0.66	3.42
Private car	6.77	6.61	6.15	6.36	5.65	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	14.28	2.06	5.88	8.08
Total	**611**	**408**	**508**	**425**	**424**		**272**	**27**	**11**	**71**
Seville						**Seville**				
Air travel	465	636	654	662	570	Air travel (economy)	470	71	18	294
						Air travel (not economy)	160	29	0.00	78
Air taxi(and helicopter)						Air taxi(and helicopter)	0.00	0.09	0.05	0.00
Rail	1.05	2.76	2.00	1.57	0.03	Rail	8.39	1.71	1.17	6.18
Hired car	0.33	0.79	0.58	0.37	0.92	Non rail surface travel 1 – Commission vehicle fleet	2.35	0.82	0.00	1.41
Private car	0.89	0.82	0.57	0.78	0.63	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	9.50	2.98	0.81	7.96
Total	**468**	**640**	**657**	**664**	**572**		**651**	**105**	**20**	**387**
Karlsruhe						**Karlsruhe**				
Air travel	322	293	263	290	291	Air travel (economy)	129	16	6.5	38

	2014	2015	2016	2017	2018	NEW CATEGORIES	2019	2020	2021	2022
						Air travel (not economy)	147	25	0.00	42
Air taxi(and helicopter)						Air taxi(and helicopter)	0.46	0.00	0.00	0.00
Rail	2.83	6.55	5.34	4.82	4.29	Rail	14.38	2.85	2.43	6.28
Hired car	56	60	75	58	61	Non rail surface travel 1 – Commission vehicle fleet	5.35	0.74	0.39	1.42
Private car	39	32	34	37	32	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	50	18	18	27
Total	**420**	**391**	**378**	**391**	**388**		**346**	**63**	**27**	**115**
Ispra						**Ispra**				
Air travel	274	2 282	1 916	1 961	2 091	Air travel (economy)	1 133	157	46	418
						Air travel (not economy)	968	149	4.0	374
Air taxi(and helicopter)						Air taxi(and helicopter)	0.05	0.00	0.00	0.00
Rail	23	28	23	23	25	Rail	26.18	5.00	1.38	12.75
Hired car	45	13	11	11	12	Non rail surface travel 1 – Commission vehicle fleet	41	12.29	15.90	14.77
Private car	109	135	111	114	121	Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	61	17.12	10.08	26
Navette	224	236	233	238	244		38	5.10	3.00	17.13
Total	**674**	**2 694**	**2 294**	**2 347**	**2 493**		**2 268**	**346**	**81**	**863**
Grange						**Grange**				
Air travel	1 142	853	953	927	747	Air travel (economy)	316	44	28	171
						Air travel (not economy)	372	182	0.00	320
Air taxi(and helicopter)						Air taxi(and helicopter)	0.00	0.00	0.00	0.00
Rail	0.39	1.39	1.46	0.26	0.42	Rail	4.73	0.43	0.79	1.43
Hired car	7.02	5.54	10.61	7.02	6.83	Non rail surface travel 1 – Commission vehicle fleet	56	3.78	2.03	14.88
Private car						Non rail surface travel 2 – hire cars, private vehicles, boat, bus, shuttle	12.10	2.35	3.48	13.07
Total	**1 150**	**860**	**965**	**934**	**754**		**761**	**232**	**35**	**520**

Annex 8. Telework

Introductory information

The data is provided for all EMAS registered sites, including the EC Representations in Member States (Vienna, Valetta, Nicosia, Budapest) as it was evaluated as a combined exercise.

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

TCO_2e	Space heating	Space cooling	Equipment electricty use	Video-conferencing	Fixed assets	Paper	Waste
Brussels	99	0.1	38.7	11.4	14.5	0.33	18.9
Luxembourg	146	0.7	40.3	10.4	10.0	0.26	20.3
JRC Petten	76.4	0.6	99.7	12.4	5.9	0.20	11.5
JRC Geel	72.7	0.1	26.7	6.5	6.2	0.17	13.4
JRC Seville	28.5	0.8	70.2	12.1	3.9	0.11	5.6
JRC Karlsruhe	56.8	0.1	26.3	6.8	0.1	0.59	0.0
JRC Ispra	53.4	1.1	51.5	9.0	3.1	0.26	7.1
Grange	91.3	0.9	108.4	8.7	3.5	0.35	3.5
Vienna	27.06	0.0	13.3	4.6	0.0	0.12	10.6
Malta	5.71	8.5	66.9	8.7	0.0	0.23	4.7
Budapest	98.79	0.6	54.0	10.1	0.0	0.27	15.4
Nicosia	21.32	11.3	91.1	6.8	0.0	0.18	3.5

