



EUROPEAN COMMISSION

Environmental Management System



# Environmental Statement 2022

## 2021 Results

### Corporate Summary



## Foreword

The Commission's *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. Russia's unjustified and unprovoked war against 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<sub>2</sub> 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. Its commitment to reduce the environmental impact of its everyday activities was established in 2005 when it became the first EU Institution to achieve EMAS registration. Initially limited to Brussels, the scheme now includes its eight largest sites in Europe: Brussels, Luxembourg, Joint Research Centres Geel (Belgium), Petten (The Netherlands), Seville (Spain), Karlsruhe (Germany), and Ispra (Italy), along with Directorate General SANTE at Grange (Ireland). It is gradually being extended to premises of the Commission representations in EU Member States that are shared with the European Parliament's Liaison Offices, and collectively known as the Houses of Europe. Those of Vienna and Valletta were the first to achieve registration.

This Corporate Summary of the Environmental Statement includes Commission results up to 2021, aggregated across the eight larger sites. Due in part to the COVID pandemic, by 2021, the Commission had largely exceeded its targets for most core indicators, as was already the case in 2020. While increasing in geographical scope, the system continued to evolve in 2021, with improvements in the reporting such as incorporating emissions from teleworking and from experts' travel.

Longer-term targets (to 2030) for the Commission's core EMAS performance parameters were updated. First results show encouraging trends. However, achieving the 2030 targets will require full implementation of the action plan on greening the Commission.



Gertrud Ingestad

A handwritten signature in blue ink, consisting of stylized initials and a surname, positioned above a thin horizontal line.

Director-General  
President of the EMAS Steering Committee

## EMAS IN EC TODAY



EXTERNAL STAKEHOLDERS



**39 000**  
STAFF & CONTRACTORS

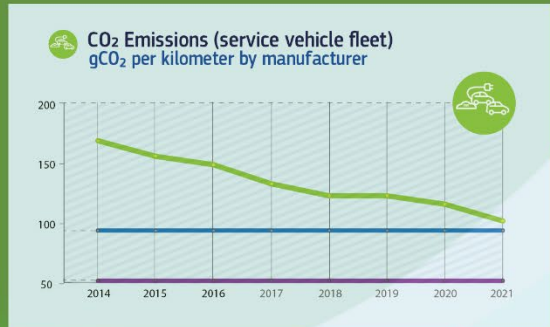
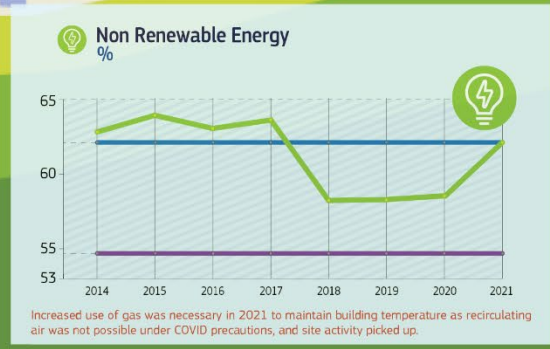
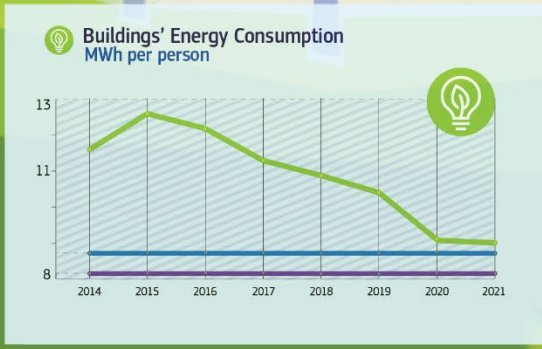
**1,6 Million m<sup>2</sup>**  
BUILDINGS' SURFACE

**10 sites**  
9 COUNTRIES

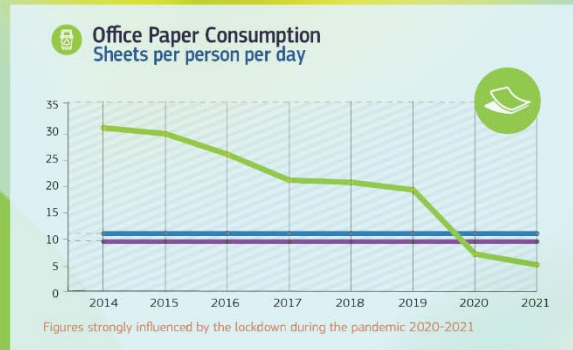
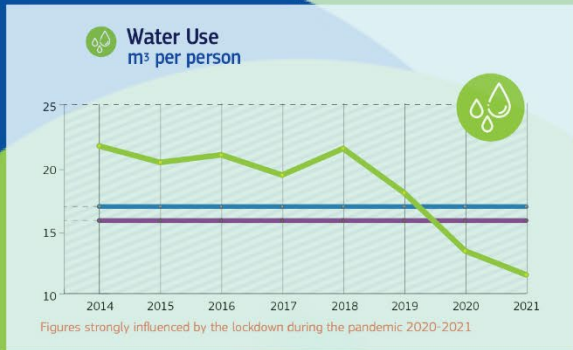
INTERESTED PARTIES

## COMMISSION'S ENVIRONMENTAL RESULTS 2014-2021 (VERSUS 2023 and 2030 OBJECTIVES)

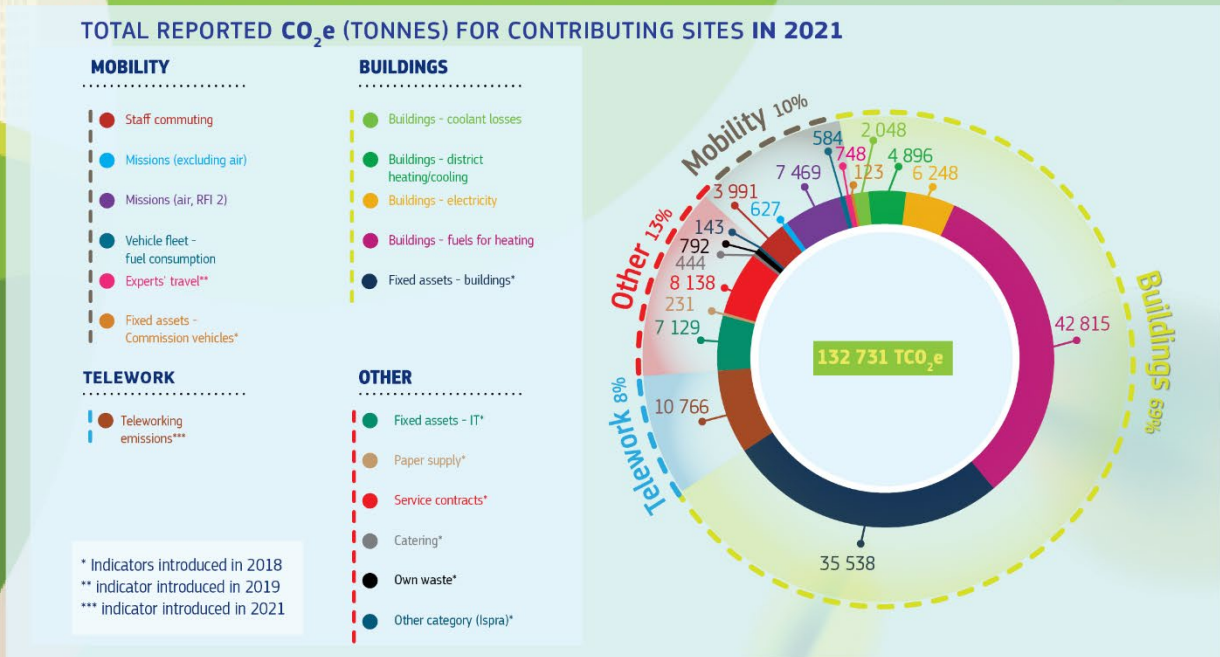
— Target 2014 - 2023 — Target 2014 - 2030 — Commission







## COMMISSION'S CARBON FOOTPRINT (EMAS PERIMETER)



## EMAS IS ALSO ABOUT ...

Legal compliance

Employee involvement

Management commitment

Communication

Leading by example

## Progress in implementing the EU's Eco Management and Audit Scheme (EMAS)

**1) Current system scope:** The Commission's EMAS system encompasses its services, including the Executive Agencies located at its eight largest sites in Europe plus, since 2021, some EC Representations in the Member States:

- The main administrative sites of Brussels and Luxembourg
- The five Joint Research Centre sites beyond the headquarters in Brussels: Petten (Netherlands), Geel (Belgium), Seville (Spain), *Karlsruhe (Germany)*<sup>(1)</sup>, Ispra (Italy)
- DG SANTE at Grange (Ireland)
- Following DG COMM's decision in 2020 to extend EMAS to the Representations in Member States (also known collectively with the European Parliament (EP) Liaison Offices (EPLO), as **Houses of Europe** (HoE)), starting with Valletta and Vienna. EMAS will be implemented jointly at the level of the Houses of Europe. EMAS will gradually extend to more locations starting with those that the Commission or EP owns, with the HoEs of Budapest and Nicosia next to be included

While Brussels, DG SANTE at Grange and JRC Seville host mainly administrative buildings, the remainder also have laboratories, the JRCs in particular have extensive technical infrastructure.

**2) Changes in this report:** The system has been relatively stable in geographic scope in recent years. Improvements incorporated in 2021 reporting are:

- Consideration of the impact of teleworking emissions in a structured way following an

introductory discussion of possible approaches in 2020; and

- Consideration of the travel emissions of experts whose expenses are reimbursed by the Commission
- Consideration of targets to 2023 and 2030 for core parameters, that were formulated prior to data for 2021 becoming available, and which in some cases were already met.

**3) Performance against 2023 and 30 targets for EMAS core indicators:** The general positive trend observed for most core parameters up to 2019 accelerated in 2020 and in 2021 with final performance sometimes exceeding 2023 targets as shown below, in large part due to staff absence during the COVID pandemic. A clearer picture will emerge in the next few years when the situation of a new hybrid way of working will be stabilized.

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<sup>(1)</sup> Owing to logistical constraints, JRC Karlsruhe was not subject to a verification audit in 2022

## Corporate Summary

No	Indicator *	Commission performance (%)		Future targets*			
		Target* 2014-20	Performance 2014-21	2014 to 2023	2030	2019 to 2023	2030
1a	Total energy consumption (Bldgs) - MWh/p	-5.2	-23	-21	-31	-12	-22
1a	Total energy consumption (Bldgs) - kW/m <sup>2</sup>	-5.2	-7	6,7	-6,6	-2,1	-14
1c	Non renewable energy (bldgs) - %	-3.3	-1.1	1,5	-8,2	8,7	-1,6
1d	Water consumption - m <sup>3</sup> /p	-5.4	-47	-21	-25	-5	-10
1d	Water consumption - L/m <sup>2</sup>	-4.8	-36	3	-3,5	0,8	-5,5
1e	Office paper consumption - Sheet/p/day or T/p	-34	-84	-47	-56	-15	-29
2a	CO <sub>2</sub> emissions (bldgs.) - TCO <sub>2</sub> /p	-5.1	-32	-33	-49	1	-22
2a	CO <sub>2</sub> emissions (bldgs.) - kgCO <sub>2</sub> /m <sup>2</sup>	-5.2	-20	-11	-32	-6,5	-29
2c	CO <sub>2</sub> emissions (vehicles) - gCO <sub>2</sub> /km (manufacturer spec.)	-14	-40	-43	-67	-20	-54
3a	Non hazardous waste - T/p	-9.7	-52	-26	-31	-11	-16
3c	Unseparated waste (%)	-6.0	-48	-2,1	-4,0	0,6	-1,3
3c	Unseparated waste (T/p)**		-74	-22	-24	-14	-17

Note: \*Global Annual Action Plan 2022; \*\*New parameter since 2020

**4) The trends in Commission performance** (totals for selected core parameters) shown in the graphs below indicate that:

- Compared to 2020, some parameters like heating and non-hazardous waste generation increased. This is for various reasons such as the increase in ventilation as a Covid measure and in generation of furniture and contractors' waste.
- Other parameters continue the decrease started in 2020 mainly due to pandemic and low presence at the office

**5) New policy framework** On 5<sup>th</sup> April 2022, the College of Commissioners adopted the new HR Strategy and a Communication on Greening the Commission. The main objective is to reduce CO<sub>2</sub> emissions by at least 60% by 2030 compared to 2005 and to compensate the remaining emissions in 2030 with carbon removals. These new targets are being integrated into the EMAS process.

The COVID pandemic has accelerated a move towards digital working, more rational use of buildings, and led to a

large reduction in missions. This year teleworking emissions were added to the carbon footprint.

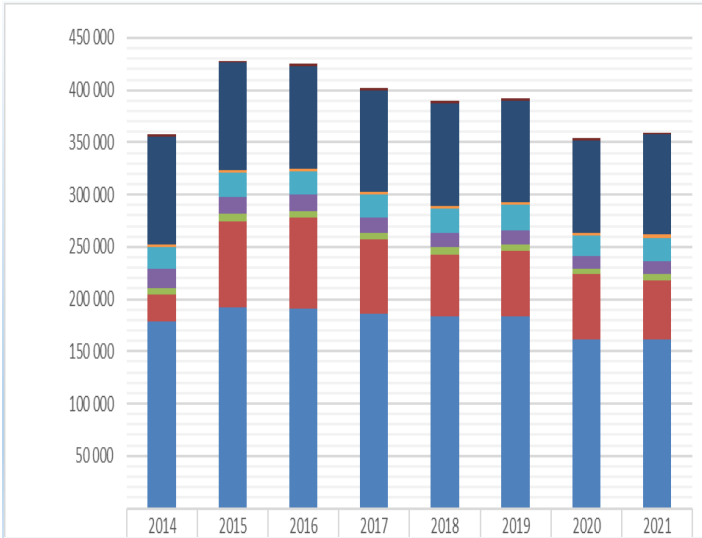
**6) Impact of teleworking:** The additional emissions associated with teleworking are estimated at 10.800 tonnes CO<sub>2</sub>e, including space heating/cooling, electricity, videoconferencing and embodied emissions of IT equipment. Teleworking emissions are estimated at 8% of the total carbon footprint

**7) Going forward:** High on the agenda for 2022 and beyond will be the need to:

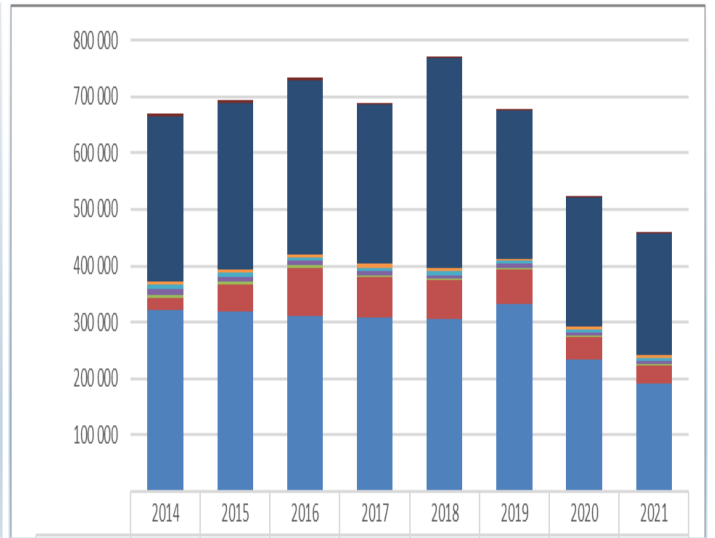
- Contribute to the GHG emissions reduction strategy for 2030 under the Green Deal and the subsequent Greening the Commission Communication
- Continue to integrate EC representations in Member States
- Continue to refine the approach to estimating the impact of teleworking

COMMISSION PERFORMANCE AT THE EMAS SITES, EVOLUTION OF KEY RESOURCE PARAMETERS

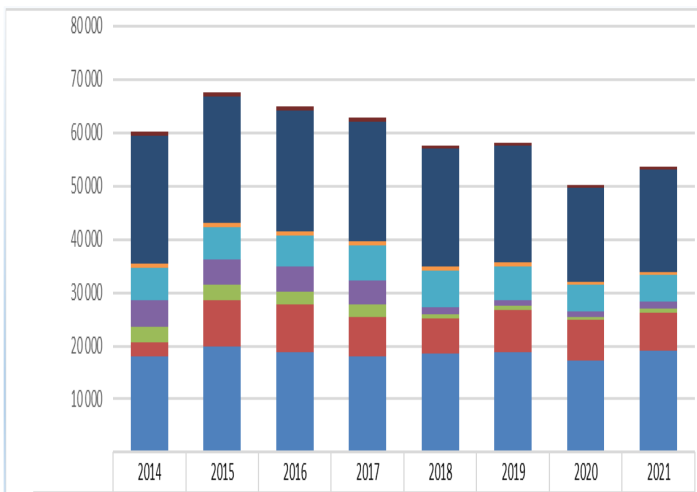
Buildings' energy consumption (MWh)



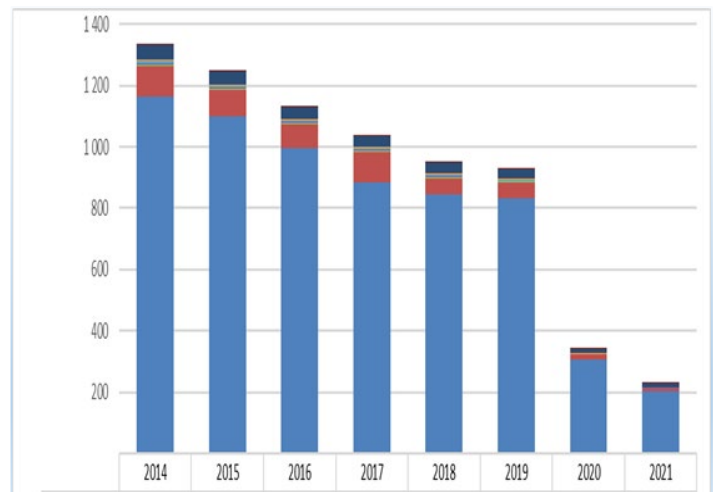
Water use (m3)



Emissions from buildings' energy use (tonnes CO<sub>2</sub>e)



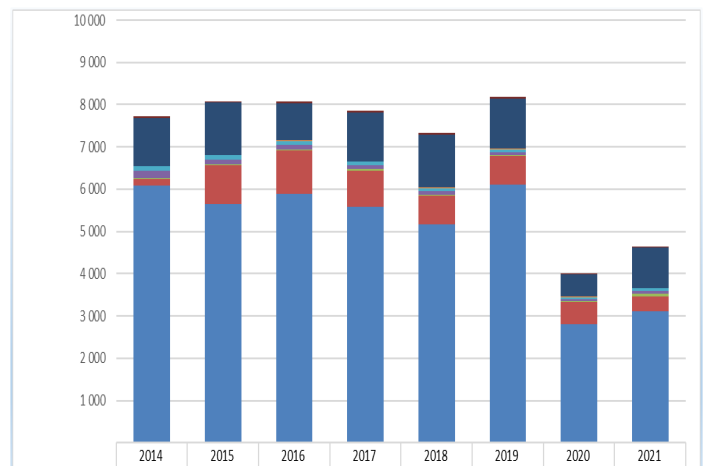
Office paper consumption (tonnes)



Legend

- Grange
- JRC Ispra
- JRC Seville
- JRC Karlsruhe
- JRC Geel
- JRC Petten
- Luxembourg
- Brussels

Non-hazardous waste generation (tonnes)



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# Verification and validation declaration (insert at end of verification)

## AENOR

### ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

**AENOR INTERNACIONAL, S.A.U.**, with EMAS environmental verifier registration number ES-V-0001, accredited for the scopes: 99 "Activities of extraterritorial organisations and bodies", 84.1 "Administration of the State and the economic and social policy of the community", 71.2 "Control activities and technical analysis", 72.1 "Research and experimental development in natural sciences and engineering", 72.2 "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 Code) declares

to have verified the sites as indicated in the environmental statement of **EUROPEAN COMMISSION**, with registration number BE-BXL-000003

meet all requirements of Regulation (EC) N° 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS), amended by Regulation (EU) 2017/1505 and Regulation (EU) 2018/2026.

By signing this declaration, I declare that:

- the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) N° 1221/2009 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) N° 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, on December 30, 2022

Signature



Rafael GARCÍA MEIRO  
Chief Executive Officer

## Corporate Summary

ANNEXES A TO I ARE THE SITE REPORTS VALIDATED SEPARATELY DURING THE VERIFICATION AUDITS AT EACH SITE, BUT WITH COMMON STRUCTURE AND PAGE NUMBERS AS FOLLOWS:

		Annex A: Brussels	ANNEX B Luxembourg	ANNEX C: JRC Petten	ANNEX D: JRC Geel	ANNEX E: JRC Seville	ANNEX F: JRC Karlsruhe <sup>(?)</sup>	ANNEX G: JRC Ispra	ANNEX H: Sante at Grange	ANNEX I: DG COMM (EC Reps in Member States)
1	Overview of core indicators	A4	B4	C3	D3	E3	F3	G4	H4	I9
2	Description of activities, context, stakeholders	A5	B6	C5	D5	E5	F5	G5	H5	I8
3	Environmental impact of activities	A8	B9	C10	D12	E8	F15	G15	H8	I9
4	More efficient use of natural resources	A9	B9	C11	D14	E9	F16	G16	H10	I11
5	Reducing carbon footprint and air emissions	A15	B13	C16	D21	E13	F22	G24	H13	I16
6	Improving waste management and sorting	A22	B18	C23	D29	E18	F29	G35	H18	I21
7	Promoting biodiversity	A26	B20	C25	D33	E21	F31	G41	H19	I23
8	Green public procurement	A26	B20	C26	D36	E22	F33	G45	H21	I24
9	Legal compliance and emergency preparedness	A27	B21	C26	D38	E23	F33	G47	H22	I25
10	Communication	A29	B23	C26	D40	E24	F35	G49	H23	I26
11	Training	A29	B23	C27	D42	E25	F36	G52	H24	I27
12	EMAS costs and savings	A29	B24	C28	D43	E26	F37	G52	H24	I27
13	Conversion factors	A29	B24	C29	D44	E26	F37	G53	H25	I27
14	Summary buildings table (optional)	A30	B25	C29	D44			G54	H26	I28

<sup>(?)</sup> Although JRC Karlsruhe was not subject to verification audit in 2022, reporting is included to permit follow-up overall Commission trends

# 1 Introduction and background information

## 1.1 About this Environmental Statement

The European Commission (EC), implements the Eco-Management and Audit System (EMAS) Regulation <sup>(3)</sup> which requires organisations to publish an Environmental Statement (ES). The EC achieved its first EMAS registration in 2005 which covered part of its activities in Brussels.