Table 1 Summary of teleworking emissions, 2018 - 2022

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Space heating	548	549	6 124	6 683	4 119	92	94	1217	1265	777
Space cooling	1.3	1.5	14.3	13.2	11.0	1.3	1.6	33.2	36.6	24.9
Equipment electricty use	202	223	2475	2241	1641	67	75	979	908	687
Videoconferencing	52	57	601	689	449	10.7	12.1	160.2	168	107
Fixed assets	0	0	0	420	518	0	0	0	40	47
Paper	1.5	1.6	17.4	19.9	12.9	0.3	0.3	4.9	4.9	3.1
Waste	116	126	996	1 113	734	20	24	193	183	115
Total	921	959	10 228	11 178	7 485					

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.

Total emissions caused by telework

	Totals (tCO2e)					Per capita (kgCO2e/p)					Per teleworker (kgCO2e/p)				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Brussels	574	602	7952	8732	5664	20.1	20.8	266	285	183	324	312	367	344	337
Luxembourg	299	302	1418	1662	1299	59.5	58.7	271	299	228	400	363	364	340	380
JRC Petten	6	7	63	66	48	23.9	29.9	255	276	207	373	369	352	290	379
JRC Geel	3	4	72	71	33	12.3	15.8	272	269	126	335	322	379	349	326
JRC Seville	2	3	48	36	37	7.3	10.1	154	119	121	201	236	215	169	242
JRC Karlsruhe	1	1	95	96	41	3.1	3.3	250	246	102	316	323	350	409	304
JRC Ispra	30	34	520	447	313	13.1	14.5	216	181	126	310	301	292	268	284
Grange	5	5	46	57	42	28.9	27.0	266	318	229	413	403	370	318	383
Vienna	0	0	4	2	1	4.7	9.1	141	102	56	238	233	233	227	214
Malta	0	0	2	2	1	13.7	13.6	134	149	95	195	195	216	220	193
Budapest	0	0	4	4	4	7.9	4.3	164	202	171	379	327	315	311	298
Nicosia	0	0	4	3	2	0.7	2.3	215	188	134	388	373	385	375	350

Table 1a Space heating emissions by site

	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Brussels	350	358	4776	5180	3065	12	12	159	169	99
Luxembourg	178	168	955	1136	832	35	33	182	204	146
JRC Petten	2.1	2.6	23.3	26.1	17.6	8.4	10.3	94.2	108.7	76.4
JRC Geel	2.0	2.6	45.4	44.5	19.2	7.8	9.8	170.5	169.3	72.7
JRC Seville	0.5	0.6	10.9	11.4	8.7	1.5	2.0	35.2	37.5	28.5
JRC Karlsruhe	0.5	0.6	53.5	48.0	22.9	1.6	1.7	139.9	123.1	56.8
JRC Ispra	13.0	14.1	234.9	205.1	133.3	5.7	6.1	97.4	82.9	53.4
Grange	2.1	1.9	20.8	27.3	16.6	11.9	10.6	120.4	153.1	91.3
Vienna	0.08	0.16	1.90	1.17	0.64	2.40	4.71	72.91	53.19	27.06
Malta	0.01	0.01	0.13	0.13	0.08	0.85	0.68	8.74	9.47	5.71
Budapest	0.10	0.06	2.41	2.70	2.12	4.27	2.50	100.35	122.95	98.79
Nicosia	0.00	0.01	0.60	0.47	0.33	0.11	0.34	35.36	31.17	21.32