The EC has since expanded the scope of its EMAS registration considerably and developed a site based approach. This ES, which reports on 2021 activities, is the basis for the EMAS registration update for the EC's eight main sites in Europe plus the European Commission's Representations in Member States as listed in Table 1.1 in their order of incorporation into the EC's EMAS registration.

General Remark: it was not possible to perform the external verification audit at the JRC Karlsruhe site in 2022. Therefore the site is not included in the EMAS registration scope for 2022. The data of the site were not verified, nevertheless and considering that the site should verify its data in 2023, we have maintained the information in the corporate volume to allow the reader to evaluate the trends of the European Commission as a whole.

**Table 1.1 Commission sites included in the EMAS registration**

Country	Commission site	For further detail, see Annex
Belgium	Brussels (EC main administrative centre, with over 40 Directorates and Services and six Executive Agencies*), with buildings located in the Brussels Region and in Flanders. (further detail in Annex A)	A
Luxembourg	Luxembourg (EC second administrative centre)	B
Netherlands	JRC Petten, (near Alkmaar)	C
Belgium	JRC Geel, (east of Antwerp)	D
Spain	JRC Seville	E
<i>Germany</i>	<i>JRC Karlsruhe**</i>	<i>F</i>
Italy	JRC Ispra (near Milan)	G
Ireland	Facility of the Directorate General of Health and Food Safety,	H

<sup>(3)</sup> 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), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC.

## Corporate Summary

	located at Grange, near Trim, County Meath (DG SANTE Grange)	
Malta, Austria	DG COMM's*** EC Representations in Valletta and Vienna	I

### Note:

- \* The six Executive Agencies manage budgets of the policy instruments developed by their 'parent' Directorates
- \*\* Site not subject to external verification in 2022, therefore not formally part of the EMAS registration for that year
- \*\*\* DG Communication (DG COMM) manages the Commission's representations in EU Member States,

This ES was produced in two phases:

- **Phase 1:** Separate reports were prepared for each of the eight sites (and DG COMM's representations), as Annexes A to I of this report. The same structure was adopted for reporting at each site; and
- **Phase 2:** The site data was aggregated where possible to produce Commission results which are described in Chapter 2 of this report. Most of the data aggregated for Commission level reporting in this volume is from the eight main site annexes. Data from the EC Representations will be more fully integrated into the corporate summary when it is available for a larger number of sites, to avoid frequent incremental increases in the EMAS perimeter that could lead to a misinterpretation of results.

The remainder of this chapter provides information on EC activities and its environmental management system, as required by the EMAS Regulation.

## 1.2 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, the Executive Agencies<sup>(4)</sup> and departments all over the world. Each Commissioner takes responsibility for a particular area of policy and heads one or more entities that are generally known as DGs.

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

The Commission's headquarters are in Brussels (Belgium), but it also has offices in Luxembourg, Grange (Ireland), Geel (Belgium), Ispra (Italy), Karlsruhe (Germany), Petten (The Netherlands), Seville (Spain) and many other places, agencies in a number of Member States and representations in all EU countries. On 1<sup>st</sup> 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.

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(4) The link [http://ec.europa.eu/about/ds\\_en.htm](http://ec.europa.eu/about/ds_en.htm) provides access to information on the activities of the Commission Directorates, Services, and Agencies,



## 1.3 Why implement EMAS?

The EC developed EMAS in the 1990s as a tool to improve environmental management across Europe. It was designed first for implementation in industrial sectors and then later modified so that it could be used for less energy intensive and polluting sectors such as public administration.

Since EMAS was introduced, the International Standards Organisation (ISO) developed ISO 14001, the international standard for environmental management which has been more widely adopted both in Europe and worldwide. EMAS remains however a more rigorous system than ISO 14001, with additional requirements such as:

- A commitment to continual improvement
- An obligation to publish results (Environmental Statement)
- Commitment to demonstrating legal compliance
- Employee involvement; and
- Registration by a public authority after verification by an accredited/licensed verifier.

The latest version of ISO 14001, (ISO14001:2015) incorporated some elements of the EMAS Regulation, but not some important ones such as mandatory reporting. So while the annexes of the EMAS Regulation have been updated to incorporate the ISO 14001:2015 requirements so that it remains attractive for those who also need ISO 14001 certification, especially for commercial reasons, EMAS will still be considered the "premium" environmental management system. The new version of the EMAS Regulation came into force in September 2018 <sup>(5)</sup>.

Since 2018, the EMAS Regulation requires that Registered Organisations take into account the EMAS Sector Reference Document (with Best Environmental Practices) for Public Administrations which came into force in late 2017.

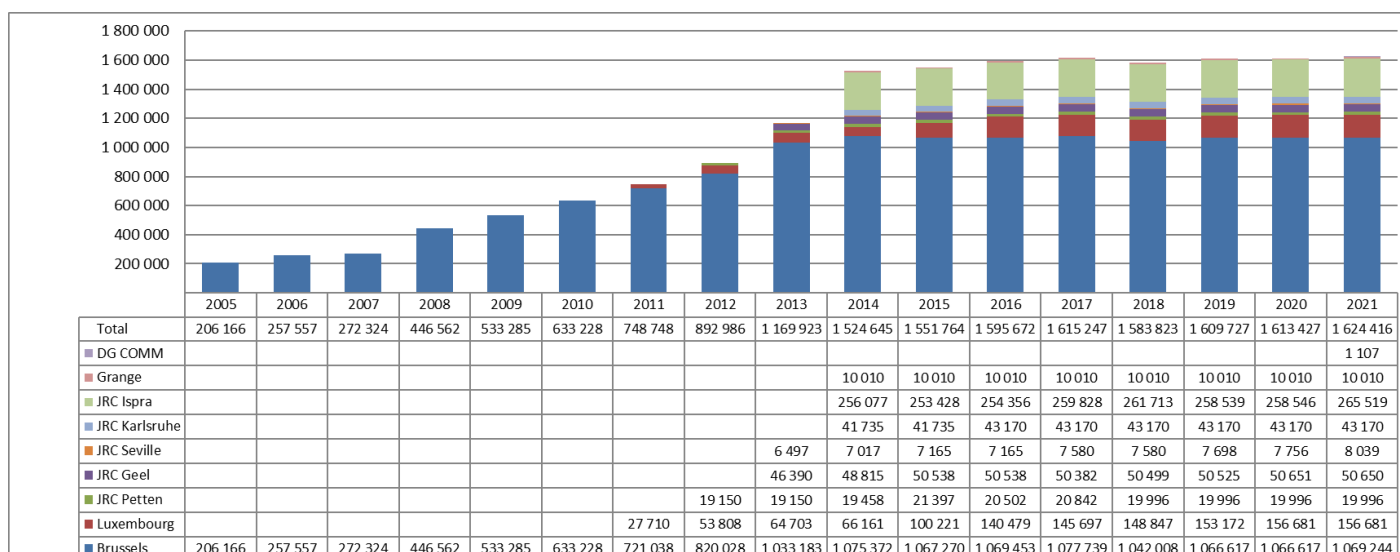
## 1.4 The development of environmental management through EMAS at the Commission

The Commission's EMAS implementation benefitted from the EMAS III Regulation of 2009, that made it possible to include sites in different countries under one registration. The Commission's EMAS registration which, subject to ongoing administrative procedures by the Brussels EMAS authority, now covers eight sites in seven countries plus two Representations in Valletta and Vienna.

Historically and for operational reasons, the Commission separated the EMAS registration of its staff activities (departments) and buildings. The system's communication aspects can be quickly addressed, enabling all staff across the Commission to be included. However, additional buildings in urban settings must be inspected and certified by the national authorities. This is time consuming, and therefore buildings at larger sites (Brussels and Luxembourg) have been added to EMAS each year according to resources available. Smaller sites, such as those of the JRC have been added entirely. Figure 1.1 shows how the "useful" surface area within the EMAS scope has evolved and reflects progress in incorporating new buildings individually at Brussels and Luxembourg, and new sites.

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<sup>(5)</sup> Commission Regulation (EU) 2017/1505 of 28 August 2017 amending Annexes 1, II and III to Regulation (EC) No 1221/2009. Registered organisations benefitted from transitional measures until 14 September 2018

**Figure 1.1 The evolution of floor space in Commission managed premises <sup>(6)</sup> to be registered under EMAS (m<sup>2</sup>)**

In 2022 the EC will be seeking re-registration of eight sites plus first registrations of two EC representations <sup>(7)</sup> with altogether 1,63 Million square metres of useful floor space, based on reporting for 2021.

**Appendix 1** describes how the Commission implements EMAS, including roles and responsibilities and major system components and requirements.

## 1.5 Description of activities at the Commission's EMAS sites

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 facilities, and sports facilities. The Luxembourg site is of a similar nature, though smaller but also includes a small radiation protection laboratory operated by DG ENER.

The five Joint Research Centre (JRC) sites are all incorporated under EMAS and include:

- JRC Ispra (Italy): a large campus with offices and research facilities, encompassing in addition its own power plant, fire station and water treatment facility, and over 80 heated buildings in total. Most of its nuclear activities (including reactors), are no longer operational. Nuclear plants and storage facilities are under a decommissioning programme that aims to restore "green field" status by 2046.
- JRC Karlsruhe (Germany) a self-contained site located in a research campus on the outskirts edge of Karlsruhe, with ongoing nuclear activities.
- JRC Petten (Netherlands) accommodates experimental equipment notably conducting research on fuel cells.
- JRC Geel (Belgium) contains Van de Graaff and Gelina Nuclear Accelerators, technical installations, and an array of laboratories.

<sup>(6)</sup> In Brussels, this includes space occupied by six Executive Agencies. The premises of all Commission sites were registered under EMAS other than Luxembourg where the 2021 registration includes 15 of 18 buildings, and Brussels 61 buildings out of 62.

<sup>(7)</sup> This EC Representations share premises with the European Parliament's (EP) liaison offices, the EC share of floor space is as 60% according to the financial agreement between the EP and the EC. This report will focus on the EC's proportion of combined EC and EP operations at each site

## Corporate Summary

- JRC Seville (Spain) has advanced computing infrastructure, From an EMAS perspective, it is more similar in nature to the administrative centres of Brussels and Luxembourg, than to the other JRC sites, with the added complexity of being in fully rented premises.

DG SANTE's site at Grange Ireland is a purpose-built low level wooden clad structure dating from 2002 and set in countryside 45km northwest 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 Commission (DG COMM) agreed to implement EMAS in EC Representations <sup>(8)</sup> starting with Valletta and Vienna and focussing on buildings that they own. The Europe House located in central Valletta, Malta was inaugurated in 2009, and is used for various information activities including seminars, debates, exhibitions, school visits and cultural events, all with the European Union as their focal point. In Vienna, the Haus der Europäischen Union, also inaugurated in 2009 and located in the centre near the Stock Exchange, serves a similar purpose. Table 1.2 presents the NACE <sup>(9)</sup> codes for the Commission's eight EMAS sites and the two EX representations.

**Table 1.2 NACE codes and descriptions of activities at the sites**

Code	Description	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Seville	JRC Karlsruhe*	JRC Ispra	DG SANTE at Grange	DG COMM (Vienna and Valletta)
99	Activities of extraterritorial organisations and bodies	✓	✓	✓	✓	✓	✓	✓	✓	✓
84.1	Administration of the State and the economic and social policy of the community	✓	✓						✓	✓
71.2	Testing and technical analysis		✓	✓	✓		✓	✓		
72.1	Research and experimental development in natural 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							✓		

Note \* JRC Karlsruhe not subject to verification audit in 2022

Characteristics of the sites in terms of staff and infrastructure are presented below:

<sup>(8)</sup> Located in shared premises with European Parliament Liaison Offices (EPLO) that collectively are referred to as the Houses of Europe

<sup>(9)</sup> Statistical classification of economic activities in the EU

**Table 1.3 Basic characteristics of the Commission EMAS sites 2021**

Site	Staff		Buildings for registration		Useful surface (m <sup>2</sup> )	
	In EMAS buildings	Total	EMAS	Total	EMAS	Total
Brussels (all EMAS buildings)	30 604	31 440	60	61	1 069 244	1 078 072
Luxembourg	4 939	5 688	15	18	156 681	181 606
JRC Petten	240	240	12	14	19 996	19 996
JRC Geel	263	263	17	17	50 650	50 650
<i>JRC Karlsruhe</i>	<i>305</i>	<i>305</i>	<i>4</i>	<i>4</i>	<i>43 170</i>	<i>43 170</i>
JRC Sevilla	390	390	1	1	8 039	8 039
JRC Ispra	2 475	2 475	366	366	265 519	265 519
Grange	178	178	3	3	10 010	10 010
DG COMM*	36	36	4	4	1 107	1 107
<b>Total</b>	<b>39 430</b>	<b>41 015</b>	<b>482</b>	<b>488</b>	<b>1 624 416</b>	<b>1 658 169</b>

\* Includes European Commission staff and space in House of Europe, just the portion related to EC

The Brussels site clearly dominates staff numbers with approximately three times more total staff than the other sites combined. Both Brussels and Luxembourg have buildings and facilities spread out throughout their respective cities and have implemented EMAS gradually. Brussels includes all its occupied buildings<sup>(10)</sup> within EMAS reporting effectively completing a phased implementation that started with its first EMAS registration in 2005 which included eight buildings.

Luxembourg started EMAS registration for its buildings in 2011 and by 2021 EMAS registered buildings accounted for 82% of floor space and accommodating 86% of staff. The EMAS scope for Luxembourg is now complete until new buildings enter Commission's real estate portfolio (new building for OP in 2023 and JMO2 starting from 2024)<sup>(11)</sup> <sup>(12)</sup>, each of the JRC research sites and SANTE Grange were incorporated entirely into EMAS. The Vienna and Valletta Houses of Europe were incorporated into EMAS and account for a very small percentage of the total registered area.

## 1.6 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<sup>(13)</sup>.

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:

1. Impact assessment system:

[https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/impact-assessments\\_en](https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/impact-assessments_en)

<sup>(10)</sup> Buildings managed by OIB, Executive Agencies in COVE and other buildings, PALM building excluded.

<sup>(11)</sup> FISCHER building in 2021 – remaining buildings CPE1 & 2 and Maison d'Europe may be replaced

<sup>(12)</sup> JRC Seville occupies part of a commercial building.

<sup>(13)</sup> Detailed information on EU policies available on [www.europa.eu](http://www.europa.eu)

## Corporate Summary

2. EU environment policy and evaluation: [http://ec.europa.eu/environment/index\\_en.htm](http://ec.europa.eu/environment/index_en.htm)
3. LIFE+ programme: <http://ec.europa.eu/environment/life/index.htm>
4. Climate policy: [https://ec.europa.eu/clima/policies/eu-climate-action\\_en](https://ec.europa.eu/clima/policies/eu-climate-action_en)
5. Energy strategy: [https://ec.europa.eu/energy/topics/energy-strategy-and-energy-union\\_en](https://ec.europa.eu/energy/topics/energy-strategy-and-energy-union_en)
6. Transport policy: [http://ec.europa.eu/transport/index\\_en.htm](http://ec.europa.eu/transport/index_en.htm)
7. The European Green Deal: [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](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) <sup>(14)</sup>. A positive opinion is in principle needed from the Board for an initiative accompanied by an impact assessment to proceed. RSB opinions <sup>(15)</sup> are 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.**

## 1.7 The Commission's environmental policy


The corporate environmental policy is a pillar of the environmental management system and signed by the Director General of the Human Resources Directorate (DG HR) as chair of the EMAS Steering Committee. It is displayed at the entrance of all the EMAS sites and registered buildings. Updated in 2020, it sets out the Commission's political commitments and objectives to reduce the environmental impacts of its everyday work in accordance with the UN Sustainable Development's Goals:

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<sup>(14)</sup> [http://ec.europa.eu/info/law-making-process/regulatory-scrutiny-board\\_en](http://ec.europa.eu/info/law-making-process/regulatory-scrutiny-board_en)

<sup>(15)</sup> [http://ec.europa.eu/smart-regulation/impact/ia\\_carried\\_out/cia\\_2015\\_en.htm](http://ec.europa.eu/smart-regulation/impact/ia_carried_out/cia_2015_en.htm)





### 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 Europe.

Continuing efforts to improve its environmental performance that started in 1997, in 2005, the Commission achieved its first registration under the Eco Management and Audit Scheme (EMAS). In 2020, the Commission implements EMAS across its eight<sup>1</sup> largest sites in Europe. The Commission will endeavor 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 pollution prevention, and in 2019, her President, Ursula von der Leyen committed to make the Commission 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 to 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 our operations' atmospheric emissions (mainly from buildings operation 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 risk;
- (7) Encouraging staff and contractors to embrace sustainable behaviour through improved internal communication, awareness-raising, and training; and
- (8) Enjoying transparent relations and dialogue with external parties, taking into account and addressing stakeholder 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 Community 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, 06/10/2020  
On Behalf of the EMAS Steering Committee,

**Gertrud INGESTAD**  
*President*



Some EMAS sites have developed more specific environmental policies.

## 2 The Commission's environmental performance to 2021

This section presents an overview of the individual results for the eight main sites participating in EMAS, each of which has a separate report in Annexes A to H and where possible aggregated data representing the Commission. The following chapters (and appendices) provide more detailed analyses <sup>(16)</sup>. Given the specificities of each site, such as climate or usage (offices, laboratories, etc) the aim of this section is not to compare performance but to show trends over the years.

Although JRC Karlsruhe was not subject to verification audit in 2022, we have retained its data in our reporting so that we can continue to follow Commission level performance.

Table 2.1 summarises the individual sites and Commission performance trends in recent years for selected (and often communicated) core parameters. Having previously reported performance in relation to 2014-20 targets, the table now includes targets for 2023 and 2030 that were initially set before the COVID pandemic. The Commission met 2014-20 targets for all parameters. The absence of nearly 90% of staff for much of 2020 and 2021 has resulted in significantly improved performance, even exceeding targets for 2030 for some parameters

**Table 2.1 Summary of performance for selected parameters at EMAS sites**

Physical indicators (Number, description, unit)	Historic data values						Performance trend (%) since:		Future targets	
	First EMAS data <sup>(1)</sup>	2014	2018	2019	2020	2021	First EMAS data <sup>(1)</sup>	2014	2014-23 Δ % <sup>(3)</sup>	2014-30 Δ % <sup>(3)</sup>
<b>1a) Energy bldgs (MWh/p)</b>										
Brussels	19,06	6,95	6,75	6,39	5,42	5,27	-72,3	-24,1	-11	-18
Luxembourg	8,35	10,74	11,74	12,24	11,87	10,03	20,2	-6,6	-30	-55
JRC Petten	37,46	23,99	26,41	24,24	19,91	20,89	-44,2	-12,9	-8	-14
JRC Geel	60,62	51,21	53,09	49,81	44,35	47,72	-21,3	-6,8	48	47
JRC Seville	9,13	9,13	6,87	6,29	5,91	6,55	-28,2	-28,3	-35	-40
JRC Karlsruhe	78,64	64,03	73,06	76,90	66,30	75,34	-4,2	17,7	n.a.	n.a.
JRC Ispra	53,13	44,24	43,31	41,82	36,59	38,98	-26,6	-11,9	-10	-16
Grange	10,21	12,69	10,75	11,27	9,88	8,57	-16,1	-32,5	-19	-34
<b>Commission</b>		<b>11,57</b>	<b>10,85</b>	<b>10,42</b>	<b>9,08</b>	<b>8,96</b>		<b>-22,6</b>	<b>-25</b>	<b>-30</b>
<b>1d) Water use (m<sup>3</sup>/person)</b>										
Brussels	28,44	12,57	11,22	11,53	7,78	6,28	6,3	-77,9	0	-5
Luxembourg	12,26	14,48	13,63	12,02	7,92	5,59	-54,4	-61,4	25	0
JRC Petten	11,50	11,14	8,00	9,83	8,99	5,60	-51,4	-49,8	-13	-14
JRC Geel	79,57	34,75	28,97	28,61	22,74	23,36	-70,6	-32,8	28	28
JRC Seville	42,81	21,73	14,66	13,18	13,04	11,80	-72,4	-45,7	-45	-50
JRC Karlsruhe	16,51	21,03	19,11	15,22	12,29	16,78	1,6	-20,2	-29	-32
JRC Ispra (4)	234,4	125,3	163,3	112,1	95,3	87,7	-62,6	-30,0	-11	-13
Grange	30,66	27,69	18,11	16,31	11,50	12,90	-57,9	-53,4	-45	-50
<b>Commission</b>		<b>21,68</b>	<b>21,48</b>	<b>18,01</b>	<b>13,44</b>	<b>11,47</b>		<b>-47,1</b>	<b>-22</b>	<b>-27</b>
<b>1e) Office paper (sheets/p/day)</b>										
Brussels	77,4	33,1	22,7	21,3	7,7	5,3	5,3	-93,1	-40	-50
Luxembourg	32,1	24,1	10,9	9,5	3,6	1,9	-88,9	-92,0	-50	-55
JRC Petten	40,0	15,9	9,6	19,4	4,7	4,5	-88,7	-71,5	-14	-25
JRC Geel		20,4	11,3	12,4	3,6	5,3	0,0	-74,2	9	7
JRC Seville	30,6	12,6	12,8	9,7	3,2	2,4	-92,2	-81,0	-22	-24
JRC Karlsruhe		17,8	10,8	7,2	0,0	3,7	0,0	-79,0	-22	-24
JRC Ispra	22,4	16,5	12,2	11,0	4,4	4,3	-81,0	-74,3	-55	-65
Grange	0,0	9,9	18,7	16,5	6,8	6,0	0,0	-39	-25	-30
<b>Commission</b>		<b>30,2</b>	<b>20,1</b>	<b>18,7</b>	<b>6,8</b>	<b>4,8</b>		<b>-84,2</b>	<b>-65</b>	<b>-70</b>
<b>2a) CO<sub>2</sub> emissions from buildings (tonnes/person)</b>										
Brussels	4,77	0,71	0,68	0,65	0,57	0,62	0,6	-87,0	-11	-18
Luxembourg	0,18	1,73	1,35	1,56	1,50	1,29	0,0	-25,8	-15	-75
JRC Petten	14,85	10,00	3,14	2,88	2,15	2,40	-83,8	-76,0	-73	-76
JRC Geel	17,57	14,83	4,94	4,16	3,88	4,92	-72,0	-66,8	3	1
JRC Seville	4,54	3,09	2,31	1,79	1,30	1,43	-68,4	-53,5	-39	-70
JRC Karlsruhe	19,37	18,34	21,21	20,20	15,79	16,88	-12,9	-8,0	n.a.	n.a.
JRC Ispra	12,36	10,25	9,68	9,39	7,31	7,74	-37,4	-24,5	-23	-41
Grange	4,18	4,91	3,69	3,58	3,20	2,78	-33,4	-43,3	0	0
<b>Commission</b>		<b>1,95</b>	<b>1,60</b>	<b>1,55</b>	<b>1,29</b>	<b>1,33</b>		<b>-31,5</b>	<b>-37</b>	<b>-51</b>
<b>3a) Non hazardous waste (tonnes/person)</b>										
Brussels	0,300	0,222	0,181	0,211	0,094	0,099	0,1	-66,9	-20	-25
Luxembourg	0,25	0,103	0,14	0,13	0,10	0,06	-75,9	-42,4	-35	-40
JRC Petten	0,08	0,105	0,11	0,10	0,07	0,35	350,7	233,4	-8	-14
JRC Geel	0,267	0,479	0,292	0,249	0,151	0,225	-15,7	-53,0	0	0
JRC Seville	0,000	0,022	0,031	0,044	0,014	0,010	0,0	-56,8	-20	-25
JRC Karlsruhe	0,000	0,333	0,269	0,246	0,194	0,187	0,0	-43,8	-22	-24
JRC Ispra	0,474	0,491	0,546	0,508	0,218	0,387	-18,4	-21,2	-2	-5
Grange	0,000	0,251	0,253	0,230	0,088	0,102	0,0	-59,4	-10	-12
<b>Commission</b>		<b>0,237</b>	<b>0,197</b>	<b>0,217</b>	<b>0,102</b>	<b>0,113</b>		<b>-52,3</b>	<b>-28</b>	<b>-32</b>

<sup>(16)</sup> DG COMM Representations sites are not included (see section 1.1) as they're very small and they'll increase in number year after year, making the corporate comparison of overall performance difficult until figures for all the EC Representations are available

## Corporate Summary

Note: NA - not applicable, (1) Earliest reported data: 2005 -Brussels, Grange; 2008 - Karlsruhe; 2010 - Petten, Seville; 2011 - Geel, Ispra, Luxembourg; NB early data for Brussels and Luxembourg is for a small number of buildings only (2) Compared to 2014; (3) EMAS Annual Action Plan 2022 (4) Indicator modified from 2014 to exclude lake water used in cooling circuits

In Luxembourg, for more representative results, reporting <sup>(17)</sup> for most parameters since 2015 has been for the entire site. Some parameters such as paper supply may be irregular and in large volume particularly in small sites (eg SANTE at Grange), making trends in usage difficult to follow.

The Commission has significantly reduced per capita **buildings' energy consumption** <sup>(18)</sup> since 2014, including from 2019 to 2021 during the COVID pandemic. JRC Karlsruhe recorded low consumption in 2014, the baseline year, and is less able to control energy consumption owing to the requirements of the nuclear regulations.

Per capita **water use** has reduced more than a third since 2014, most of this since 2018. Per capita **office paper consumption** has reduced by more than 80%, with the 2021 value more than a third of the 2019 value.

Buildings' energy consumption in 2021 was similar to 2020 as were **CO<sub>2</sub> emissions**. 2020 and 2021 could be considered similar in the pandemic situation, with a small increase due to ventilation as a Covid related measure.

## 2.1 The COVID pandemic and the impact of teleworking

There is considerable interest and debate on the impact of teleworking on emissions and especially whether this represents a net increase or decrease in the carbon footprint. Overall, working at home does incur some additional energy consumption, but reduces that related to commuting. But this must also be considered in the context of the Commission's evolving buildings policy which seeks to use office space more efficiently.

Caution is required in trying to draw firm conclusions based on current data. There is far greater confidence in the carbon footprint evaluated for the office (with a relatively low number of buildings, all with records in the form of invoices and measurements that are used to identify the main elements of the carbon footprint), compared to teleworking where there are very large number of individual dwellings about which a great many assumptions are required. Further work will be required to improve the understanding of the impact of teleworking on emissions.

### Emissions associated with increased energy consumption at home

The Environmental Statement that reported on performance to 2020, described several methods to evaluate teleworking emissions and these resulted in a wide range of results. The work was further developed <sup>(19)</sup> to incorporate more site-specific data for 2021 reporting. A preferred approach was identified that provided the results shown in Table 2.2. Teleworking emissions comprised those related to space heating (or cooling), electricity, embodied emissions of Commission provided IT equipment for the home office, and videoconferencing emissions. <sup>(20)</sup>

The breakdown is shown below in Figure 2.1 and Table 2.2 that indicate the relative importance of the components of the teleworking emissions that are described above <sup>(21)</sup>, underlining that heating and electricity consumption account for over 90% of the emissions.

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<sup>(17)</sup> For verification purposes data for EMAS registered buildings only is also available. Reporting only on EMAS registered buildings made it more difficult to discern trends from year to year - particularly when newly registered buildings were very different to existing ones.

<sup>(18)</sup> Measured as final energy (ie through meter readings)

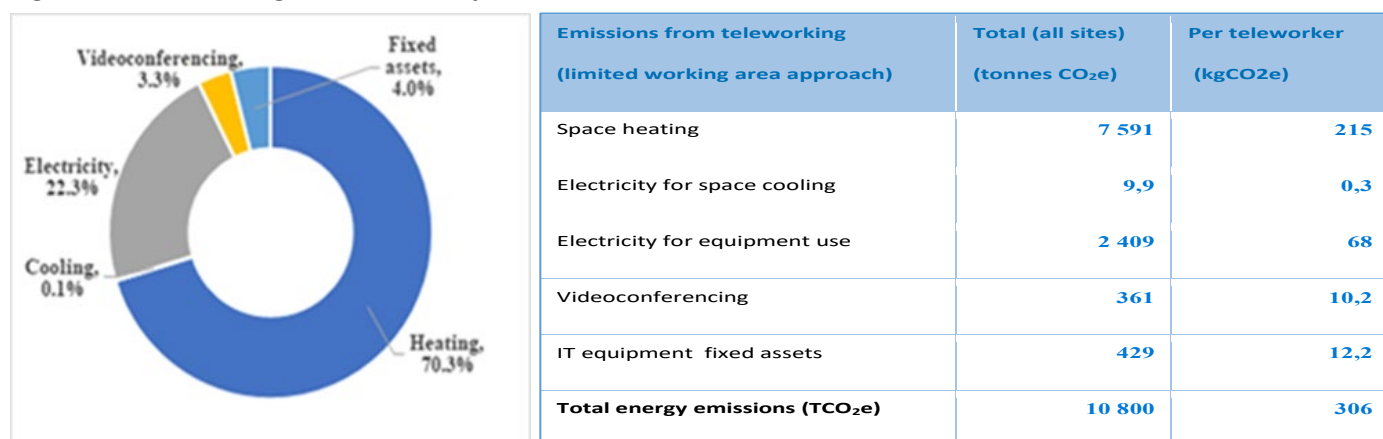
<sup>(19)</sup> Ares hr.d.7(2022)4134770

<sup>(20)</sup> This is a subset of the categories in the Commission's carbon footprint, and represents those considered the most significant in the teleworking context

<sup>(21)</sup> Assuming similar rates of presence for teleworkers at most sites are similar to that for Brussels.

Figure 2.2 illustrates shows that heating and, those from cooling is negligible, (except as indicated in Figure 2.1, in Valletta).

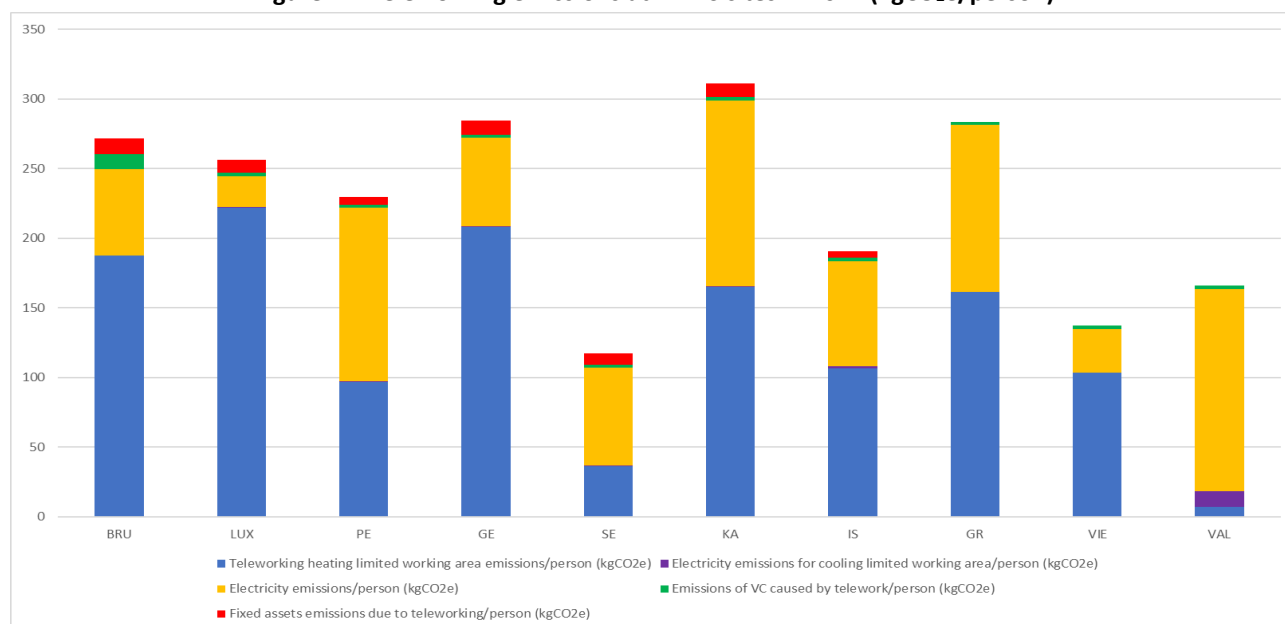
**Figure 2.1 Teleworking emissions composition**



**Table 2.2 Teleworking emissions, (Tonnes CO<sub>2</sub>e, indicative)**

The average extra per capita emissions due to energy consumption for teleworking is 306 kg of CO<sub>2</sub> equivalent, and varies considerably by location, amounting to 327 kgCO<sub>2</sub>e in Brussels and only 100 kgCO<sub>2</sub>e in JRC-Seville. Figure 2.2 represents total emissions divided by total staff numbers by site, hence lower figures than reported above. Heating emissions dominate teleworking emissions at most sites except the most southern (JRC-Seville and EC Representation in Valletta).

**Figure 2.2 Teleworking emissions at EMAS sites in 2021 (kgCO<sub>2</sub>e/person)**



**Emissions reductions associated with reduced commuting owing to teleworking**

Table 2.3 shows the estimated reduction in commuting emissions in 2020 and 2021. The emissions due to staff commuting reduced by 79% in 2021 compared to 2019.

**Table 2.3 Emissions due to staff's commuting, tonnes CO<sub>2</sub>e (2018 - 2021)**

Year	2018*	2019	2020	2021
Staff commuting (eight Commission EMAS sites)	13 611	19 137	5 269	3 991

\* Luxembourg data excluded

## 2.2 Status of the Global Annual Action Plan

The EMAS Steering Committee adopted the 2022 EMAS Global Annual Action Plan <sup>(22)</sup>, prepared in the manner introduced in 2018, and with progress towards the objectives for each site, grouping actions by category. It comprises two main elements, targets under each of the political objectives, and actions to achieve them.

### 2.2.1 Targets

DG HR requested the sites' contributions to the GAAP in December 2021. The main purpose of this consultation, apart from updating actions, was to confirm targets established in GAAP 2021 for performance on certain indicators up to:

- **2023** – which will be reported in 2024 towards the end of the current Commission (and when a progress update is due on the implementation of the Greening the Commission action plan); and
- **2030** – a long term target, relevant to achieving a climate neutral Commission. (The importance of achieving climate neutrality resulted in sites being asked in 2020 to consider targets for a larger range of parameters relating to the carbon footprint).

Some parameters, such as emissions from missions, are largely outside the scope of site management, particularly at larger sites containing multiple DGs. Individual DGs will be required to commit, via pledges to reducing these emissions.

### 2.2.2 Number and status of actions

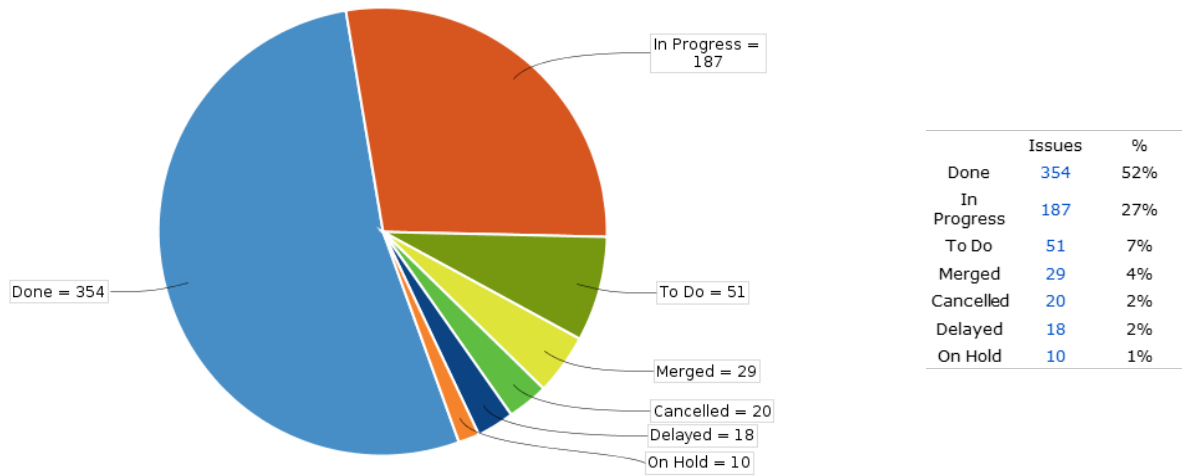
The EMAS Global Annual Action Plan has at its core a database of over 600 actions, past and present, across all the sites that seek to improve the Commission's environmental performance. Every January or February the EMAS Steering Committee formally adopts a new plan, and the February 2022 plan included the actions described below.

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<sup>(22)</sup> Ares hr.d.7(2022)4213282



**Figure 2.2 Status of actions in the EMAS Global Annual Action Plan 2022 <sup>(23)</sup>**

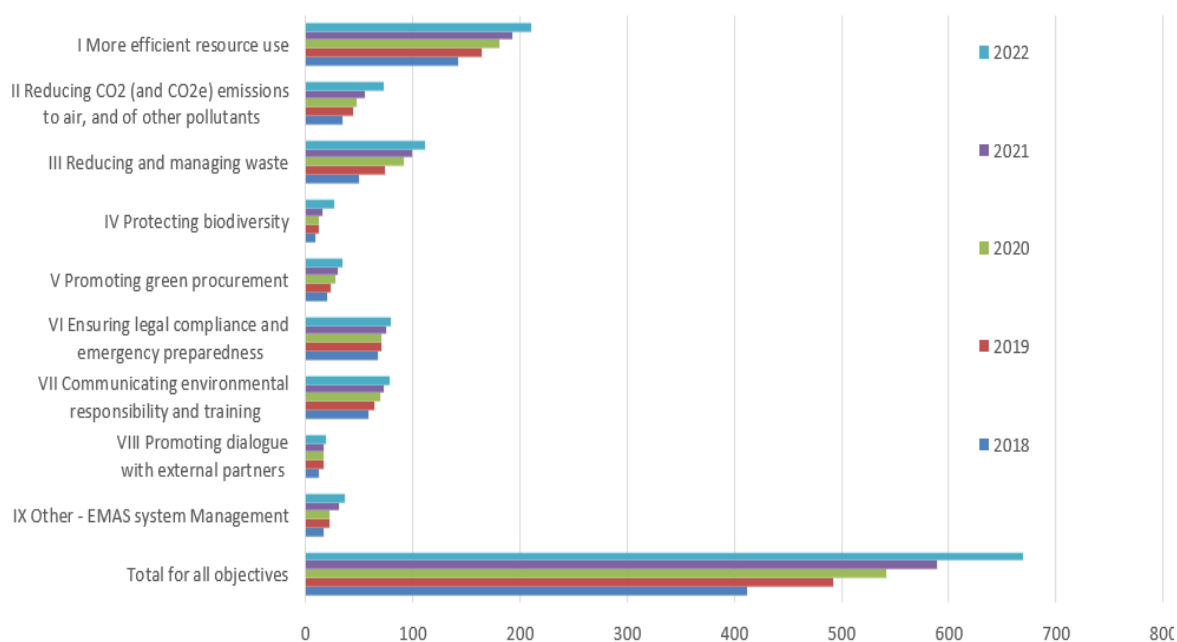


Although roughly half of the actions have been completed, they are retained on the database for reference.

### 2.2.3 Breakdown of actions by main objective and by site

The actions are distributed across the Commission’s main environmental objectives according to Table 2.4 which shows that the Commission continues to add new actions to respond to most environmental objectives.

<sup>(23)</sup> Global Annual Action Plan as submitted to the EMAS Steering Committee on 7<sup>th</sup> February 2022, and subsequently adopted

**Table 2.4 Evolution of actions by main objective in the GAAP, 2018-22**

Most main objectives recorded an increase in the number of actions particularly in number **I More efficient resource use** (that includes 20% of all actions are for reducing buildings' energy consumption, and 3,4% each for reducing water and office paper consumption). No **III Reducing and managing waste** is also important, together with **II Reducing CO2 (and CO2e) emissions to air, and of other pollutants**, in line with European Commission's top priorities. Reducing buildings' energy consumption is the overwhelming priority, the number of actions representing nearly one quarter of all the actions in the database. Table 2.5 presents the distribution of actions with "active" status, ie those not "cancelled" or "done", or "merged".

**Table 2.5 Distribution of active actions by site for main objectives**

Main Objective	Brussels	COMM Reps	Grange	JRC Geel	JRC Ispra	JRC Karlsruhe	JRC Petten	JRC Sevilla	Luxembourg	Grand Total
I More efficient resource use	23	6	6	7	16	2	8	3	10	81
II Reducing CO2 (and CO2e) emissions to air, and of other pollutants	8	5	2	3	6	2	4	1	4	35
III Reducing and managing waste	12	3	4	4	9		2	2	3	39
IV Protecting biodiversity	1		2	3	6		1	2	2	17
V Promoting "green" procurement	4	2	1	1	4		1		2	15
VI Ensuring legal compliance and emergency preparedness	7			6	1	2	1		1	18
VII Communicating environmental responsibility and training	17	2	1	2	2		1	1	2	28
VIII Promoting dialogue with external partners	6	1	1		1		1			10
IX Other - EMAS System Management	17	1					1			19
<b>Grand Total</b>	<b>95</b>	<b>20</b>	<b>17</b>	<b>26</b>	<b>45</b>	<b>6</b>	<b>20</b>	<b>9</b>	<b>24</b>	<b>262</b>

The largest sites, Brussels, Luxembourg and JRC Ispra have the greatest number of total actions.

Given the relative importance and high number of energy reduction actions (within more efficient resource use), the number of actions that seek to reduce emissions appears relatively low compared to its importance as underlined below. However, this is

## Corporate Summary

because most actions that reduce energy consumption also reduce emissions, and these are not counted separately in this analysis. The data also shows:

- **Resource consumption** dominated the actions at most sites, Luxembourg and JRC Seville being exceptions perhaps owing to a larger proportion of rented accommodation.
- There were also many actions relating to **communication and legal compliance**. Legal compliance actions were a significant proportion of the total at Brussels and Luxembourg because individual buildings in both cities require environmental permits. And JRC Karlsruhe operates under extensive legal operating requirements and is very closely monitored by the German authorities owing to its nuclear activities. The JRC sites and DG Grange at SANTE do not require registration of individual buildings because their special legal status permits them to be incorporated into EMAS as a single entity.
- The relatively large number of actions for **more efficient resource use, and waste** is in line with important international policy developments. To slow global warming by limiting greenhouse gas emissions, at the United Nations Climate Change Conference in Paris 2015 (COP 21) all 195 countries adopted the first universal climate change agreement aiming to limit temperature rise to well under 2 degrees Celsius by the end of the century. Under the agreement the EU sought to reduce CO<sub>2</sub> emissions by 40% in 2030, although the Commission under the Green Deal plans to increase this to 55%.
- The Commission has also called for a climate neutral Europe by 2050, and the Commission has itself declared an ambition to become greenhouse gas neutral by 2030. The Commission for this purpose adopted, on the 5<sup>th</sup> of April 2022, the Communication and action plan on Greening the Commission. **The Commission committed to reducing its greenhouse gas emissions by at least 60% compared to 2005** (corresponding to approximately 38% compared to 2019, the first year where the Commission has comprehensive CO<sub>2</sub> emission data), **and compensating for any remaining emissions in 2030 with high quality certified carbon removals.**

The EU also recently adopted the circular economy package to reduce waste generation and under which by 2030 the EU should achieve common municipal waste recycling and reuse target of 65%, with a target of 75% for recycling packaging waste, and an EU wide landfill reduction target of 10%.