Table 1b Space cooling emissions by site

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Brussels	0.25	0.27	5.75	5.29	3.30	0.0	0.0	0.2	0.2	0.1
Luxembourg	0.75	0.90	3.65	3.27	4.13	0.2	0.2	0.7	0.6	0.7
JRC Petten	0.01	0.02	0.16	0.15	0.14	0.0	0.1	0.6	0.6	0.6
JRC Geel	0.00	0.00	0.05	0.05	0.02	0.0	0.0	0.2	0.2	0.1
JRC Seville	0.01	0.02	0.29	0.16	0.25	0.0	0.1	0.9	0.5	0.8
JRC Karlsruhe	0.00	0.00	0.13	0.20	0.06	0.0	0.0	0.3	0.5	0.1
JRC Ispra	0.21	0.29	3.64	3.49	2.64	0.1	0.1	1.5	1.4	1.1
Grange	0.02	0.02	0.16	0.19	0.16	0.1	0.1	0.9	1.1	0.9
Vienna	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0
Malta	0.01	0.01	0.13	0.19	0.12	0.7	0.8	8.8	14.3	8.5
Budapest	0.00	0.00	0.01	0.02	0.01	0.0	0.0	0.2	0.7	0.6
Nicosia	0.00	0.00	0.32	0.25	0.18	0.1	0.2	18.7	16.5	11.3

Table 1c Equipment electricity use emissions by site

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Brussels	124	135	1891	1740	1197	4.4	4.7	63.2	56.9	38.7
Luxembourg	58	65	246	215	230	11.6	12.7	46.9	38.6	40.3
JRC Petten	2.9	3.6	31.0	28.4	22.9	11.5	14.6	125.4	118.3	99.7
JRC Geel	0.7	0.9	16.6	13.8	7.0	2.6	3.4	62.3	52.4	26.7
JRC Seville	1.3	1.9	28.2	15.7	21.5	4.1	6.1	91.2	51.3	70.2
JRC Karlsruhe	0.3	0.3	25.6	34.2	10.6	0.8	0.8	67.0	87.7	26.3
JRC Ispra	11.7	13.4	211.8	167.4	128.5	5.1	5.8	87.9	67.6	51.5
Grange	2.3	2.1	19.4	21.7	19.7	12.7	12.2	112.3	121.8	108.4
Vienna	0.04	0.07	0.79	0.48	0.31	1.1	2.1	30.2	21.9	13.3
Malta	0.15	0.15	1.49	1.44	0.94	9.9	10.0	99.6	106.5	66.9
Budapest	0.06	0.03	1.16	1.29	1.16	2.8	1.3	48.2	58.5	54.0
Nicosia	0.01	0.03	2.46	1.89	1.41	0.4	1.5	144.5	126.2	91.1

Table 1d Videoconferencing emissions by site

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Brussels	37	40	473	546	354	1.3	1.4	15.8	17.8	11.4
Luxembourg	13	14	70	86	59	2.5	2.7	13.3	15.5	10.4
JRC Petten	0.4	0.4	4.2	5.3	2.8	1.4	1.8	17.0	22.0	12.4
JRC Geel	0.2	0.2	3.3	3.5	1.7	0.6	0.8	12.6	13.3	6.5
JRC Seville	0.3	0.3	5.5	5.2	3.7	0.9	1.0	17.9	17.2	12.1
JRC Karlsruhe	0.1	0.1	5.7	4.8	2.7	0.2	0.2	14.9	12.3	6.8
JRC Ispra	1.9	2.2	37.6	34.6	22.4	0.8	1.0	15.6	14.0	9.0
Grange	0.2	0.2	1.9	2.6	1.6	1.0	0.9	10.8	14.7	8.7
Vienna	0.01	0.02	0.29	0.18	0.11	0.3	0.7	11.1	8.1	4.6
Malta	0.02	0.02	0.17	0.17	0.12	1.2	1.2	11.4	12.3	8.7
Budapest	0.01	0.01	0.23	0.26	0.22	0.4	0.2	9.6	11.7	10.1
Nicosia	0.00	0.00	0.17	0.14	0.11	0.0	0.1	10.2	9.0	6.8

Table 1e Fixed assets emissions by site

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	0	0	0	355	449	0	0	0	11.6	14.5
Luxembourg	0	0	0	53	57	0	0	0	9.5	10.0
JRC Petten	0	0	0	1.4	1.4	0	0	0	5.7	5.9
JRC Geel	0	0	0	1.6	1.6	0	0	0	6.2	6.2
JRC Seville	0	0	0	1.2	1.2	0	0	0	3.9	3.9
JRC Karlsruhe	0	0	0	0.1	0.1	0	0	0	0.1	0.1
JRC Ispra	0	0	0	7.8	7.8	0	0	0	3.2	3.1
Grange	0	0	0	0.0	0.6	0	0	0	0.0	3.5
Vienna	0	0	0	0.0	0.0	0	0	0	0.0	0.0
Malta	0	0	0	0.0	0.0	0	0	0	0.0	0.0
Budapest	0	0	0	0.0	0.0	0	0	0	0.0	0.0
Nicosia	0	0	0	0.0	0.0	0	0	0	0.0	0.0