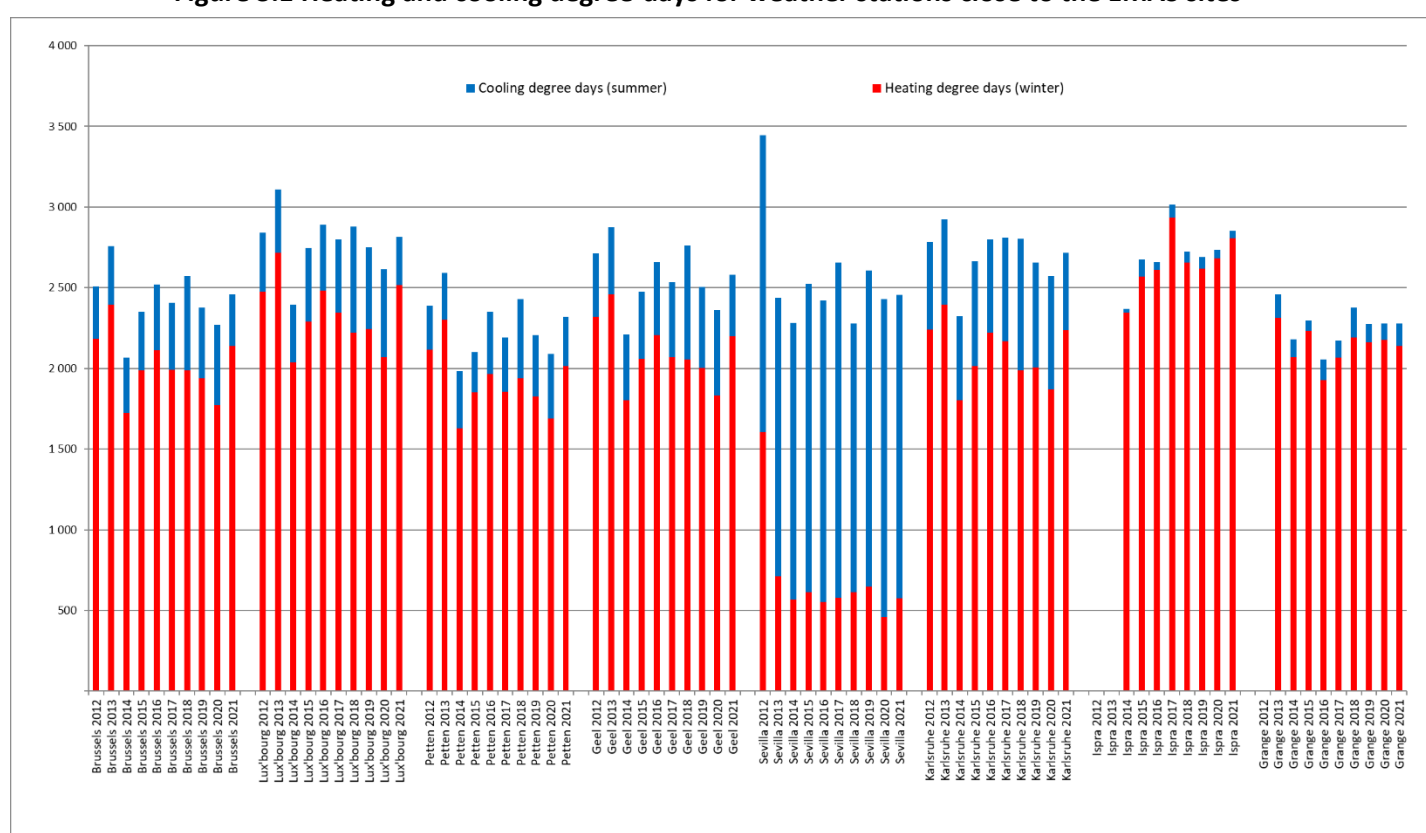
## 3 Making more efficient use of natural resources

### 3.1 Energy consumption

#### 3.1.1 Climate influence

Climate influences buildings' energy consumption. One simple means of describing the annual variability in climate is with temperature<sup>(24)</sup>. Figure 3.1 shows the annual number of heating degree-days and cooling degree-days<sup>(25)</sup> for meteorological stations near the Commission EMAS sites since 2012.

**Figure 3.1 Heating and cooling degree-days for weather stations close to the EMAS sites**



Comparing the total number of degree-days from year to year at a site will suggest whether to expect each year, and all other factors being equal, more or less energy consumption than in previous years. Figure 3.1 shows that:

- all sites recorded higher total degree days in 2021 than in 2020
- for most sites the increase is notably in the number of heating degree days, indicating severe winter conditions

<sup>(24)</sup> But factors such as humidity and windspeed are also important.

<sup>(25)</sup> Source of monthly degree day data: [www.degreedays.net](http://www.degreedays.net), station references EBBR (Brussels), ELLX (Luxembourg), INHLAKMA1 (JRC Petten), EBLB (JRC Geel), EDSB (JRC Karlsruhe), LEZL (JRC Seville), LIMC (JRC Ipsra), EIDW(DG SANTE at Grange)

- 2014, the baseline year for all longer-term reduction targets, is challenging for energy consumption, as the largest consumers (Brussels, Luxembourg, JRC Ispra and JRC Karlsruhe) all record the lowest number of degree days in that year suggesting lower heating and cooling requirements, and therefore making it difficult to demonstrate improvement in the following years. It is similar situation for the other northern sites

### 3.1.2 Energy use in buildings, breakdown by site

Figure 3.2 Buildings' energy consumption at EMAS sites, 2014-21 (MWh)

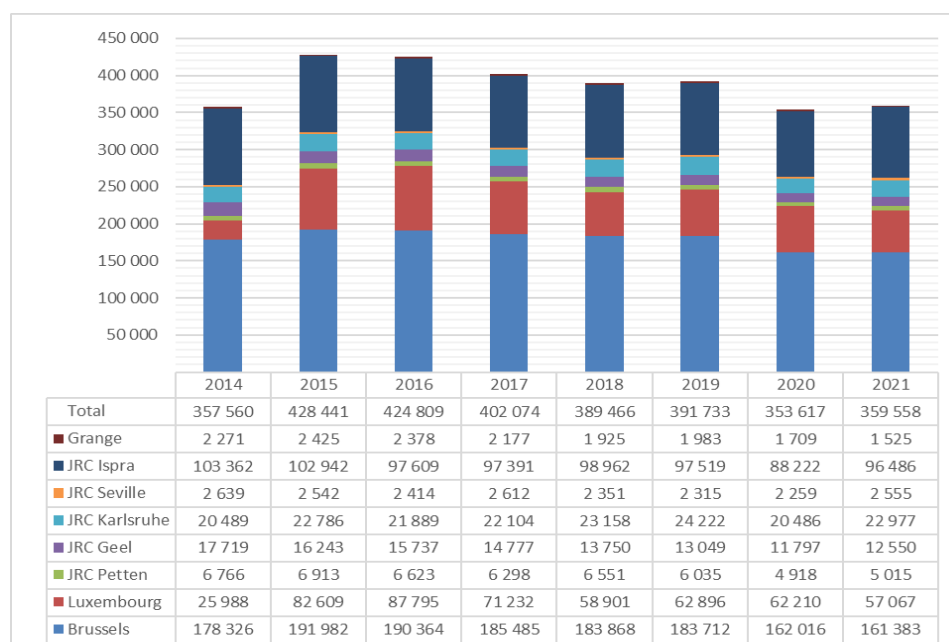


Figure 3.2 shows that Brussels and JRC Ispra<sup>(26)</sup> account for a large proportion of energy consumption at the Commission sites, reflecting that they have the largest amount of infrastructure. Luxembourg is the third highest overall consumer of energy. Luxembourg reporting was restricted to EMAS scope buildings in 2014, hence a lower Commission total than in the following years.

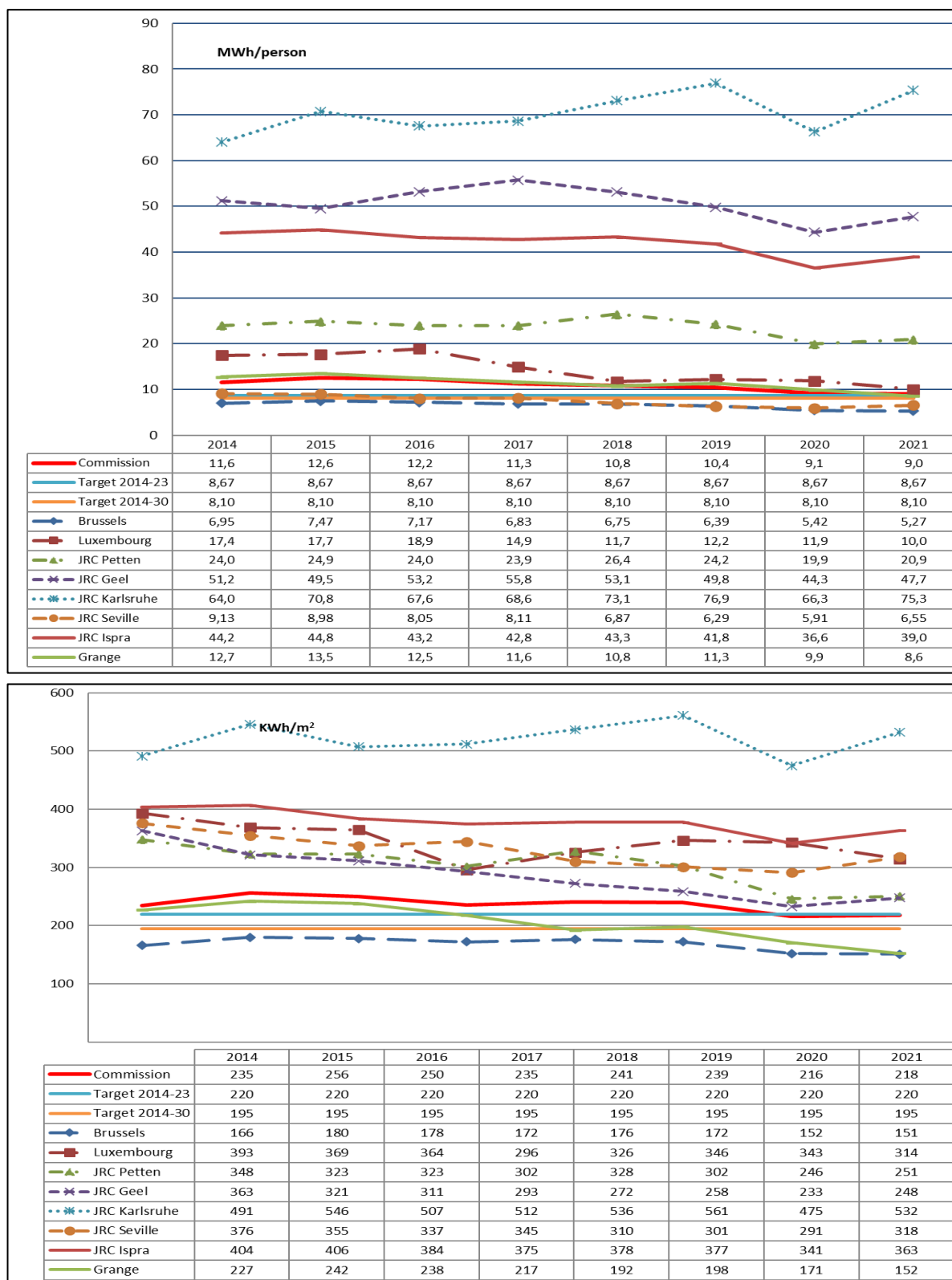
There has been an overall slight increase in 2021 from 353 to 360 GWh resulting from an increase

in ventilation due to safety measures during pandemic which demanded more energy for heating.

Figure 3.3 shows the evolution in per capita and per square meter buildings energy consumption for the EMAS sites, together with the Commission value obtained by aggregating and the values for individual sites and the targets for the periods 2014-23 and 2014-30.

<sup>(26)</sup> JRC Ispra has its own power plant to produce electricity based on gas (methane).

Figure 3.3 Buildings' energy consumption at EMAS sites, 2014-21 (MWh/p, kWh/m<sup>2</sup>)



The data shows that:

- In 2021, the Commission met its 2014 to 2023 targets for per capita and per square metre emissions with little change from 2020 due to a similar Covid situation and appears 'not far' from the 2030 targets.



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- The JRC sites with laboratory or heavy experimental apparatus (Karlsruhe, Geel, Ispra and Petten) have the highest per capita energy consumption from 20 to 75 MWh per annum. The predominantly office dominated sites of Brussels, Luxembourg, Grange and JRC Seville consumed between 6 and 10 MWh per capita. JRCs Seville and Geel experienced a small increase in both indicators, due to an increased use of energy due to additional Covid measures and an increase in heating days for 2021 as shown in the previous Table 3.3. JRC-Karlsruhe (although we remind that JRC Karlsruhe data were not subject to verification audit in 2022) has the highest consumption figures, and this is due to the legal requirement to continue full time flow of air through the nuclear facilities (a permanent flow of around 300 000 m<sup>3</sup> per hour).

Table 3.1 describes the types, and number of actions that the sites have identified to reduce total energy consumption of buildings, whether as a primary or secondary objective. Details of individual actions are available in the Global Annual Action Plan (GAAP) actions database.

**Table 3.1 Ongoing actions in the EMAS Global Annual Action Plan to reduce buildings' energy consumption**

Action type	Description	BX	LX	PE	GE	KA	SE	IS	GR	COM	REP
Studies / awareness	Awareness/ communications campaigns	1					2			1	1
	Energy action plan or audits, studies	10	2	1	1	1		2	1		
	Management review, trends analysis	2		1							
Lighting, movement, motion	Lighting	3	1			2		1	1		
	Movement sensors	1						1			
IT	PC turnoff (auto)	1					1		1		
	IT cloud strategy	1									
	IT server room consolidation strategy	1						1			
Operational optimisation	Metering and measurement, BMS EMS	2		1	2	1		2	1		1
	Comfort hours optimisation	5	1				1				1
	End of year buildings closure	2									1
	Block/ replace thermostatic valves								1		
	Air flow optimisation	1									
Building standards	Optimise heating set point temperatures	1									
	Insulation (roof, pipe or unspecified)	2		1		1		1	1		
Large investment	New building and standards, or refurbishment, disuse/ demolition of old buildings		1	3				3			
	Upgrade transformers				1						
	Geothermal energy or heat pumps			1				1			
	HVAC upgrade					2		4			
Other	Heat transfer system (new)					1					
	Introduce SPS sintering					1					

Sites generally have many prioritised actions (too many to list here) and are required to undertake measures with a payback period of less than 5 years. There are a wide variety of actions at most sites, which reflects the significance of the indicator and that many of the actions to reduce buildings energy consumption reduce CO<sub>2</sub> emissions. Studies and audits have been conducted at most sites and actions involving relatively "quick wins" such as relating to lighting and insulation have been widespread. Luxembourg and JRCs Geel, Karlsruhe and Ispra list several actions with larger "investment" projects. (The JRC sites have site development plans for 2030, although these are subject to the availability of funding).

The sites identified the following **key** actions in the 2022 Global Annual Action Plan:

- Brussels: Refurbishing buildings in line with EPB directive; energy audits; optimising comfort hours including holidays; upgrading lighting and sensors; task force energy to analyse return on investment and energy savings; adapting lighting in parking; energy reporting tool; liaising with landlords on high consuming buildings (energy, water); central air optimisation; long term optimisation of heating set point temperatures; identify potential to install voltaic panels; end of year close down, inspection of buildings' lighting or HVC equipment during closing time, Shutting down of buildings, adapting energy consumption to low occupancy and remote inspection of the buildings' management systems
- Luxembourg: construction of JMO2 buildings (BREEAM excellent design rating); reduce temperatures at end of year closure; install LED lighting, optimise energy consumption in buildings and identify problems at an early stage and assess potential to improve energy performance with open space floors
- JRC Ispra: Demolition plan to remove old buildings; apply BREEAM to construction of selected JRC buildings; implement site development plan
- JRC Geel: Buildings management system (BMS) optimisation of air compressors; Technical equipment in specific buildings and Study for potential thermal insulation in B020
- JRC Petten: Assess automated information on energy and water use and Insulation of building
- JRC Seville: Assess electricity consumption, time of use and comfort of users
- DG SANTE at Grange: Tender for electricity from renewable sources.
- DG COMM Reps: Development and operation of a monitoring system to measure use of resources; Staff awareness actions to reduce energy and water use; Closing down Representations' premises during winter and summer holidays and Adjusting comfort hours and settings for heating and ventilation

### 3.1.3 Buildings energy from renewable sources

**Figure 3.4 Percentage of Commission buildings' energy generated from non-renewable sources**

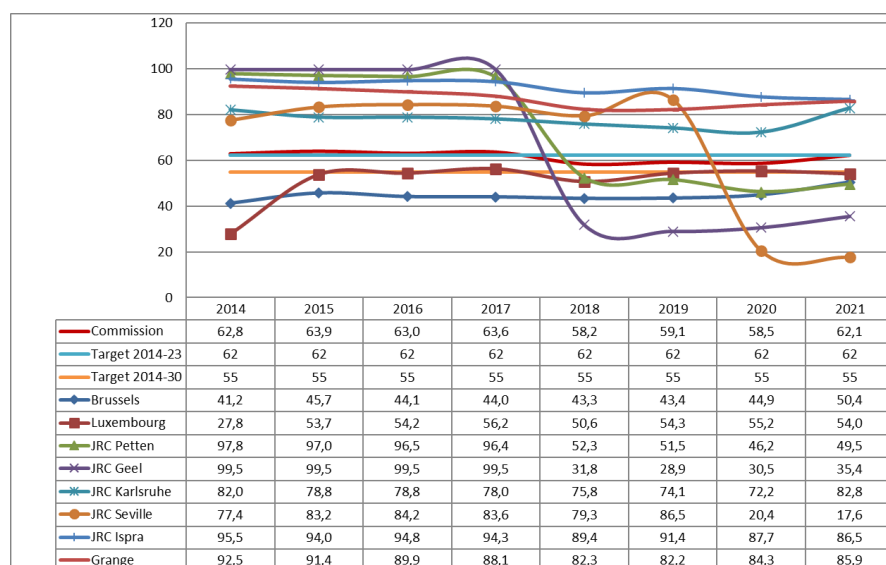


Figure 3.4 shows that the Commission has slightly increased the percentage of buildings metered energy consumption generated from non-renewable sources, but this still is in line with the 2023 target. The most obvious strategic options such as electricity from renewable sources have already been adopted, still there is a need to decarbonise heating at most sites.

Both Brussels and Luxembourg have been purchasing almost all their electricity from renewable sources, the former introducing its renewable energy contract in August 2009. JRCs Geel and Petten followed in

2018, JRC Seville in 2020 and DG SANTE at Grange is planning to sign a contract in 2022.

Several sites have developed photovoltaics capacity to generate energy on site (especially JRCs Petten and Ispra). Both JRCs Ispra (starting in 2015) and Petten use ground source heat pumps, along with Brussels (in building MO15). Urban heating generates

part of Luxembourg's heating supply. Three district heating networks are used and one of them, located in the Kirchberg district, is partly powered by wood chip cogeneration.

JRC-Geel is supporting the development of a local energy supply from superheated groundwater at 3km depth that is under development by its supplier VITO. Although the high pressures involved in the reinjection process have triggered small tremors that have required further site investigation prior to authority approval.

Lake water abstraction reduces JRC Ispra's requirement for cooling energy, although rising temperatures in Lake Maggiore have been a challenge in recent years. Other examples of actions to increase the proportion of renewable energy include monitoring systems for photovoltaic panels, and geothermal heat pumps.

The sites identified the following **key** actions in the 2022 Global Annual Action Plan:

- Luxembourg: Construction of JMO2 BREEAM design 'excellent'
- JRC Ispra: Installation of renewable site generated energy heat pumps; photovoltaic panels
- DG SANTE at Grange: Sign contract for electricity from renewable sources.

## 3.2 Water use

Figure 3.5 Water use at EMAS sites, 2014-21 (m<sup>3</sup>)

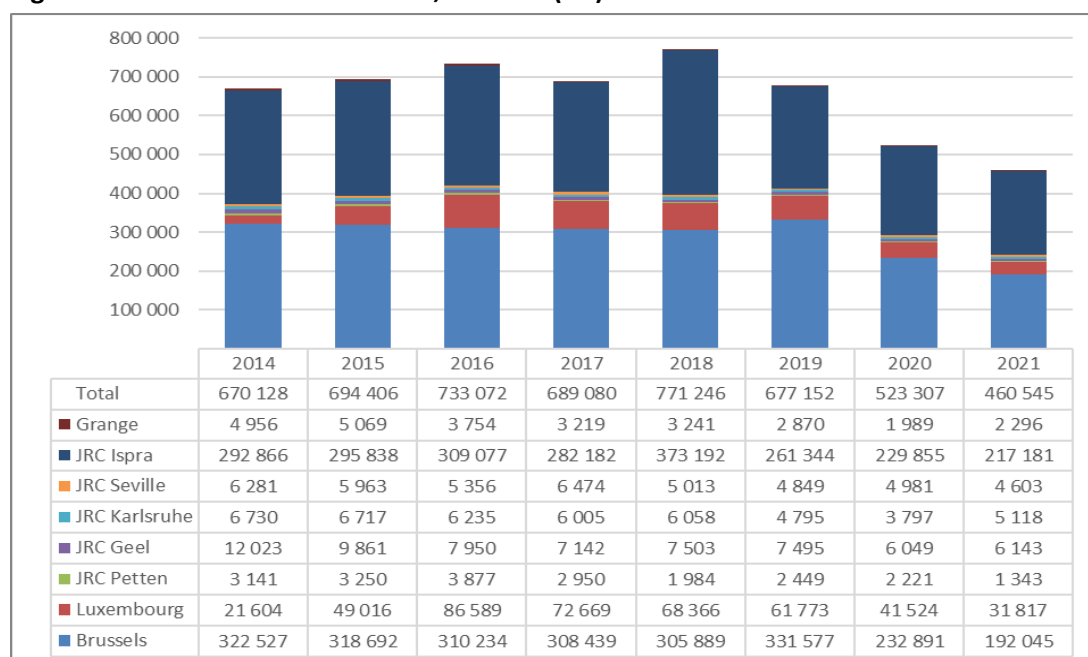


Figure 3.5 shows that Brussels and JRC Ispra are the greatest water users. The Commission reduced its water use by 15% from 523 to 443 m<sup>3</sup> in 2021, due in part to the COVID pandemic.