Table 1f Paper use emissions by site

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	1.07	1.16	13.81	15.95	10.35	0.04	0.04	0.46	0.52	0.33
Luxembourg	0.32	0.35	1.74	2.15	1.47	0.06	0.07	0.33	0.39	0.26
JRC Petten	0.01	0.01	0.07	0.08	0.04	0.02	0.03	0.27	0.35	0.20
JRC Geel	0.00	0.01	0.09	0.09	0.05	0.02	0.02	0.33	0.35	0.17
JRC Seville	0.00	0.00	0.05	0.05	0.03	0.01	0.01	0.16	0.16	0.11
JRC Karlsruhe	0.01	0.01	0.49	0.42	0.24	0.02	0.02	1.29	1.07	0.59
JRC Ispra	0.06	0.06	1.09	1.00	0.65	0.02	0.03	0.45	0.41	0.26
Grange	0.01	0.01	0.08	0.11	0.06	0.04	0.04	0.44	0.60	0.35
Vienna	0.00	0.00	0.01	0.00	0.00	0.01	0.02	0.30	0.22	0.12
Malta	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.30	0.33	0.23
Budapest	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.25	0.31	0.27
Nicosia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.24	0.18

Table 1g Waste generation emissions by site

	Totals (tCO2e)					Per capita (kgCO2e/p)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	62	68	793	890	585	2.2	2.3	26.5	29.1	18.9
Luxembourg	49	53	142	167	116	9.7	10.2	27.1	30.0	20.3
JRC Petten	0.6	0.8	4.2	4.9	2.7	2.5	3.1	17.1	20.3	11.5
JRC Geel	0.3	0.5	7.0	7.1	3.5	1.3	1.7	26.2	26.9	13.4
JRC Seville	0.2	0.3	2.8	2.4	1.7	0.7	0.9	8.9	8.0	5.6
JRC Karlsruhe	0.2	0.2	10.0	8.1	4.6	0.0	0.0	0.0	0.0	0.0
JRC Ispra	3.1	3.7	31.5	27.5	17.7	1.3	1.6	13.1	11.1	7.1
Grange	0.6	0.6	3.6	4.8	2.9	0.4	0.9	11.0	6.6	3.5
Vienna	0.03	0.05	0.70	0.41	0.25	0.8	1.6	26.7	18.6	10.6
Malta	0.02	0.01	0.08	0.09	0.07	1.0	1.0	5.1	6.6	4.7
Budapest	0.01	0.01	0.14	0.17	0.15	0.1	0.2	25.0	21.2	15.4
Nicosia	0.00	0.00	0.10	0.07	0.05	0.0	0.1	5.8	4.7	3.5

Table 2 Telework energy use

	Totals (MWh)					Par capita (kWh/p)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	2 189	2 302	28 758	33 200	20 054	107	109	1346	1520	881
Luxembourg	1 013	1 012	5 637	6 966	4 546	298	279	1594	1856	1230
JRC Petten	14	17	159	200	113	64	79	741	958	588
JRC Geel	12	16	267	279	123	68	87	1439	1520	647
JRC Seville	7	8	146	138	98	13	16	299	287	222
JRC Karlsruhe	4	4	363	307	173	15	16	1288	1068	574
JRC Ispra	94	105	1 757	1 620	995	53	57	932	838	508
Grange	12	11	126	177	98	78	69	833	1136	591
Vienna	0.7	1.4	17.9	11.1	6.0	29	57	911	667	331
Malta	0.4	0.4	4.2	4.3	2.9	7	6	70	88	56
Budapest	0.7	0.5	17.7	20.0	15.4	42	26	1079	1326	1033
Nicosia	0.0	0.1	5.6	4.3	3.1	1	2	204	180	121
Total	3 347	3 477	37 258	42 926	26 229					

Table 3 Telework water use

	Totals (m^3)					Par capita (m3/p)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	7 328	7 989	94 746	109 380	70 977	0.3	0.3	3.2	3.6	2.3
Luxembourg	3 023	3 368	16 701	20 635	14 141	0.6	0.7	3.2	3.7	2.5
JRC Petten	51	64	603	757	409	0.2	0.3	2.4	3.2	1.8
JRC Geel	34	46	712	744	367	0.1	0.2	2.7	2.8	1.4
JRC Seville	46	54	939	889	628	0.1	0.2	3.0	2.9	2.1
JRC Karlsruhe	16	17	1 333	1 128	641	0.0	0.0	3.5	2.9	1.6
JRC Ispra	356	414	6 939	6 391	4 145	0.2	0.2	2.9	2.6	1.7
Grange	41	39	438	614	369	0.2	0.2	2.5	3.5	2.0
Vienna	3	5	67	42	25	0.1	0.2	2.6	1.9	1.1
Malta	4	4	40	39	28	0.3	0.3	2.6	2.9	2.0
Budapest	2	1	53	60	51	0.1	0.1	2.2	2.7	2.4
Nicosia			41	32	24	0.0	0.0	2.4	2.1	1.6
Total	10 903	12 002	122 611	140 712	91 806					

Table 4 Telework paper use

	Totals (tonnes)					Par capita (sheets/person/day)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	1.16	1.27	15.03	17.35	11.26	3.92	3.92	3.92	3.92	3.92
Luxembourg	0.34	0.38	1.89	2.34	1.60	3.10	3.10	3.10	3.10	3.10
JRC Petten	0.01	0.01	0.07	0.09	0.05	2.24	2.24	2.24	2.24	2.24
JRC Geel	0.00	0.01	0.10	0.10	0.05	2.98	2.98	2.98	2.98	2.98
JRC Seville	0.00	0.00	0.05	0.05	0.04	2.90	2.90	2.90	2.90	2.90
JRC Karlsruhe	0.01	0.01	0.54	0.45	0.26	4.86	4.86	4.86	4.86	4.86
JRC Ispra	0.06	0.07	1.18	1.09	0.71	4.00	4.00	4.00	4.00	4.00
Grange	0.01	0.01	0.08	0.12	0.07	2.56	2.56	2.56	2.56	2.56
Vienna	0.000	0.001	0.008	0.005	0.003	3.58	3.58	3.58	3.58	3.58
Malta	0.001	0.001	0.005	0.005	0.004	3.58	3.58	3.58	3.58	3.58
Budapest	0.000	0.000	0.005	0.004	0.003	3.58	3.58	3.58	3.58	3.58
Nicosia	0.000	0.000	0.007	0.007	0.006	3.58	3.58	3.58	3.58	3.58
Total	1.6	1.8	19.0	21.6	14.1					

Table 5 Telework waste generation

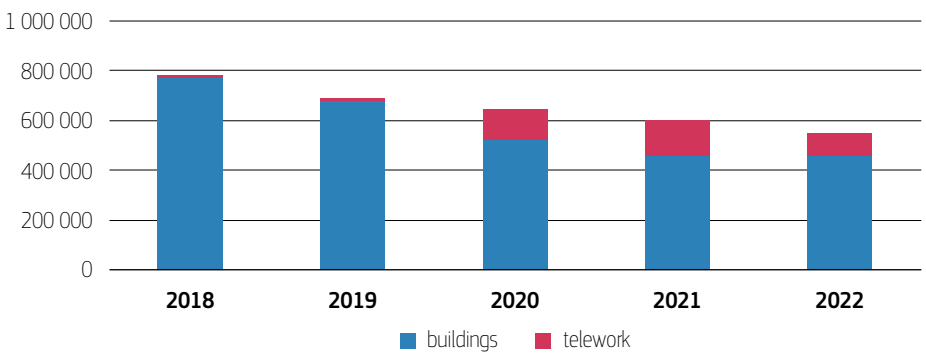
	Totals (tonnes)					Par capita (kg/p)				
	2018	**2019**	**2020**	**2021**	**2022**	2018	2019	2020	2021	2022
Brussels	129	141	1674	1932	1254	4.5	4.9	55.9	63.1	40.5
Luxembourg	109	118	326	384	263	21.7	22.9	62.3	69.1	46.2
JRC Petten	1.5	1.8	10.1	11.6	6.3	5.9	7.3	40.7	48.3	27.2
JRC Geel	0.7	0.9	14.7	15.3	7.6	2.7	3.6	55.2	58.3	28.7
JRC Karlsruhe	1.0	1.2	11.0	10.1	7.1	3.2	3.7	35.7	33.1	23.3
JRC Seville	0.4	0.4	18.6	15.0	8.5	1.1	1.1	48.6	38.5	21.2
JRC Ispra	8.0	9.3	84.1	73.6	39.6	3.5	4.0	34.9	29.7	15.9
Grange	1.3	1.3	8.3	11.1	6.7	7.1	7.3	48.3	62.5	36.7
Vienna	0.07	0.13	1.37	0.81	0.49	2.0	4.1	52.9	36.7	20.9
Malta	0.12	0.13	0.59	0.57	0.41	8.0	8.7	39.2	41.9	29.6
Budapest	0.00	0.01	0.52	0.37	0.29	0.2	0.6	30.3	24.8	18.6
Nicosia	0.03	0.02	0.52	0.58	0.49	1.4	0.9	21.7	26.1	22.6
Total	251	274	2 150	2 455	1 594					