JRC Ispra's water use indicator was redefined in 2021 to exclude water used in the extensive cooling circuits across the site, and therefore to provide a more similar usage to the other sites.<sup>(27)</sup> The site

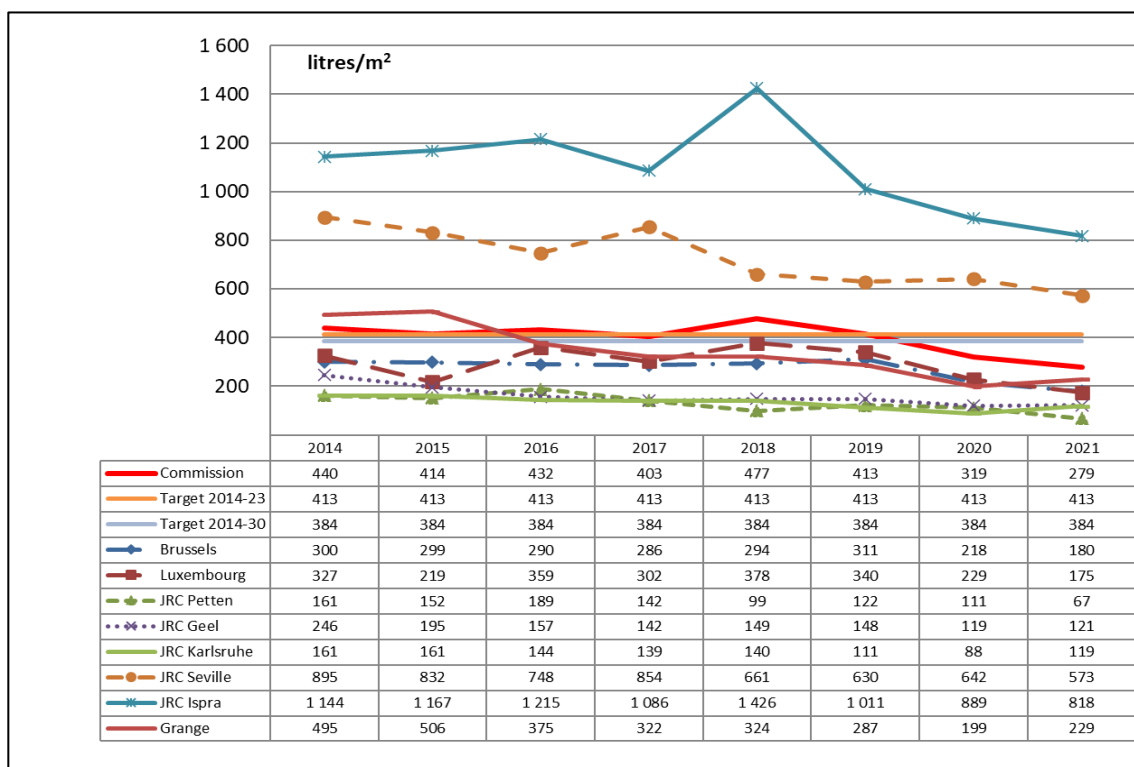
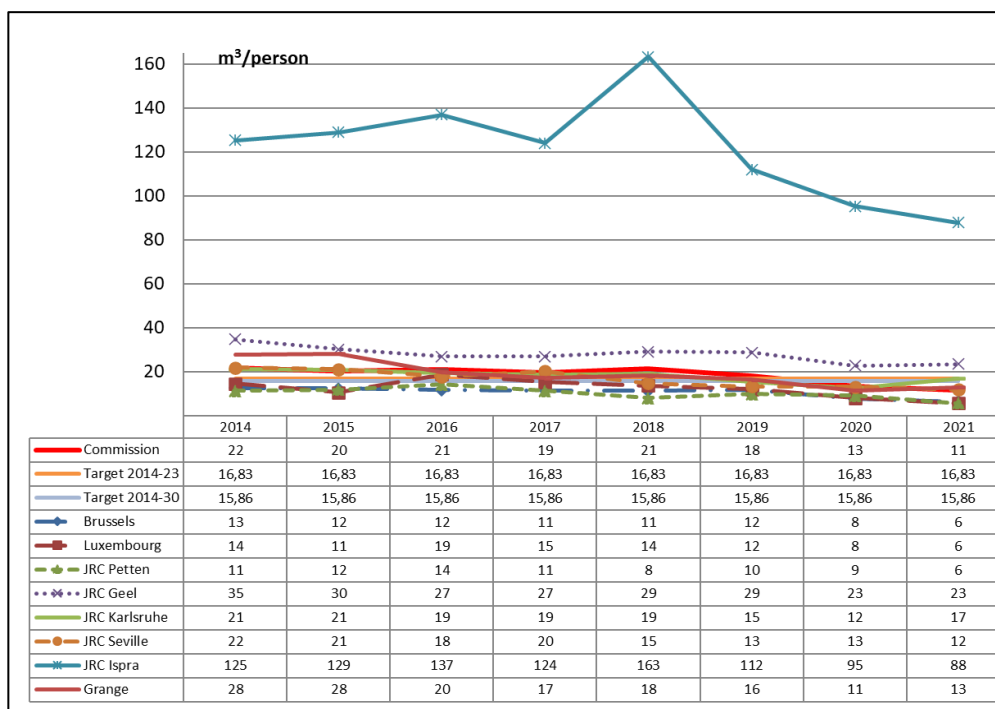
contains both a high pressure drinking water circuit (fire extinguishing networks and activities that are further away including social and sport areas, garderie, ALER apartments, etc.); and a low pressure drinking water circuit: mostly for staff use (canteens, toilets, etc.) leading to relatively high per-capita usage.

<sup>(27)</sup> Unlike other sites, JRC Ispra was designed to use its own intake (from nearby Lake Maggiore). Indeed, this low cost and readily available water supply was one reason to select the site to host EURATOM facilities

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Figure 3.6 shows per capita water use measured in cubic meters and litres per square metre for the eight Commission sites.

**Figure 3.6 Water use at EMAS sites, 2014 -21 (m<sup>3</sup>/p, litres/m<sup>2</sup>)**



The data show that:

- The Commission reduced per capita water use in Brussels since by half since 2014.
- The JRCs at Seville and Ispra have recorded the largest reductions in use over the last three to four years, with JRC Ispra introducing several infrastructure related initiatives. Improving the network and reducing leaks enabled JRC Ispra to follow a rise in use in 2018 with a larger decrease in 2020 and 2021.

- The Commission’s water use in 2021 met the 2014-23 and 2014-30 reduction targets.

Table 3.2 describes the types, and number of actions that the sites have identified to reduce water use whether as a primary or secondary objective. Further details are available in the Global Annual Action Plan

**Table 3.2 Site level ongoing actions in the EMAS Global Annual Action Plan to reduce water consumption**

Type of action	Description	BX	LX	PE	GE	KA	SE	IS	GR	COM	REPs
Studies / awareness	Studies, improve plans, drawings						1		1	1	
Operational optimisation	Improve monitoring system	<u>1</u>		<u>1</u>	3			2	<u>1</u>		<u>1</u>
	Water saving devices on taps or water dispensers	1	1	1			1				
Large investment	Modify, remove or replace cooling towers				1						
	Infrastructure (HVAC) upgrade and optimization							1			
	Install cascade of pumps and variators							1			

Several actions at Luxembourg and Geel involve reducing the number of cooling towers. All sites for which water use is a significant aspect have actions to improve performance. Six of the actions primarily target another indicator (usually 1a, reducing energy consumption of buildings).

The sites identified the following **key** actions in the 2021 Global Annual Action Plan:

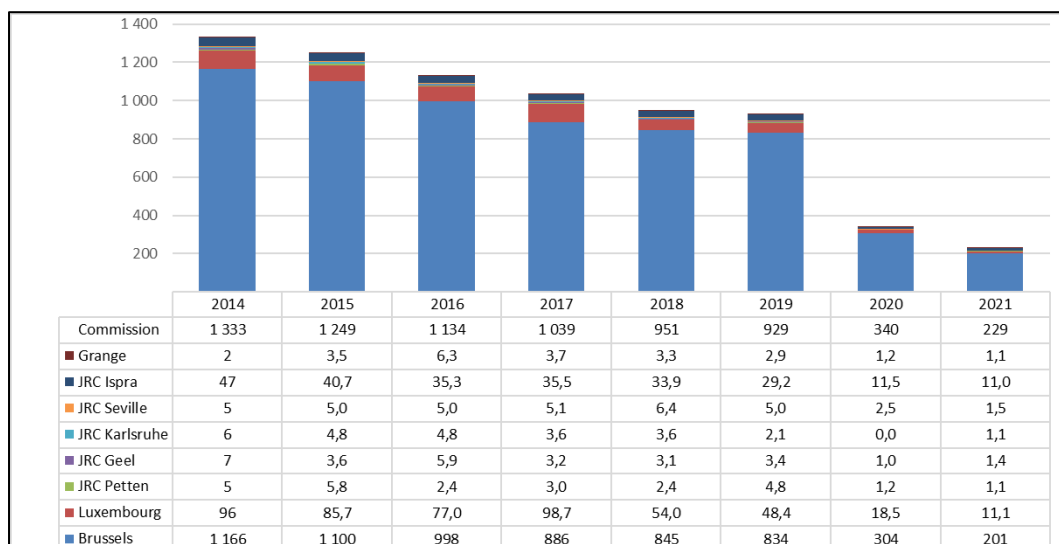
- Brussels: Liaising with landlords on high consuming buildings; installation of water fountains near conference/meeting rooms
- Luxembourg: Construction of JMO2 building
- JRC Ispra: Monitor performance of water dispensers
- JRC Geel: Analyse the feasibility of monitoring water consumption of building air humidifiers; replace cooling towers; Analyse and implement alarms on the water monitoring measurement instruments and Analyse and install an automatic blowdown system for B190 cooling towers
- DG SANTE at Grange: General program including more efficient flushing of toilets and rainwater harvesting
- DG COMM Reps: Development and operation of a monitoring system to measure use of resources and Staff awareness actions to reduce energy and water use

### 3.3 Paper consumption

Figure 3.7 shows annual total paper consumption at the Commission, which in both Brussels and Luxembourg applies to the whole Commission site, rather than only to EMAS registered buildings.

**Figure 3.7 Total paper consumption at the EMAS sites, 2014-21 (tonnes)**

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Total paper consumption comprises:

i) **Office paper** - A3 or A4 typically used for printing in offices and representing about 80% of total paper consumption, and

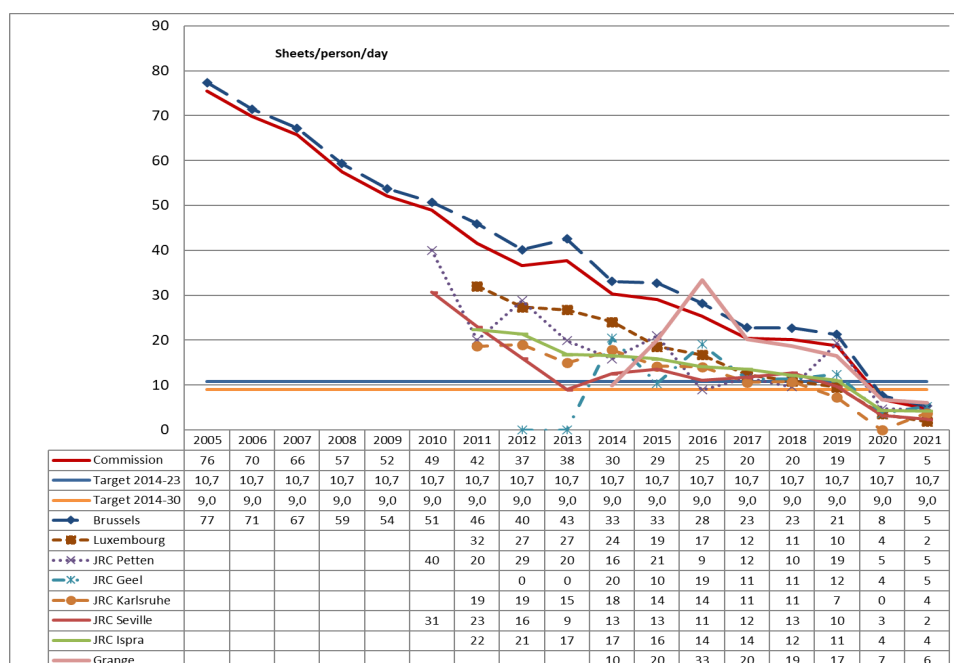
ii) **Print shop paper** - used in high quality or large format printing usually for publications and used at fewer sites.

Brussels is by far the largest consumer of paper, followed by Luxembourg and JRC-Ispra with these three sites responsible for more than 97% of the total in 2021. Largescale homeworking in 2021 resulted in the Commission reducing consumption to below 2020 levels.

The large reduction in 2021 saw the Commission meeting its 2014-23 and 2014-30 targets, as indicated in Figure 3.8, which also demonstrates a very long-term steady decline in paper consumption in Brussels since 2005.

### 3.3.1 Office paper consumption

Figure 3.8 Office paper consumption at EMAS sites, 2005-21 (sheets/person/day) <sup>(28)</sup>



The reduction in office paper consumption shown in Figure 3.8 continued the sharp decrease already started in 2020 due to the Covid pandemic with the number of sheets per day printed representing about a third of the Commission target.

While continual promotion of electronic circuits and communication explain much of the decrease, along with the use of lower density paper, over the years much pre-COVID improvement is also due to the installation of badge operated menu driven network printer system that replaced many individual printers, and drastically reduces the number of documents printed in error.

<sup>(28)</sup> 211 days/year; Data from HR Processes and Information systems unit and used since 2014



An increase at the smaller sites can be due to bulk orders, and the reported figures reflect purchase rather than consumption.

Table 3.3 shows the type of actions that are planned at site level to reduce paper consumption.

**Table 3.3: Site level ongoing actions in the EMAS Global Annual Action Plan to reduce office paper consumption**

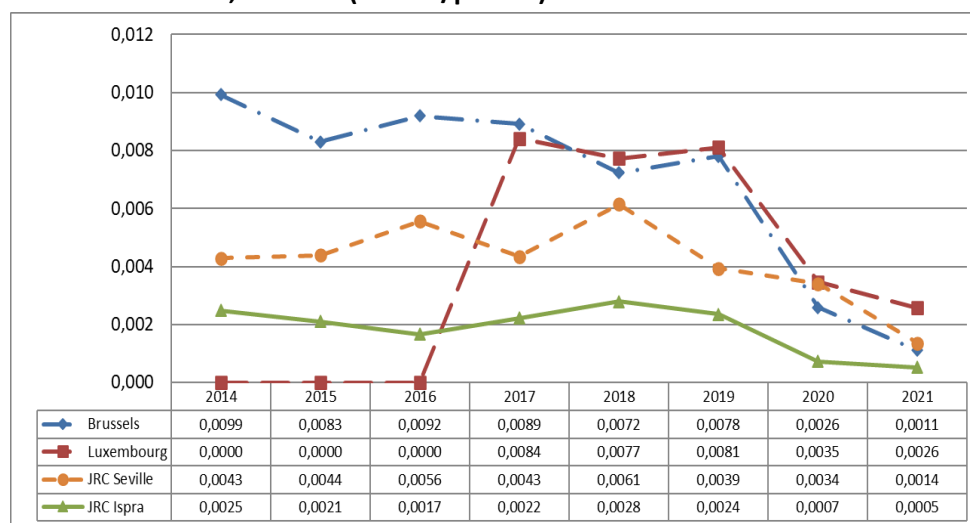
	Description	BX	LX	PE	GE	KA	SE	IS	GR	COM	REPs
Studies / awareness	Raising awareness with communication				1		2				1
	Staff training on multifunctional device						1				
Operational optimisation	Better inventory measurement			1					1		
	Data monitoring analysis						1				
Other	"Paperless working", various	4	3					2	1		1
	Use paper with higher recycled content	1									

The sites identified the following **key** actions in the 2021 Global Annual Action Plan:

- Brussels: Use more recycled paper; favour compulsory purchase of ecological items from office supply catalogue and Future tender for office furniture with the concept of upcycling
- Luxembourg: Receive contractual reports and documents only electronically; electronic conference information for participants
- JRC Ispra: General paper reduction program
- JRC Petten: Plan to better manage the paper inventory
- JRC Seville: General paper reduction campaign
- DG SANTE at Grange: General paper reduction program based on technology
- DG COMM Reps: Implementation of the paperless DG Communication strategy.

### 3.3.2 Print shop paper consumption

**Figure 3.9 Evolution of print shop paper consumption at the EMAS sites, 2014-21 (tonnes/person)**



JRCs Petten, Geel, Karlsruhe and Grange have no print shop and/or undertake a negligible amount of printing and are therefore not included in Figure 3.9.

Luxembourg started to report separately on paper used in the printshops 2017. JRC Seville contracts a large amount of offset printing per capita compared to other sites, because the lower number of staff in Seville compared to other sites makes that the ratio of offset printing by person is higher than other.

Moreover, a positive trend may be observed due to the policies implemented by JRC Seville's program office. JRC-Ispra prints for other JRC sites. The Commission reduced per capita print shop output in 2021 in all sites.

## 4 Reducing the carbon footprint, other greenhouse gases and air pollutants

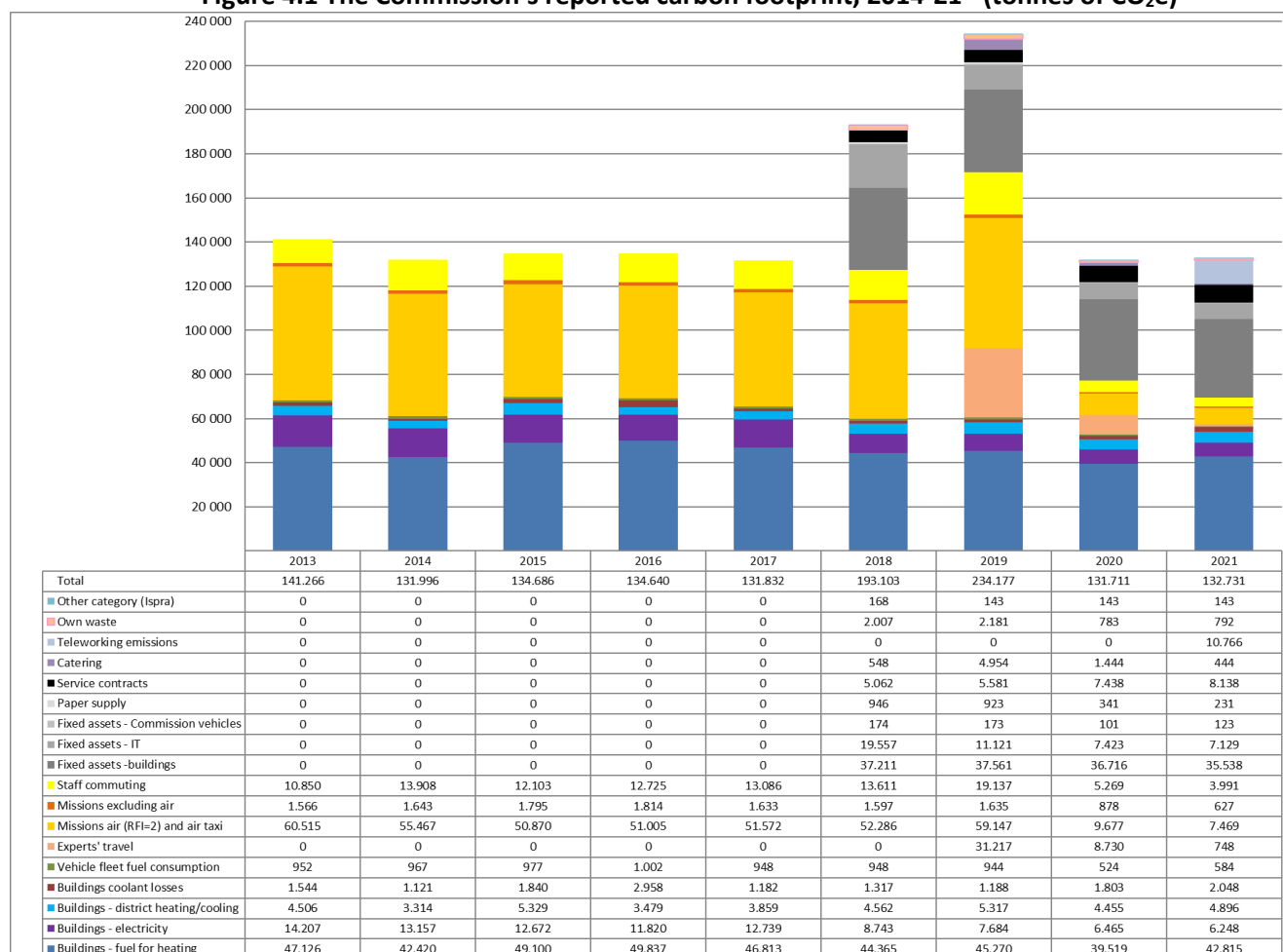
### 4.1 Overview of total emissions

Figure 4.1 shows the evolution of the main categories of emissions comprising the Commission's carbon footprint. The Commission significantly expanded its reporting in 2018, to include fixed assets (buildings and IT), purchased goods and services, waste and upstream emissions due to energy consumption.

Further additions in 2019 included fixed assets (embodied energy of Commission vehicles and of infrastructure for renewable energy), and a fuller assessment of upstream emissions, for example in relation to green electricity contracts.

Also new in 2021 are the impact of teleworking<sup>(29)</sup>, and the emissions attributed to external experts' travel for which the cost is borne by the Commission's administrative budget.

**Figure 4.1 The Commission's reported carbon footprint, 2014-21\* (tonnes of CO<sub>2</sub>e)**



<sup>(29)</sup> As described in Section 2.2

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\*The scope was significantly increased in 2018, and reporting has improved Reporting revisions in 2020 are where possible back calculated at least to 2018. The 2019 emissions include approximately 10 k tonnes that were estimated as 'unreported' in the 2019 Environmental Statement. Missions' emissions were calculated for the first time in 2021 using the internal mission management system data (MiPs)

The effect of the COVID pandemic on staff missions' emissions is evident with even lower emissions in 2021 following already significant reductions in 2020. The reduction in external experts' travels emissions is more pronounced, with a reduction of 91% compared to 2020 and of 97% compared to 2019.

Emissions from commuting, catering and own waste reduced as expected with increased staff absence in 2021. Buildings related emissions (electricity, heating or cooling) did not decrease mainly because increased ventilation and cooling was mandatory to avoid spreading the coronavirus and as staff work mostly in individual offices it was not possible to concentrate in fewer buildings. An increase in heating and cooling was needed to compensate the ventilations effects. In some sites, such as Brussels this increased energy consumption was partially offset by a reduction for certain periods in the number of buildings that remained open.

Overall, the carbon footprint decreased in 2021 (excluding the teleworking emissions (10,8 ktonnes) that were estimated for 2021 (but not 2019, 2020). Table 4.1 shows the impact of teleworking under the COVID pandemic (2021), and the addition of experts' travel (since 2019), as the two main additional elements to improve reporting of the carbon footprint this year.

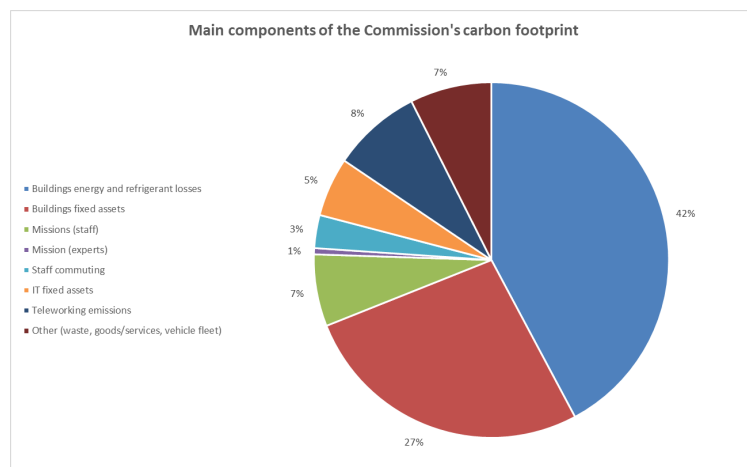
**Table 4.1 – Main components of the Commission's carbon footprint, tonnes CO<sub>2</sub>e <sup>(30)</sup> (2018 - 2021)**

Main contributors	2018	2019	2020	2021	2018	2019	2020	2021
	tonnes CO <sub>2</sub> e				% of total			
Buildings energy and refrigerant losses	58 988	59 459	52 242	56 008	31	25	39	42
Buildings fixed assets	37 211	37 561	36 716	35 538	19	16	28	27
Missions (staff)	54 831	61 726	11 079	8 680	28	26	9	7
Mission (experts)		31 217	8 730	748	0	13	7	1
Staff commuting	13 611	19 137	5 269	3 991	7	8	4	3
IT fixed assets	19 557	11 121	7 423	7 129	10	5	6	5
Teleworking emissions				10 766				8
Other (waste, goods/services, vehicle fleet)	8 905	13 957	10 251	9 871	5	6	8	7
<b>Sum</b>	<b>193 103</b>	<b>234 177</b>	<b>131 711</b>	<b>132 731</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Note: Staff commuting data for 2018 excludes Luxembourg

Figure 4.2 shows that with reduced travel emissions, buildings account for a much larger proportion of the total.