Table 6 Total telework emissions (8 main sites only), for Figure 3.1

	2018	**2019**	**2020**	**2021**	**2022**
Brussels	574	602	7952	8732	5664
Luxembourg	299	302	1418	1662	1299
JRC Petten	5.9	7.4	62.9	66.2	47.5
JRC Geel	3.2	4.2	72.4	70.7	33.2
JRC Seville	2.3	3.2	47.7	36.2	37.1
JRC Karlsruhe	1.1	1.2	95.4	95.8	41.2
JRC Ispra	30.0	33.8	520.5	446.9	313.1
Grange	5.2	4.7	46.0	56.7	41.7
Total	**920**	**958**	**10 215**	**11 167**	**7 476**

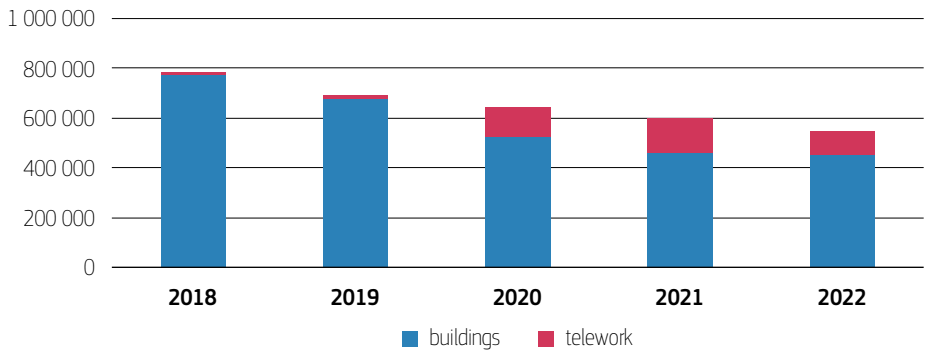
Total energy use (office and telework), (MWh)

	2018	**2019**	**2020**	**2021**	**2022**
office	388 905	391 304	353 307	359 770	303 849
telework	3 347	3 477	37 258	42 926	26 229
Total	392 251	394 781	390 565	402 696	330 078
% telework	0.9	0.9	10	11	8



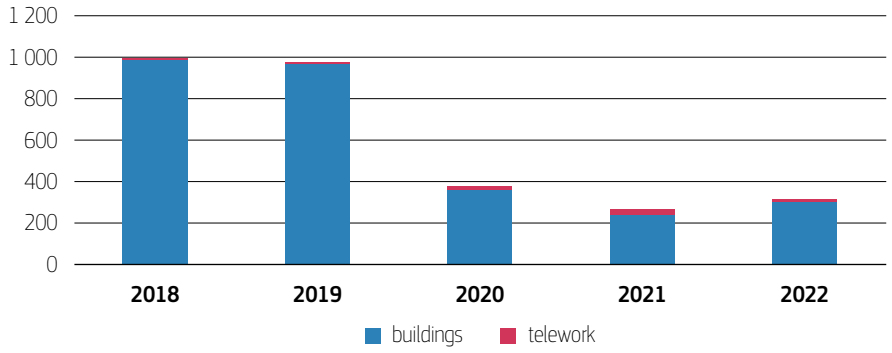
Total water use (office and telework), (m3)

	2018	2019	2020	2021	2022
buildings	771 246	677 152	523 307	458 859	454 893
telework	10 903	12 002	122 611	140 712	91 806
Total	782 149	689 155	645 918	599 571	546 698
% telework	1.4	1.7	19	23	17



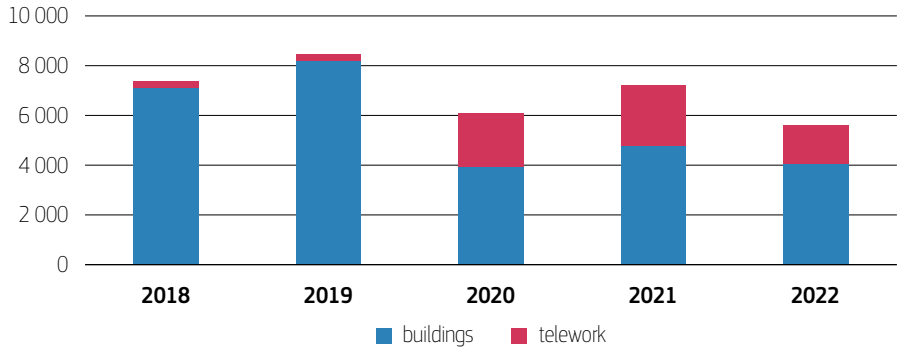
Total paper consumption (office and telework), (tonnes)

	2018	2019	2020	2021	2022
buildings	991	972	359	244	305
telework	2	2	19	22	14
Total	992	973	378	266	319
% telework	0.2	0.2	5	8	4



Total waste generation (office (non hazardous) and telework), (tonnes)

	2018	2019	2020	2021	2022
buildings	7 094	8 171	3 928	4 763	4 033
telework	251	274	2 150	2 455	1 594
Total	7 345	8 445	6 078	7 218	5 627
% telework	3.4	3.2	35	34	28



Annex 9. Scope of the Commission's EMAS system by site (2022)

A) Brussels

Bldg. Code	Address	Useful surface area (PEB, m²) (a)	Staff (a)	EMAS Registration status	Included in EMAS reporting?	Comment
B232	Rue Breydel 4	11 425	444	BXL 2009/016	yes	
B-28	Rue Belliard 28	14 843	1 198	BXL 2007/009	yes	
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	
BRE2	Avenue d'Auderghem 19	19 578	824	BXL 2005/002	yes	
BREY	Avenue d'Auderghem 45	35 868	784	BXL 2009/015	yes	
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	
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 du Cornet 41-45 Rue G.Leman 60	9 961	74	BXL 2011/026	yes	
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	
DAV1	Avenue de Bourget 1-3	12 567	96	BXL 2007/011	yes	
DM24	Rue Demot 24	15 758	502	BXL 2014/055	yes	
DM28	Rue Demot 28	11 638	353	BXL 2013/051	yes	
F101	Rue Froissart 101	8 268	227	BXL 2010/031	yes	
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	
J-27	Rue Joseph II 27	13 247	377	BXL 2009/019	yes	
J-30	Rue Joseph II 30	18 890	449	BXL 2009/020	yes	
J-54	Rue Joseph II 54	20 419	415	BXL 2007/012	yes	
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	
J-79	Rue Joseph II 79	16 400	396	BXL 2009/021	yes	
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	
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		no	Will enter in EMAS scope in 2023
L-56	Rue de la Loi 56	9 640	282	BXL 2012/046	yes	
L-86/L-84	Rue de la Loi 86	13 445	408	BXL 2011/032	yes	

Bldg. Code	Address	Useful surface area (PEB, m²) (a)	Staff (a)	EMAS Registration status	Included in EMAS reporting?	Comment
LX40	Rue de Luxembourg 40	7 926	221	BXL 2013/054	yes	
LX46 + MO59	Rue de Luxembourg 46	25 790	806	BXL 2010/023	yes	
MADO	Place Madou, 1	39 992	1 168	BXL 2014/058	yes	
MERO	Av. Tervuren, 41	13 651	425	2020	yes	
MO15	Rue Montoyer 15	11 968	524	2020	yes	
N105	Avenue des Nerviens 105	10 045	292	BXL 2010/025	yes	
NOHE	Chaussée de Vilvorde 142 1120 - Neder-Over-Heembeek	21 892	24		no	Will enter in EMAS scope in 2023
ORBN	square Frère Orban, 8	24 820	697	BXL 2014/059	yes	
OVER	Dennenboslaan, 54- 3090 OVERIJSE	2 600	7	VL/2015/003	yes	
PALM	Avenue Palmerston 6-14	2 403	0		no	Empty building plannned for sale
RP14	Rond-poinr Schuman 14	530	0			Exhibition space
PLB3	Philippe Le Bon 3	17 432	145	BXL 2015/060	yes	
SC11	Rue de la Science 11	9 158	414	BXL 2005/008	yes	
SPA2	Rue de SPA 2	19 483	451	BXL 2012/047	yes	
SPA3	Rue de Spa 3	12 044	502	BXL 2012/048	yes	
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	
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	1257		no	Staff formerly working in Commission buildings now in non Commission accommodation, not considered in the system
Summary (*)	Buildings registered in EMAS, (No)			48		Including external verification in 2023
	Total 'useful area' of buildings registered in EMAS (sq.m)			992 390		
	Staff in buildings registered in EMAS			30 928		
	Total number of buildings			54		
	Total 'useful area' of buildings (sq.m)			1 043 355		
	Total number of staff			30 928		