<sup>(30)</sup> All carbon emissions in this chapter are expressed as CO<sub>2</sub>e (carbon dioxide equivalent, which allows for warming effects related to combustion and release of refrigerants to be included, as well as other warming gases).

**Figure 4.2 Main components of the Commission's carbon footprint, 2021**

The data show that in 2021, under COVID conditions, emissions from the Commission's buildings energy emissions and the embodied (fixed energy) decrease a little, from 73% to 69% of the carbon footprint.

IT fixed assets represented a smaller proportion in 2022 as several coefficients used in the calculation have been revised downwards, and the rollout of laptops has continued, along with the phasing out of desktops and individual printers.

## 4.2 Scope and detailed per capita emissions by site in 2021

The Commission chairs the Inter-institutional environment group (GIME) and in November 2017 adopted a common methodology for calculating carbon emissions in response to the European Court of Auditor (ECA) 2014/14 special report on the subject.

**Appendix 2 describes the different components, and conversion factors** used when calculating the Commission's footprint for 2021. For coherence (and simplicity), the central coordination team recommends that EMAS sites use these values, but the sites can (exceptionally) choose different values, for example at the request or under guidance of national authorities.

### 4.2.1 Scopes defined

For the purposes of Greenhouse Gas (GHG) reporting, emissions fall under different "scopes" <sup>(31)</sup>:

- Scope 1: "Direct" emissions typically arising from own fuels combustion (e.g. boilers, furnaces), owned transport (Commission owned or operated vehicles), process emissions and fugitive emissions (refrigeration and air conditioning leaks);
- Scope 2: "Indirect" emissions from energy consumed but produced by others (purchased electricity, heat, and steam cooling); and
- Scope 3: Other "indirect" emissions including, transport related activities (commuting and business travel, distribution), fixed assets, purchased goods and services, waste disposal (waste, recycling), purchased materials and fuels (e.g. extraction, processing and production), fixed assets, teleworking.

<sup>(31)</sup> <http://www.ghgprotocol.org/calculation-tools/faq>

More than one scope may be associated with a particular type of energy use. When the Commission consumes gas for heating, or either petrol or diesel for its vehicle fleet, the reported emissions result from not only combusting the fuel (scope 1) but also from the extraction and supply (scope 3).

The additional parameters added for reporting in 2018/9 permit the embodied emissions of renewable energy supply infrastructure to be considered, as well as the emissions used to produce Commission fleet vehicles – although in both cases, the contribution to the carbon footprint is relatively small.

### 4.2.2 Uncertainty

The breakdown of the carbon footprint in the following section illustrates that it is very data intensive and relies on many conversion factors. Both the data and factors have associated degrees of uncertainty, and these increase with scope, especially for factors. Energy invoices provide consumption data with a high level of precision (considered +/-5% accuracy), as they are based on calibrated meter readings. The factors used to convert the consumption to emissions are based on physical/chemical properties that are well known, and similarly have low uncertainty.

While input data is from invoices, or databases (eg IT equipment), the uncertainty remains low. But estimating the Global Warming Potential of refrigerants over 100 years, which may be composed of two or more substances leads to factors considered to have around 30% uncertainty. The factors used to estimate emissions from the construction of buildings, IT equipment, and food that all have very complex supply chains are subject to (frequently updated) research and uncertainties of 50%. A few conversion factors have 80% or more uncertainty as shown in Table 2 (Annex 2 page 91).

Therefore, adding additional elements, beyond scope 1 and 2 necessarily involves considerable additional resources while providing answers that are more uncertain. It is important therefore to use a consistent approach year to year.

Total uncertainties have been calculated per each factor in the master datasheet in order to have an idea of the magnitude of the uncertainty for every data.

### 4.2.3 Per capita emissions by site – detailed summary for 2021

Table 4.3 presents the categories of the Commission's footprint, as calculated for each site in 2021.

**Table 4.3 Per capita equivalent (CO<sub>2</sub>e) emissions by scope and site 2021 (tonnes)**

## Corporate Summary

	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Sevilla	JRC Karlsruhe	JRC Ispra	Grange
<b>Scope 1: Own fuel use and direct loss</b>	<b>0,53</b>	<b>0,83</b>	<b>2,06</b>	<b>2,19</b>	<b>0,21</b>	<b>0,06</b>	<b>6,48</b>	<b>1,50</b>
Fuel for bldgs: mains gas	0,485	0,738	1,914	1,412	0,213	0,000	6,331	0,000
Fuel for bldgs: tanked gas (1) (biogas)	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	0,000
Fuel for bldgs: diesel	Ne	Ne	Ne	0,028	Ne	0,009	0,008	1,432
Biomass	N.a.	0,002	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.
Commission vehicle fleet	0,011	0,014	0,028	0,012	0,000	0,048	0,011	N.a.
Refrigerants (2)	0,037	0,071	0,118	0,741	0,000	0,000	0,127	0,070
<b>Scope 2: Purchased energy</b>	<b>0,01</b>	<b>0,49</b>	<b>0,00</b>	<b>2,45</b>	<b>1,08</b>	<b>16,15</b>	<b>0,00</b>	<b>0,96</b>
External electricity supply (grey),	0,010	0,264	N.a.	N.a.	1,080	8,045	N.a.	0,952
External electricity supply contract (renewables), combustion	0,000	0,000	0,004	0,004	0,003	0,003	0,000	0,006
District heating (combustion)	N.a.	0,225	N.a.	2,450	N.a.	8,106	N.a.	0,000
<b>Scope 3: Other indirect sources</b>	<b>1,63</b>	<b>1,99</b>	<b>2,93</b>	<b>5,35</b>	<b>1,02</b>	<b>3,49</b>	<b>3,28</b>	<b>2,54</b>
Fuel for bldgs: mains gas (upstream)	0,102	0,155	0,402	0,297	0,045	0,000	1,331	N.a.
Fuel for bldgs: tanked gas (upstream) (1)	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	Ne
Fuel for bldgs: diesel (upstream)	Ne	Ne	Ne	0,006	Ne	0,002	0,002	0,312
Commission vehicle fleet (upstream)	0,003	0,004	0,007	0,003	Ne	0,012	0,003	N.a.
Site generated renewables (upstream) (3)	0,000	0,002	0,043	0,000	0,000	0,000	0,028	Ne
External grey electricity supply, line losses	0,001	0,024	N.a.	N.a.	0,096	0,716	N.a.	0,085
Ext. 'renewables' electricity contract (upstream + line loss)	0,023	0,034	0,043	0,341	0,000	0,000	0,043	0,000
District heating (upstream)	N.a.	0,036	N.a.	0,387	N.a.	1,281	N.a.	N.a.
Business travel: air (combustion) + (including air taxi)	0,225	0,041	0,024	0,019	0,065	0,030	0,035	0,211
Business travel: rail (combustion)	0,004	0,002	0,002	0,006	0,004	0,017	0,001	0,006
Business travel: hire car (combustion)	0,001	0,015	0,000	0,000	0,000	0,022	0,001	0,007
Business travel: private car (combustion)	0,006	0,019	0,004	0,024	0,003	0,062	0,007	0,037
Commuting (combustion) (4)	0,063	0,207	0,308	0,220	0,076	0,256	0,243	0,022
Fixed assets - buildings	0,864	0,756	0,793	2,052	0,391	0,362	1,145	1,452
Fixed assets - IT	0,155	0,204	0,249	0,673	0,257	0,635	0,225	0,127
Fixed assets - Commission vehicles	0,003	0,004	0,008	0,001	Ne	N.a.	0,003	N.a.
Paper supply	0,006	0,002	0,012	0,006	0,005	0,003	0,004	0,006
Service contracts	0,155	0,438	1,018	1,192	0,073	0,089	0,052	0,160
Catering (5)	0,004	0,023	0,000	0,043	0,001	0,000	0,073	0,021
Own waste	0,016	0,029	0,019	0,078	0,003	0,000	0,030	0,094
(Other category) - Ispra	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	0,058	N.a.
<b>Sum</b>	<b>2,47</b>	<b>3,57</b>	<b>5,22</b>	<b>10,27</b>	<b>2,42</b>	<b>20,01</b>	<b>9,95</b>	<b>5,29</b>

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

(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 protocol - less than 3%); (3) Geothermal, biomass, PVs, (for JRC Geel electricity supply for heat pumps includes upstream emissions) (4) Can include Commission bus service when appropriate (5) JRCs Petten, Karlsruhe and Seville use restaurants outside the site boundary. A small cafe within the Karlsruhe boundary was closed for for 2021.

The main observations arising from Table 4.3, are:

- Carbon footprints ranged from less than 5 tonnes/person (Brussels, Luxembourg, Petten, Seville the sites; other than JRC Petten) with a high proportion of offices) to 10-20 tonnes/person (Ispra and Karlsruhe) sites with extensive experimental facilities.
- Scope 1 emissions (own fuels use and direct losses) usually represent a small proportion of the total emissions. JRC Ispra is the exception with its gas fired tri-generation plant that accounts for over half of the total.
- Scope 2 emissions (purchased energy) is particularly high for JRC Karlsruhe, which relies on electricity and district heating for almost all of its buildings' energy requirements. The combination of high energy consumption and relatively low proportion of renewables in the energy mix generates considerable per capita emissions, The site cannot select the suppliers, and is dependent on arrangements made by the KIT campus.
- Scope 3 emissions (other indirect sources) represent the greatest proportion of the carbon footprint for sites other than Karlsruhe and JRC Ispra. In 2021 they were nearly three times the combined total for Scopes 1 and 2. By definition Scope 3 emissions are more difficult to manage with management having "indirect" control. (This means that particular attention is required in the tendering process to ensure that contracts include the measures necessary to reduce emissions).

There are Commission targets for both Scope 1 and 2 emissions. **Further discussion of different categories of emissions are presented in Appendix 3, as follows**

### 3.1 Emissions due to buildings' energy consumption



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- 3.2 Emissions due to refrigerant or coolant loss
- 3.3 CO2e emissions from the site vehicle fleet
- 3.4 Staff missions, breakdown by EMAS site
- 3.5 Staff missions, breakdown by DG/Service (to update)
- 3.6 Homeworking emissions breakdown by site
- 3.7 CO2e emissions from commuting
- 3.8 Alternatives to missions and commuting
- 3.9 External experts' missions' emissions
- 3.10 Fixed asset emissions (buildings)
- 3.11 Fixed asset emissions (Information Technology)
- 3.12 Emissions from purchased goods and services
- 3.13 Emissions from waste disposal
- 3.14 Total air emissions of other pollutants

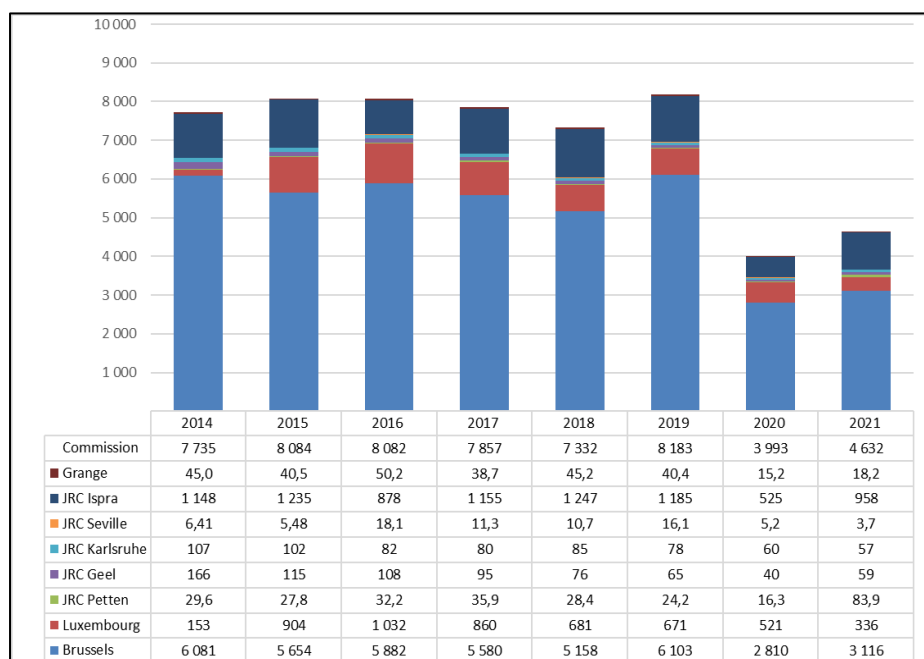
## 5 Improving waste management and sorting

Waste management practices vary from site to site. Some, such as JRC Geel, consider all waste generated on site to be the Commission's direct responsibility and therefore include all contractors' waste in their waste reporting system, and JRC Karlsruhe, that due to its nuclear status must ensure that all site waste generated is disposed of by very tightly controlled channels. In other sites, the quantity of waste directly disposed by contractors may not be included in the site's figures. As indicated in Appendix 3.12, only 0.4 to 0.5% of emissions due to waste disposal arise from landfilling, underlining the importance of the circular economy.

### 5.1 Reducing non-hazardous waste generation <sup>(32)</sup>

Figure 5.1 data indicate that in 2021 the Commission, assisted by the COVID pandemic, reduced its non-hazardous <sup>(33)</sup> waste generation by nearly half from 2019 to 2020 before increasing by over 10% in 2021.

**Figure 5.1 Generation of non-hazardous waste at EMAS, 2014-21 (tonnes)**



While the overall tendency in 2021 was an increase in non-hazardous waste generation, several sites including most notably Luxembourg, and JRC-Karlsruhe generated less hazardous waste.

The decrease for Luxembourg was due to additional staff members and to the low presence at the office due to the pandemic.

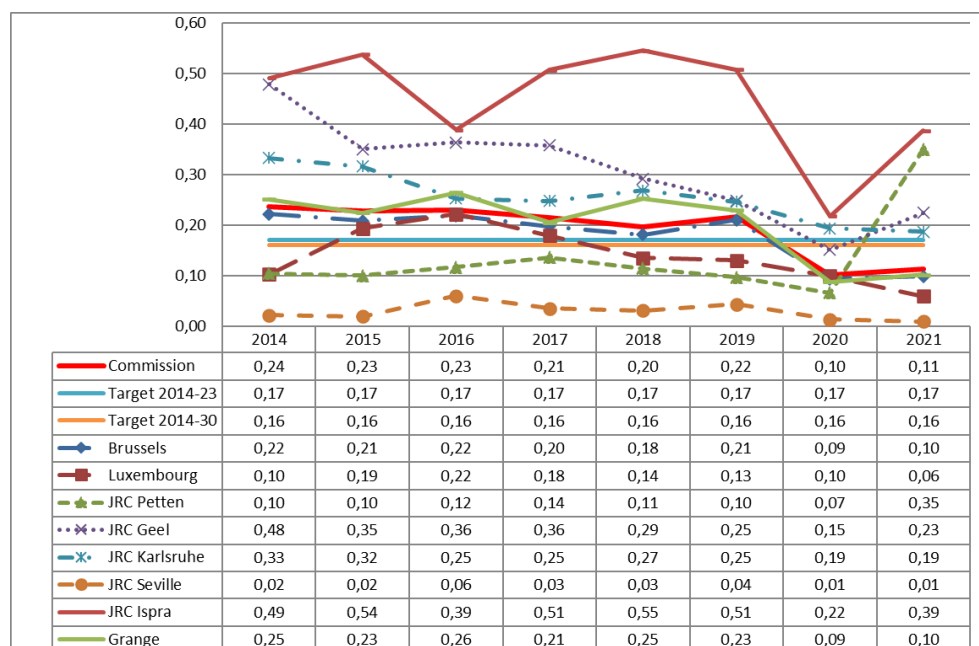
JRC Karlsruhe has developed their policy of waste partitioning and recycling which constantly seeks to reduce overall waste production.

Figure 5.2 shows the evolution of per capita waste generation at Commission sites and Commission level targets.

<sup>(32)</sup> Definition of non-hazardous and hazardous waste according to the EU Waste Directive 2008/98/EC

<sup>(33)</sup> It should be noted that at some sites contractors' construction and demolition waste is included in the total (JRCs Petten, Geel) and this can give rise to significant year-to-year fluctuations. Works at JRC-Ispra contribute to significant year on year variation

Figure 5.2 Evolution of non-hazardous waste generation at EMAS sites, 2014-21 (tonnes/person)



The Commission reduced non-hazardous waste generation from nearly 300 kg/person in 2005 <sup>(34)</sup> to less than 200 kg/person in 2019. It halved between 2019 and 2020 and increased a little in 2021 because, in the case of Brussels, figures related to waste produced by refurbishment works have been included in this year's reporting.

At JRC-Ispra, the increase is due both to the resumption of normal activities on site and to a greater presence of staff compared to 2020. At Petten 2021 recorded a significant rise due to the removal

of two cranes and therefore a remarkable increase of metal waste.

The 2014-23 and 2014-30 targets have been already met. There is some fluctuation in recent years particularly of sites newer to EMAS implementation.

JRC-Seville cooperated with the cleaning company to implement a new waste management plan. In Luxembourg the relocation of staff from the Jean Monnet (JMO) building generated considerably more waste in 2016 and 2017. JRC Ispra site's rate of waste generation has fluctuated in recent years owing to variable infrastructure works across the site but reduced by 7% in 2019 before more than halving in 2020 and in 2021, owing largely to the impact of the COVID pandemic.

The Commission has sought particularly since 2018 to reduce the use of single-use plastics (SUP) in its vending machines and catering facilities, and part of this involved replacing non-recyclable cups and installing water fountains. The corporate EMAS Coordination team was initially able to identify and report on 56 actions across the eight EMAS sites plus the corporate actions and the actions foreseen at EC representations in Member States, demonstrating progress in this initiative, and these have progressed considerably.

The sites identified the following types (and numbers) of actions to reduce non-hazardous waste in the 2022 EMAS Global Action Plan.

Table 5.1: EMAS Global Annual Action Plan – Ongoing site level ongoing actions to reduce non-hazardous waste generation

	Description	BX	LX	PE	GE	KA	SE	IS	GR	COM	REPs
Studies / awareness	Raise awareness	1	1	2	1			1		1	1
	Improve waste management procedures, GPP	2	1	1			2		1		

<sup>(34)</sup> Commission performance from 2005 to 2009 is based heavily on Brussels data

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Operational optimisation	Contractor to report on their own waste		1								
	Improve demand management in self restaurants	1									
	Improve demand management for children's facilities	1									
	Improve demand management for printed publications or improve publication process						2				
	Reduce number of bins	1									
	Replace plastic cups with alternatives, or other reusable crockery	2							2		1
	Reduction of single-use plastic (SUP)	6	1				3	8	3		
	Replace disposable cups with porcelain	1	1								
	Reuse (unused) office supply		1								
	Organic waste recycling						1				
Large investment	Install water fountains or dispensers	2						1	1		
IT	Replace printing devices (JRC policy)						1				

Brussels has the greatest number of actions, and several are to reduce SUP. Brussels and JRC Ispra have moved towards installing water fountains. JRC Karlsruhe implemented many waste sorting and reducing activities also associated with plastic many years ago. JRC-Geel reduced SUP generation by introducing glass bottles and drinking water fountains in 2019, while JRC-Ispra has also continued its commitment to avoid the use of SUP, and encouraging staff to do so, through awareness campaigns.

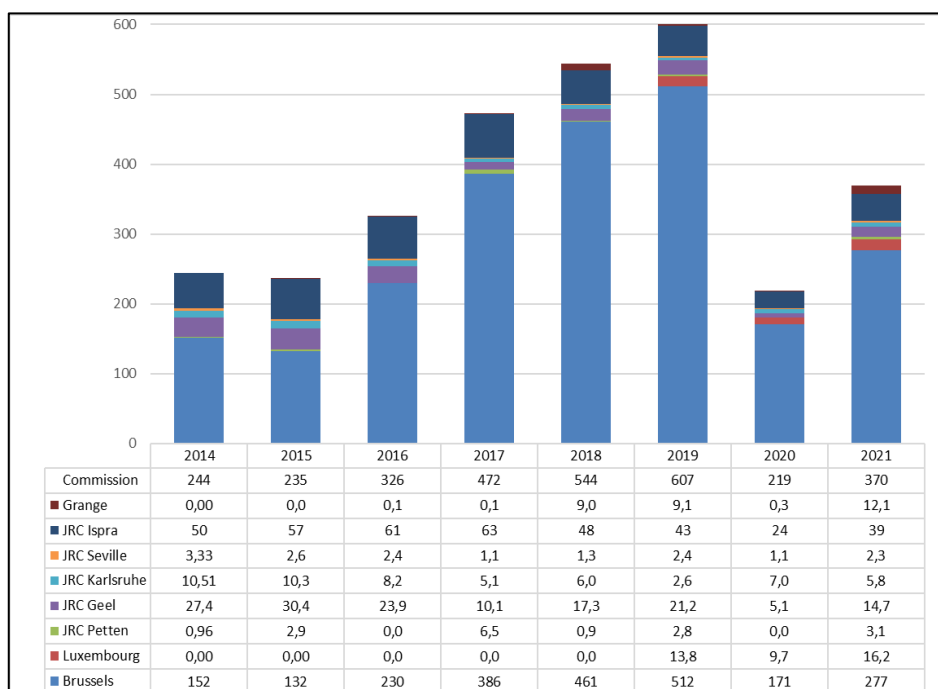
The sites identified the following **key** actions for reducing non-hazardous waste generation in the 2021 Global Annual Action Plan:

- Brussels: Raise waste contractor's awareness; centralised waste sorting stations pilot project extended to additional buildings; create waste working group; replace offset printing technology; tender for digital press using water based inks; ecological supplies in office supply contract; tenders for upcycling and recycling of office furniture; inter-institutional tender for collection and recycling of bulky items; avoid SUP by promoting green events; pilot project to collect and recycle paper cups and paper towels; replace paper cups by porcelain cups; replace chemical based cleaning products by bio based products; pilot project for the use of washable diapers, producing less waste and requiring less water in the diapers' fabrication process; installation of water fountains at the afterschool care facilities, replacing the use of plastic bottles, using paper cups
- Luxembourg: General waste reduction campaign including for educators and children; extend pilot for common waste points to additional buildings; include in tenders the obligation for contractors to deal with and report on the waste they produce linked to activities in the Commission; reduction of single use plastic items; receive contractual reports and documents only electronically; electronic conference information for participants; analyse possibility to reuse declassified furniture and replacing paper cups with porcelain cups
- JRC-Ispra: Improve waste indicators; promote waste reduction and separation; increase percentage of recycled urban waste; optimise control of the new storage facility for special waste; optimise the operational control of the waste coming from construction/demolition sites
- JRC-Geel: set up waste segregation islands to replace individual bins; organise eco workshops in waste reduction campaigns; recruit a nuclear waste manager
- JRC-Petten: general awareness campaign
- JRC-Seville: Waste sorting station in new conference centre

- DG SANTE at Grange: Reduce waste to landfill
- DG COMM Reps: Staff awareness actions about waste reduction and sorting and staff awareness actions on organising green meetings and events

## 5.2 Reducing hazardous waste generation <sup>(35)</sup>

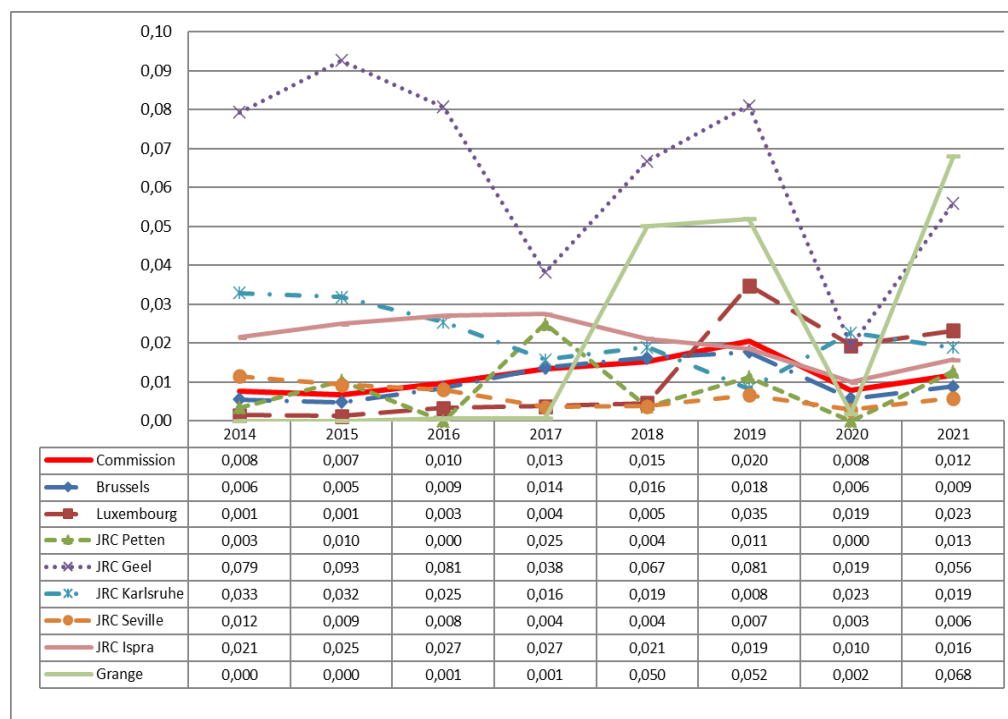
Figure 5.3 Hazardous waste generation at EMAS sites, 2014-21 (tonnes)



The Commission generates far less hazardous than non-hazardous waste. Figure 5.3 shows again that, largely owing to the COVID pandemic, the Commission reduction in hazardous waste generation in 2020 was remarkable, although in 2021 it increased slightly due to a gradual return to the office.

Year to year comparisons for the research sites may not always be appropriate because some hazardous wastes are stockpiled prior to disposal, and the type and quantity of waste will vary with the experimental program. For this reason, the EMAS Steering Committee decided to discontinue the hazardous waste generation target.

Figure 5.4 Evolution in hazardous waste generation at EMAS sites, 2014-21 (tonnes/person)



Some of the actions included in the EMAS Annual Action Plan to reduce hazardous waste included:

- JRC Geel: Recruitment of a new nuclear waste manager and build a new hazardous waste storage facility
- JRC Ispra: new hazardous waste storage facility and daily presence of an onsite waste operator
- Brussels: replace offset printing technology

Ispra Operational Nuclear Decommissioning and Waste Management has signed a Material Transfer Agreement with Radiopharmaceutical Chemistry Unit of Czech Technical University of Prague about the donation, and indeed the re-use, of the Cyclotron lab, an amazing example of circular economy. Several shipments have occurred since the signature of the agreement with the last one planned for September 2022.

### 5.3 Sorting waste into reusable waste streams

Figure 5.5 shows a decrease in the unsorted waste mainly due to sites' efforts to maximise the sorting of waste into potentially useful recycling streams and minimise the amount of unsorted "general" waste.

2020 and 2021 figures may not be representative, due to the low buildings' occupancy. But indeed, the percentage of unsorted waste decreased substantially, from 40 to 25%.

**Figure 5.5 Unsorted waste as proportion of total waste at EMAS sites, 2014-21 (%)**

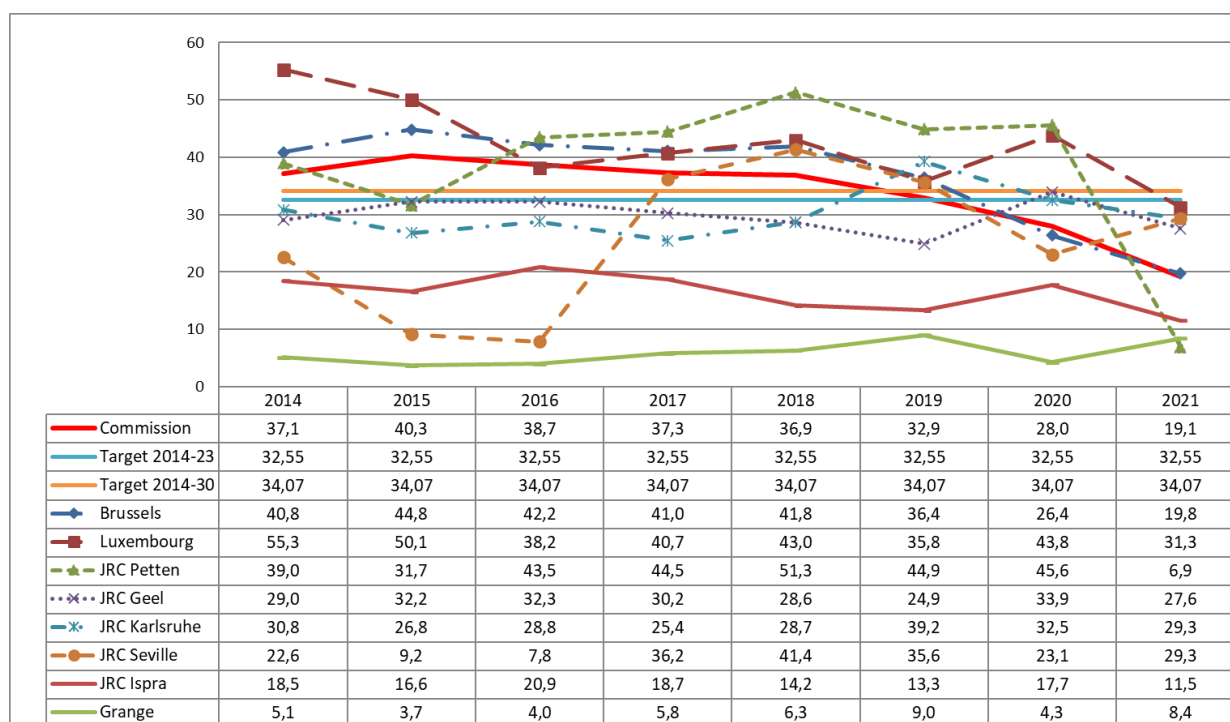
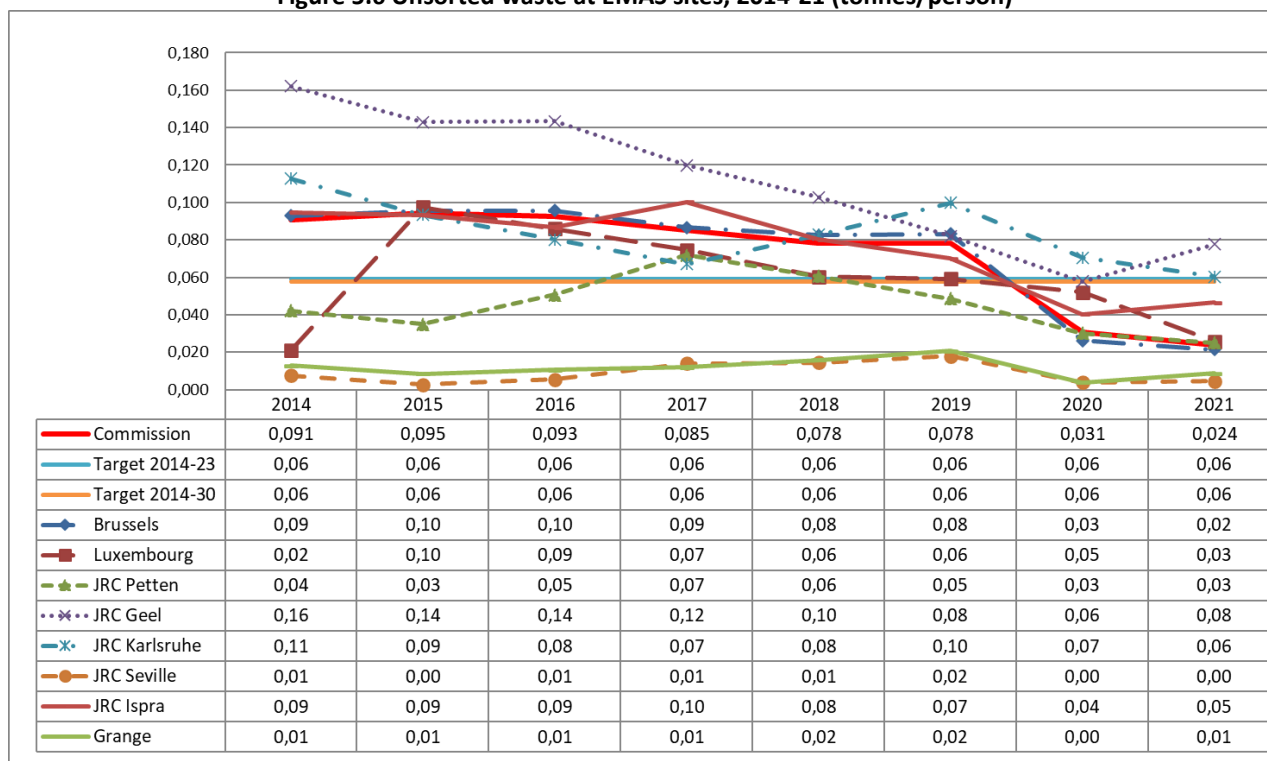




Figure 5.6 Unsorted waste at EMAS sites, 2014-21 (tonnes/person)



JRCs Petten and Ispra have the lowest proportion of unsorted waste, and Grange has achieved less than 10% in recent years. This low value is in part due to Grange’s waste contractors undertaking additional sorting post collection. Brussels had improved waste sorted through improved awareness and the successful introduction of new waste sorting stations, initially installed as pilot trials in several DGs. JRC-Karlsruhe’s figures are indicative as German legislation has a different definition for sorting.

Figure 5.6 shows that per capita unsorted waste reduced by 34% from 2020 to 2021, the Commission having already met the 2023 and 2030 targets. Approximately 0.6% of waste goes to landfill with JRC Ispra and Grange sites reporting this mode of disposal.

Table 5.2 summarises the types of initiatives of actions included in the 2022 Global Action Plan to reduce waste sorting, and the number of actions per site.

Table 5.2 EMAS Global Annual Action Plan - Types and number of ongoing site level actions to improve waste sorting

Type of action	Description	BX	LX	PE	GE	KA	SE	IS	GR	CO	REP
Studies / awareness	Staff awareness							2	1		1
	Documentation and procedures	1					1	1			1
	Contractor awareness	1									
	New tender for waste management contract	2					1				
Operational optimisation	Contractor to manage own waste		1								
	Standardise waste contractors’ management		1								
	Signing and distribution of bins	2									
	Introduce waste sorting stations, or new storage areas	2			1		1				
	Replace plastic cups by biodegradable ones	1									
	Collect coffee grounds								1		

There are several actions seeking to improve waste sorting in most of the sites. Involving contractors is an important element of several actions.

### 5.3.1 Recycling obsolete IT and office equipment:

DG DIGIT has a contract with Oxfam Solidarity (Oxfam) since 2006 (and since 2017 with Close the Gap), for the “removal and recycling, for humanitarian purposes”, of goods no longer used by the Commission but still useful beyond their economic life, and thus providing a useful social outcome. The sales fund these charities’ humanitarian and welfare activities. Through the agreements, DG DIGIT aims to reuse on average at least 70% of units collected from the Commission.

Table 5.3 shows actual recycling rates for IT collected in Brussels (and Luxembourg), indicating that far higher rates were achieved until 2017. The data includes material collected in Luxembourg which is transferred to processing facilities in Belgium.

**Table 5.3 Number of IT and telephony items collected and recycled in Brussels and Luxembourg**

Parameter	Year of collection											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Collected items	15 462	12 531	19 360	24 744	27 513	30 918	23 969	18 133	15 988	30 001	31 483	16 763
Processed items <sup>1</sup>	15 301	12 531	19 251	19 935	27 375	30 918	23 554	18 088	15 988	28 893	31 483	16 763
Items for second hand use	12 509	10 960	17 469	17 298	24 759	27 952	21 736	14 287	10 549	14 357	12 935	15 851
Second hand use (%)	82	87	91	87	90	90	92	79	66	49	41	95
Recycled or dismantled (%)	18	13	9	13	10	10	8	21	34	51	59	5
Weight of collected items (tonnes)	45,81	33,03	57,36	73,32	76,02	72,33	45,00	67,50	55,54	215,92	150,60	152,82

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

Left over equipment is transferred to authorised operators on behalf of Recupel, the non-profit organisation responsible for recycling electrical and electronic waste in Belgium. During the annual audit of Oxfam Solidarity under its EMAS registration, the auditor verified that its recycling measures complied with environmental regulations and noted the generally good progress it had made in relation to legal requirements.

The data reported are for IT and telephony, with the split between the two available since 2017. Although recycling of combined IT and telephony has fallen below 70% in 2018 and 2019, IT alone has remained above 70% according to Oxfam and Close the Gap data. If docking stations are excluded, re-use of IT was 85% in 2018 and 84% in 2019. Charities report that they cannot sell docking stations as they are generally not used in homes. Since the Commission has implemented telephony through its IT equipment it has disposed of most of its fixed phone sets. But the charities send these to Recupel for dismantling as there is no market for them, recycling rate of telephony was 23% in 2018 and 0% in 2019.

The high re-use rates for IT equipment were achieved despite the falling cost of new goods, which make older IT equipment less attractive. This is due to the generally good quality of the collected items, and systematic recycling effort made by Oxfam in the context of its EMAS registration and by Close the Gap through the ISO9001, ISO14001, OHSAS18001, R2 and WEEELABEX certificates of its partners.

Oxfam reports the weight of IT material collected and this is incorporated into the Brussels waste reporting. The quantity of waste that Oxfam collected (including donations to Close the Gap) increased from less than 100 tonnes prior to 2019 to over

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200 tonnes, and decreased but still exceeded 100 tonnes in 2020/1. Similar donations of IT were organised in the JRC's sites of Brussels, Ispra and Petten. With a global amount of 342 items in 2020, 498 in 2021. <sup>(36)</sup>

ICT strategies such as replacing desktops by laptops, removing of personal printers, splitting computer and screen life cycles <sup>(37)</sup>, replacing fixed line phones with Voice over Internet Protocol (VoIP) software solutions explains the variation in terms of volume and weight. Recycled office equipment (excluding ICT) under the same contract amounted to over 500 tonnes in 2016 and 2017, but reduced to 256 and 247 tonnes respectively in 2018 and 2019. Table 5.4 shows the evolution for different categories of IT equipment.

**Table 5.4 Evolution of reported IT inventory from 2018 to 2021 at Commission sites\***

Table 5.5 Evolution of reported IT inventory from 2018 to 2021 at Commission sites*					
Category of equipment	2018	2019	2020 data	2021 data	% change 2018-21
<b>Computers and screens</b>					
Desktop PCs	23908	14590	13534	10238	-57,2
Laptops	28267	35890	43939	43590	54,2
Docking stations	26074	35311	42133	43100	65,3
Flatscreens	61041	63714	72691	71283	16,8
<b>Printers and scanners</b>					
Individual printers	7361	3505	2637	1869	-74,6
Network printers and copiers	5911	5452	5407	4665	-21,1
Scanners	495	387	357	343	-30,7
Fax machines	242	168	145	129	-46,7
<b>Telephones and faxes</b>					
Simple (portable) phones	160	150	201	124	-22,5
Smartphones	9062	9314	7444	6973	-23,1
Fixed line telephones	43376	30884	17556	18487	-57,4
<b>Servers and switches</b>					
Informatics server	6160	5684	5855	5447	-11,6
Firewall router switch	2392	2490	7268	7029	193,9
<b>Video equipment</b>					
Projectors	845	673	656	554	-34,4
Videoconference installations	1418	1194	1273	1174	-17,2
Televisions	437	523	588	649	48,5

\* All sites, although JRCs Seville and Karlsruhe data included from 2020

<sup>(36)</sup> 2020: <https://webgate.ec.europa.eu/connected/docs/DOC-250318> 2021: report not published yet, data by JRC

<sup>(37)</sup> CRT monitors and Desktop computers had roughly the same life expectancy. Since LCD screens were introduced, computers are replaced more frequently than the standalone screens which have a higher life expectancy.

## 6 Protecting biodiversity

Table 6.1 summarises the required EMAS biodiversity indicators including “nature-oriented areas” both onsite and offsite <sup>(38)</sup>.

**Table 6.1 Biodiversity indicators in 2021**

Site	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Karlsruhe	JRC Seville	JRC Ispra	Grange
Total use of land (m2)	285 928	138 339	332 500	380 316	72 000	12 094	1602 965	90 000
Per capita	9	24	1 385	1 446	236	31	648	513
Total sealed area (m2)	181 864	104 029	59 909	72 110	72 000	23 487	654 157	18 000
Per capita	6	18	250	274	236	60	264	102
nature oriented area onsite (m2)	104 064	34 310	75 591	308 206	162 000	4 994	948 808	18 250
Per capita	3	6	315	1 172	531	13	383	104
Nature oriented area offsite (m2)			197 000					18 000
Per capita			821					102

The data shows that JRCs Petten and Geel are the most sparsely populated sites, with JRC Ispra and DG SANTE at Grange also occupying several hundred square meters of land per person. The experimental JRC sites have relatively extensive sealed areas, due to the widespread presence of experimental apparatus. There is also plenty of room for nature at the experimental JRC sites. JRC Petten is involved in managing natural areas outside the site perimeter.

Volunteer groups organise occasional activities in Brussels and these have included incorporating potted plant areas at locations in front, or inside buildings’ open courtyards. The OIB started a study with the University of Liège to develop an approach to incorporating biodiversity indicators in several urban areas at or between office buildings. This involved a participatory approach considering both input and output-based measurement criteria.

Activities at JRC Petten, JRC Geel and DG SANTE at Grange are discussed below. **Key actions** in the 2022 Global Action Plan included:

- Brussels, Luxembourg and DG SANTE Grange: Preparing a forest management plan or ecological enhancement plan or biodiversity plan
- JRC Geel: Preparing an updated biodiversity assessment and action plan for the forested areas and setting up priorities based on the 2020 biodiversity study
- JRC Ispra: Developing a multi-annual plan in line with the EU Biodiversity Strategy
- JRC Petten: Developing and updating the NATURA 2000 Control Plan with the Dutch authorities and creating new habitat, including insect hotels
- JRC Seville: Identification of specific biodiversity actions for the JRC Seville site.

### 6.1 Brussels

The OIB has launched a new project in 2021, with the aim of elaborating a strategy for the improvement of conditions for biodiversity in the external green areas of the buildings occupied / managed by the Commission in Brussels (action 505 in the

<sup>(38)</sup> Where an organisation participates in the management of an area outside its perimeter

Global Annual Action Plan). The project is carried out in collaboration with the University of Liège, Agro-bio Tech department Gembloux, and with the involvement and consultation of a broad spectrum of stakeholders:

- OIB departments and other Commission DGs (ENV, JRC, HR), including the network of EMAS Correspondents across the Commission
- Local and regional authorities
- Other European Institutions; and
- NGOs involved in the fields of environment and sustainability.

This strategy, as main deliverable, is scheduled to be presented in the first semester 2022.

## 6.2 Natura 2000 site at JRC Petten



Staff from an external company analyzing the nature in the Natura-2000 dune area adjacent to the JRC Petten premises

In 2019 an external company was asked to perform a nature management plan for the Nature oriented area, a Natura-2000 dune area adjacent the JRC-Petten premises.

The results were delivered in 2020 and three different scenarios to improve the biodiversity and protect endangered species and habitats were suggested. In 2021 JRC Petten received a budget to implement the advanced scenario for nature preservation and restoration to achieve the goal to sustain biodiversity on site.

In 2021 JRC-Petten invited the responsible forester from the National Forestry (Staatsbosbeheer) to show the Natura 2000 area so addresses lessons-learned from the COVID-19 lockdown that will contribute to the “new normal” and efforts to reach Commission’s climate neutrality objective by 2030.

## 6.3 JRC Geel’s forestry management

To further enhance its biodiversity on its premises, JRC-Geel has hired an external company specialised in biodiversity to develop a biodiversity plan. This study, completed in 2020, assessed the existing status of the biodiversity and proposed complementary actions to increase it further.

A prioritisation of the actions was made in 2021. As a result, two main actions were carried out to improve both the fauna and flora:

- The first action has been the purchase of various bird nests of different types (owl, as well as bats) and, insect hotels to improve the fauna habitats.
- The second action set up was taken to increase the flora in the green areas of the JRC-Geel.


An additional action was initiated under the bumble bee nest project managed by unit R.6. Old wooden pallets were collected and sawed for the construction of bumble bee nests.

## 6.4 JRC Ispra’s habitat mapping and species protection

JRC-Ispra site features 33 hectares of natural habitats of conservation covered by the Habitats Directive. A 3 years’ monitoring plan of habitat surfaces is in place, the next habitat survey is foreseen in 2022.