(*) 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?	Comment
ARIA	Route d'Esch 400, L-1471	13 624	527	BXL 2009/016	yes	

Bldg. Code	Address	Useful surface area (PEB, m²) (a)	Staff (a)	EMAS Registration status	Included in EMAS reporting?	Comment
BECH	Rue Alphonse Weicker 5, L-2721	34 060	811	BXL 2007/009	yes	
CPE 1 et 2	Rue Albert Borschette 1, L-1246	4 370	11	BXL 2005/001	yes	Will be replaced
CPE 3	Rue Albert Borschette 5, L-1246	5 218	59	BXL 2005/002	yes	
CPE 5	Rue Gaston Thorn 6, L-8268	10 895	32	BXL 2009/015	yes	
DRB	Rue Guillaume Kroll 12, L-1882	27 124	906	BXL 2008/013	yes	
EUFO	Rue Robert Stumper 10, L-2557	26 098	551	BXL 2012/044	yes	
FOYER (HEI)	Rue Heinrich Heine 10-12, L-1720	1 192	5	BXL 2011/033	yes	
HTC	Rue Eugène Ruppert 11, L-2453	4 194	86	BXL 2011/034	yes	Abandonned end 2022
LACC	Rue Eugène Ruppert 18-20, L-2453	11 292	401	BXL 2011/035	yes	
T2	Rue Pierre Frieden 1-7, L-1543	15 342	453	BXL 2005/003	yes	
MER	Rue Mercier 2, L-2985	19 626	579	n/a	yes	Abandonned mid 2023
FISR	Rue Adolphe Fischer 135-137 L- 1521	3 526	12	BXL 2013/049	yes	
HTC (DC)	Rue Eugène Ruppert 11, L-2453	252		BXL 2009/017	yes	Abandonned end 2022
WIND (DC)	Rue Pierre Flammang 3, L-8399	1 206	6	BXL 2013/050	yes	
WIND - Telecom Centre	Rue Pierre Flammang 3, L-8399	274		BXL 2014/055	yes	
BETZ (DC)	Parc Audiovisuel et des Télécommunications, L-6832 Betzdorf	2 384	4	BXL 2011/026	yes	
PXEL	Virtual buildings for externl prestataires	n/a	162		no	
Summary (*)	Buildings registered in EMAS, (No)			15		Including external verification in 2023
	Total 'useful area' of buildings registered in EMAS (sq.m)			156 681		
	Staff in buildings registered in EMAS			5 108		
	Total number of buildings			17		
	Total 'useful area' of buildings (sq.m)			180 677		
	Total number of staff			5698		

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, m^2) (a)	Staff (a)	EMAS Registration status	Included in EMAS reporting?	Comment on scope including exclusions
JRC Petten	Petten, Westerduinweg, 3			NL-001	yes	Nuclear reactor not in scope, run by NRG (Nuclear Research and Consultancy Group)
JRC Geel	Geel, Retieseweg, 111	50 650	264	VL-001	yes	B180 (heating building managed by VITO) out of EMAS
JRC Seville	41092 Sevilla, Calle Inca Garcilaso, 3	8 039	403	ES-001	yes	No exclusions
JRC Karlsruhe	Eggenstien Leopoldshafen, Hermann von Helmholtz Platz, 1	43 710	306	DE-001	yes	No exclusions
JRC Ispra	Ispra, Via Enrico Fermi, 2749	1 592 231	2 494	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			IE-001	yes	No exclusions

(a) Indicative figures.
(*) Excluding EC Representations in Member States (see separate Annex).

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