## Corporate Summary



Habitat	EU Habitat Directive code	2019
Grasslands: high-diversity plant communities Acidophilous meadows, Dry meadows, Wet meadows	6230*: Species-rich <i>Nardus</i> grasslands	3.73 ha
	6150: Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> )	3.48 ha
	6510: Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> )	3.02 ha
	Total	10.23 ha
Wetlands Surface waters and swamp	3150: Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation	1.30 ha
Wet woodlands Alder woodland and mixed alder-oak woodland	91E0*: Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, <i>Salicion albae</i> )	17.11 ha
Dry woodlands Oak woodland	9190: Old acidophilous oak woods with <i>Quercus robur</i> on sandy plains	4.67 ha

JRC-Ispra has established a biodiversity monitoring approach that adopts scores to reflect both the quantity and quality of site biodiversity. This way forward allows defining objectives and evaluating progress in time.

A field survey recorded the population of different species of amphibians, including a protected species of frog.

Deadwood (coarse woody debris) is also a proxy indicator for biodiversity, since it is a habitat for a wide array of organisms including vertebrates, invertebrates, lichens, bryophytes and fungi. In 2021, a “dead wood garden” has been developed along a popular footpath to inform the staff about the biodiversity on site.

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 21<sup>st</sup> November and in 2021 101 trees and shrubs were planted on site in activities involving management.

Moreover, to improve the perimeter of a wooded area during 2021, exotic forest species have been eliminated to prevent dead branches (or the trees) from falling and 658 native trees and 927 shrubs have been planted with the aim of recovering forest habitats of community interest "Alluvial forests of *Alnus glutinosa* and *Fraxinus excelsior*.

In addition, JRC-Ispra is planning to reduce the number of invasive alien species by removing American pokeweed and cutting the Pygmy Bamboo, removing 9 invasive species such as *Pinus nigra* (black pine), *Quercus rubra* (northern-red oak), *Pinus strobus* (white pine) and girdling of *Robinia pseudoacacia* (black locust) and *Prunus serotina* (black cherry): 200 plants which will be removed in 2022.



JRC Ispra habitat map, and zoning for forest works

## 6.5 Ecological enhancement at Grange

### DG SANTE at Grange projected landscape enhancement



Several activities listed in the Global Annual Action Plan are for ecological enhancement.

Such activities have included the planting of native trees, the creation of meadowlands, and allotments for staff.

More recently, DG Grange committed to a five-year bio-diversity project that will conserve and restore indigenous flora and fauna. In addition to the net biodiversity gain, an increased carbon adsorption is expected as the landscaping scheme establishes and matures. In 2021, owing to the COVID epidemic, it was not possible to put in place other parts of the plan (e.g. creation of two pollinators sections). However, meadows have grown and their harvesting has been quite successful and productive

### DG SANTE at Grange, Meadows cut





## 7 Promoting Green Public Procurement (GPP)

### 7.1 Incorporating GPP into procurement contracts

The EMAS sites have been recording the proportion of procurement procedures that include environmental criteria, beyond the requirements of the financial procedures, as shown in Table 7.1. Alternative approaches are being considered, as described in Section 7.2, to provide more information on the strength of the measures adopted, and to support the Greening the Commission Communication.

**Table 7.1 Contracts greater than 60k EUR with additional "eco" criteria (%)**

Site	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Brussels	0	94	80	100	82	93	100	100	100	100
Luxembourg	65	92	100	100	94	83	100	71	93	100
JRC Petten	NR	NR	NR	NR	NR	NR	76	76	76	76
JRC Geel	NR	NR	NR	NR	22	33	35	29	29	29
JRC Karlsruhe	NR	NR	8	8	8	28	26	36	27	54
JRC Sevilla*	NR	NR	1	2	1	1	2	13	15	7
JRC Ispra	NR	17	32	9	9	10	17	64	53	40
Grange	0	0	2	4	100	100	100	100	100	100

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

In recent years both Brussels and Luxembourg have increased the number of their procurement contracts, managed by the Infrastructure Offices OIB and OIL respectively, that include some form of "green" criteria in the contract or award process, in addition to the standard clauses. The JRC sites and Grange have also started to incorporate such criteria.

In addition to the infrastructure and logistics contracts, JRC also manages many contracts related to research that do not fall under the current GPP guidelines.

DG ENV chairs an inter-service working group on developing and promoting GPP [criteria](#) as part of the Commission's response to its obligations under the Circular Economy Package.

### 7.2 Rating the level of sustainability achieved in contracts through GPP

The Commission started, in 2018, to use the European Court of Auditor's recommended grading scale <sup>(39)</sup> to show the degree to which tenders incorporate sustainability, as follows:

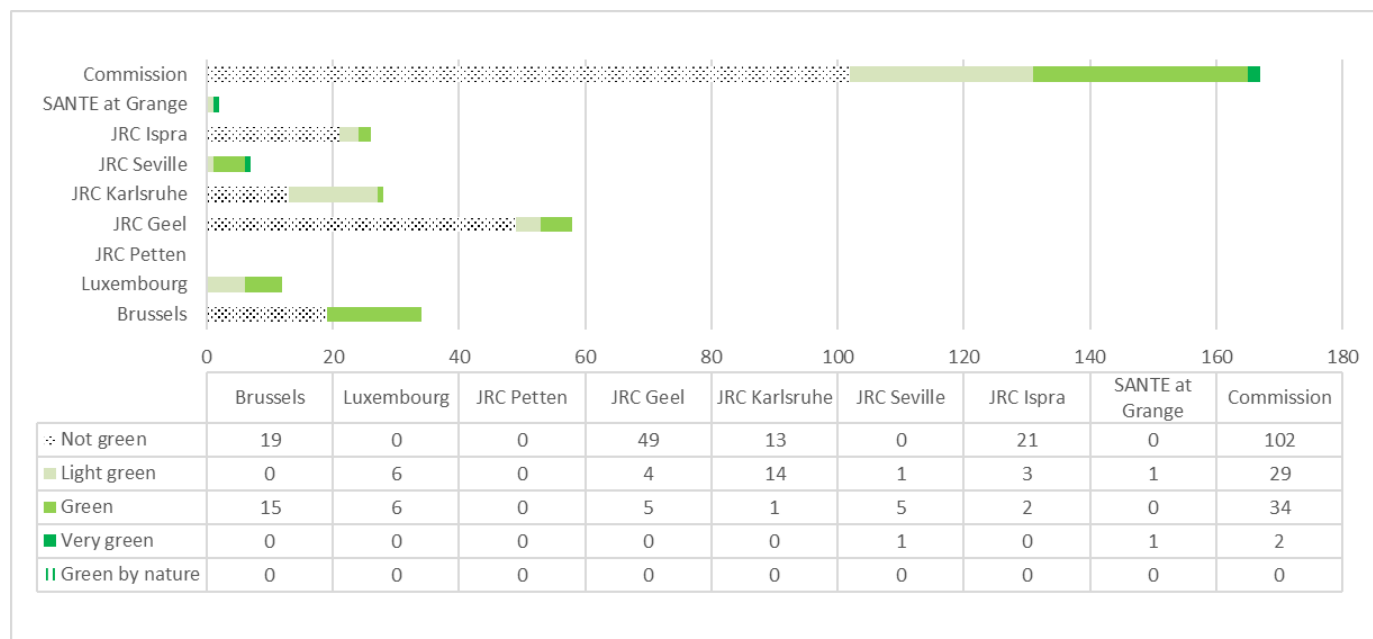
- **Not green:** Tender documents without environmental considerations or have clauses without impact on purchasing approach
- **For light green to very green** a main difference is in the weighting of the environmental criteria as a share of the total (for price and quality), as follows:
  - ❖ **Light green:** <10%;

<sup>(39)</sup> Scale recommended in P41 Annex to the European Court of Auditors Special Report 2014/14 - How do the EU institutions and bodies calculate, reduce and offset their greenhouse gas emissions? This approach may eventually supersede that described in Section 7.1

- ❖ **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

Figure 7.1 presents the results at site level for the five categories:

**Figure 7.1 Breakdown of the extent of incorporating GPP criteria in 2021**



Note: (1) ‘Green’ total includes light ‘green’ and very ‘green’

Under this approach, 68% of contracts were ‘not green’ in 2018, but this increased to 74% in 2019 before decreasing to 64% in 2021. A relatively small proportion of contracts at the larger experimental sites JRC-Ispra had any degree of greening. JRC Petten has yet to adopt the new GPP criteria.

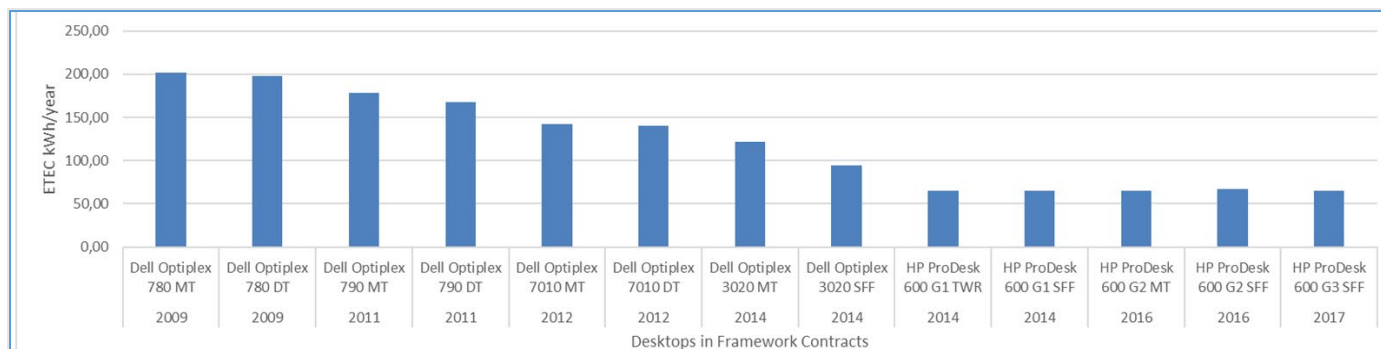
## 7.3 IT procurement – computers

DG DIGIT is responsible for IT across the Commission sites. It uses environmental criteria in the technical evaluation of all invitations to tender for the purchase of IT hardware and incorporates these criteria into the financial evaluation. Where pertinent the financial evaluation includes the cost of energy consumed by the equipment during its lifecycle.

The Commission’s desktop computers improved performance while reducing power consumption, as shown by the evolution of the E.TEC <sup>(40)</sup> value in Figure 7.2, reducing to around 65 kWh/year by 2017.

<sup>(40)</sup> A standard measure of annual total energy consumption

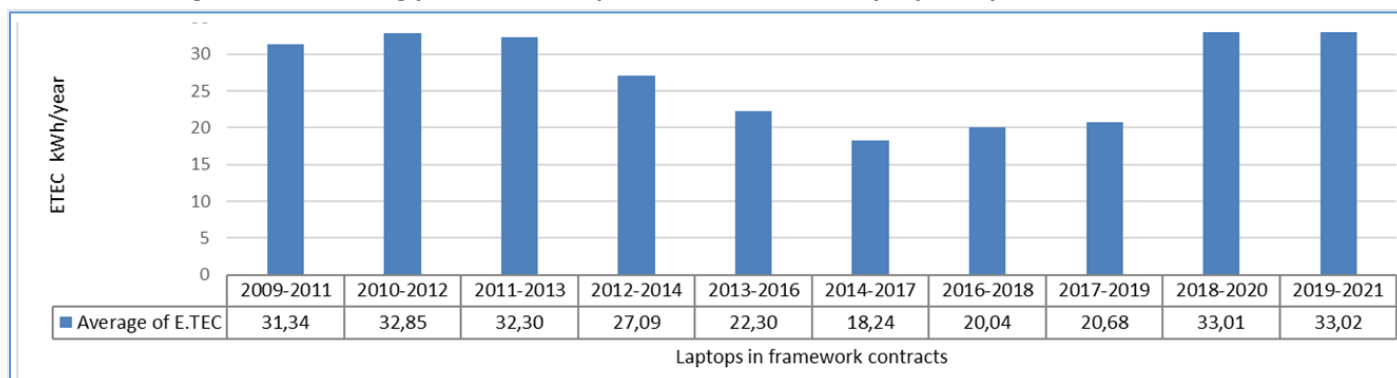
**Figure 7.2 Reducing power consumption in Commission desktop computers, 2009-17**



Since 2015, laptops have been replacing desktops with an eventual Commission target of 100% mobile computers by 2021 although in 2021 there remained 4070 desktops in Brussels, Luxembourg and Grange.

The efficiency of laptops improved quickly (Figure 7.3 <sup>(41)</sup>) after they were introduced because at first, they were usually a portable accessory supplementing a desktop. But since 2015 they started replacing desktops (and therefore needed to be more powerful) E.TEC values increased from a low of around 20 kwh/year to over 30 kWh/year. Averaging 33 kWh/year, the Commission’s laptops currently use about 15% of the energy the desktops consumed in 2009 (200 kwh/year).

**Figure 7.3 Reducing power consumption in Commission laptop computers, 2009 to 2021**



Other operational activities serve to reduce the Commission’s IT consumption, including consolidating servers in fewer locations, and insisting on high performance levels for IT data centres in Luxembourg.

## 7.4 Purchasing through the office supply catalogues

Data in Table 7.4 shows that Brussels and Luxembourg have reduced the percentage of non "green" products in the standard office supply catalogue. Since 2012, at both Brussels and Luxembourg the percentage of "green" items has roughly doubled. JRC-Ispra has a smaller proportion of "green" products in the catalogue, but many items.

<sup>(41)</sup> Presenting 3 years averages makes it easier to show trends. There are 40 models of laptops in framework contracts.

**Table 7.4 Proportion and number of items in the office supply catalogue that are not “green”**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Percentage of items that are not "green"										
Brussels	73	64	64	54	53	52	52	53	53	46
Luxembourg	82	77	74	77	74	64	65	46	45	45
JRC Ispra	74	74	76	76	68	70	72	71	72	74
Number of items that are not 'green'										
Brussels	464	328	328	385	416	392	386	124	125	48
Luxembourg	438	303	263	302	244	206	201	83	82	89
JRC Ispra	433	433	517	529	500	475	532	506	517	478

## 7.5 Specialist advice on Green Public Procurement

The Commission supports an inter-institutional consultancy contract coordinated by the European Parliament through which a helpdesk can provide tailored advice on how to incorporate more sustainable elements into individual contracts. Under the Green Deal initiative, the Commission hopes to improve the procedures and guidance available in the tendering process to ensure that GPP is considered in a systematic way.

## 8 Demonstrating legal compliance and emergency preparedness

### 8.1 Prevention and risk management

Sites have their own standard operating procedures including internal and external audits that are required to demonstrate compliance with operating licenses and legislation. Sometimes environmental and health and safety compliance are integrated. The approach is described in the site annexes to this report and depends on the site, who retains overall responsibility.

The corporate EMAS coordination team (HR.D7) organises an annual internal auditing exercise for all the eight sites plus the Representations which is conducted on the Commission's behalf (and participation), by an external consultant. This is an EMAS system requirement.

The sites are also subject to annual EMAS external verification audits, the successful completion of which is a prerequisite for EMAS registration. In 2021 the verification audit took place mainly in June. The consulting company used 14 auditors to visit the eight sites over 23 days, with usually two or three per site.

HR.D7 encourages the external auditors to consider the resources available to Commission staff when formulating their findings, and prioritise accordingly. The audits identify, in increasing order of urgency of response:

- Good practices
- Scopes for improvement (SFI) – which can be considered as professional advice with no obligation
- Observations – findings which if not addressed, could become non-conformities
- Minor non-conformities – findings to be addressed immediately but not a systems threat
- Major non-conformities – serious findings that put the system at risk and address immediately.

The Commission records and follows up all audit findings using workflow software (JIRA). The external verifiers must immediately approve auditees' actions to address both minor and major conformities. The Commission monitors the number of EMAS non-conformities each year as shown in Table 8.1.

**Table 8.1 Non-conformities from EMAS verification audits at Commission sites**

Site	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Brussels system coordination	6	0	2	2	0	0	1	0	0	1	0
Brussels (OIB and other)	15	5	1	1	3	1	0	1	0	0	0
Luxembourg	19	3	0	0	2	4	6	4	0	0	1
Petten			1	1	1	1	4	4	1	4	2
Geel				3	3	2	4	4	0	0	1
Sevilla				1	0	0	0	2	5	3	0
Karlsruhe					5	4	1	0	3	2	3
Ispra					0	0	0	1	1	0	0
Grange					4	3	4	3	3	0	0
<b>Total</b>	<b>40</b>	<b>8</b>	<b>4</b>	<b>8</b>	<b>18</b>	<b>15</b>	<b>20</b>	<b>19</b>	<b>13</b>	<b>10</b>	<b>7</b>

The total number of non-conformities has been decreasing since 2017, and is a sign of a maturing system. The 2021 verification exercise highlighted:

- Good practices (42) for all the sites
- Observations and scopes for improvements on several horizontal themes including the need to measure training effectiveness, and better incorporate the checking of data prior to verification audits.

## 8.2 Improving compliance (and performance) by registering more buildings under EMAS)

All buildings in Brussels and Luxembourg have their own environmental permits issued by the local authorities. Registering individual Commission buildings in Brussels and Luxembourg under EMAS helps to ensure that the Commission complies with the permits, of which up to 20 or 30 could be undergoing modifications at any one time, and in so doing delivering ever-improving environmental performance.

It also ensures the Commission adheres to additional local regulatory requirements, such as COBRACE in Brussels that are mandatory targets for reducing energy consumption. Owing to the administrative workload associated with incorporating new buildings in EMAS (including system implementation, data preparation and reporting internal and external audits), the scope of the Commission's system has expanded gradually by adding a "manageable" number of buildings every year.

EMAS reporting for Brussels in 2015 reached a milestone with all occupied buildings (62) included for the first time. However, the real estate portfolio changes from year to year, with typically either one or two buildings entering or leaving the estate. In 2018 three buildings were not included in the scope, but in 2019 both MO15 and MERO buildings underwent successful audits were added to the Brussels registration, and in 2022 the registration will include 60 of 61 buildings.

In Luxembourg, reporting on environmental performance has included all buildings and 15 out of 18 are EMAS registered representing 84% of useful floor space. As indicated in Table 1.3, 482 of 488 building structures (99 %) are registered in the Commission's EMAS scope in 2020, representing 98 % of useful floor space).

The JRC experimental sites, JRC-Seville and DG SANTE at Grange are self-contained, and each wholly registered under EMAS, therefore it is not necessary to register building by building as in Brussels and Luxembourg where the Commission's premises are spread across the cities. As the EC representations in Member States are progressively included in EMAS, each location will be registered separately, starting with Valletta and Vienna.

## 8.3 Emergency preparedness

Each Commission site has structures and procedures for responding to emergencies. A page on the EMAS intranet corporate portal (MyIntracomm) explains the different emergencies in Brussels and Luxembourg with links to all pages related to the follow-up of incidents and emergencies. This was necessary because for these large centres multiple services share responsibility for emergency preparedness and response making it sometimes difficult to see exactly where responsibilities lie between the Security Office, Health and Safety services, infrastructure services, etc.

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<sup>(42)</sup> Including JRC Ispra's annual external stakeholder initiative "EMAS Round Table" with national, regional and local authorities, which resulted in signing a Sustainable Development Agreement with the Lombardy Region in 2019, when it also achieved a record participation.

## Corporate Summary

In addition, summary sheets of emergency contact numbers are circulated to offices, and HR.D7 also prepared an intranet page to relay air quality alerts from the local authorities in Brussels. Automatic SMS to staff can also convey emergency information, for example, when buildings evacuations enter into force and when they are lifted.



## 9 Communication and training

### 9.1 Internal communication and training

This section describes the corporate communication and training actions common for all the Commission sites. Every year, HR.D.7 prepares detailed corporate communication and training action plans, sets up corporate internal communication campaigns, supports individual services in setting up local staff awareness campaigns, updates EMAS training material and delivers training and technical support to the EMAS Site Coordinators and to the EMAS Correspondents Network (Brussels and Luxembourg). The more important actions are outlined below.

#### 9.1.1 Leadership and commitment

During 2021, the Commission's senior management took an active role demonstrating leadership and commitment in relation to the environmental management system and environmental issues in general. Specifically:

##### 9.1.1.1 *"Building" the Greening Communication together*



The consolidation of the "Greening Communication and action plan" during 2021 followed a unique participatory approach, with regular steering from **Commissioner Hahn** and his team, in constant liaison with the **President Van Der Leyen** and her Cabinet. Specifically, Directorate HR. D: Workplace & Wellbeing with the support of its **Director Christian Roques** set up a focus group bringing together about 18 services, represented at various levels. We have had six meetings since October, many bilateral and trilateral talks, and received many contributions. This focus group has acted like a platform for all the ideas to be presented, going beyond the traditional representation of each service's positions. It has proven to be an efficient tool: we have dived into the complexity of the issues at stake, looking at the technicalities of energy efficiency, the specificities of each site, and ways to integrate constraints arising from local environmental legislations. The main aim was that the Communication emerging from this process to be both

ambitious and anchored in reality. The first draft was also presented to the Corporate Management Board, and the broad outlines to the Group of Resource Directors and the HR business correspondent network. A preliminary consultation with all Commission services took place in late 2021, generating several local staff consultations in several services. Lastly, a series of articles as part of the *Simpler.Smarter.Together.* campaign, were published, exploring the key themes of the greening of the Commission in greater detail.

##### 9.1.1.2 *VeloWalk: record number of institutions participate*



During spring 2021, the first-ever VeloWalk campaign combined two successful fit@work initiatives, supported by **DG HR Director-General Gertrud Ingestad**, the Walking challenge and the Velomai biking competition – the former took place in April, the latter, as usual, in May. Its goal was not only to encourage staff to exercise on a regular basis but also to help colleagues and students connect during lockdown and stay fit both physically and mentally. Altogether, nine institutions, nine agencies, 14 European schools and 35 delegations participated in the campaign, with many showing impressive results. Pupils from the European Schools were especially active: while in December 2020 only 60 students took part in the walking challenge, in April over 700 did – with the European School in Uccle boasting the most numerous team.

People who participated could register their steps and rides and browse the full VeloWalk programme in the dedicated web-based and mobile apps developed by colleagues in HaDEA. In the walking challenge, 2 500 people participated actively and registered a total of 436 million steps. The Velomai competition mobilised 1 512 cyclists who cycled 303 000 kilometres during 36 140 rides – equivalent to more than seven times the distance around the Earth! All these walks and rides meant emission savings of more than 39.5 tonnes of CO<sub>2</sub>. In order to make the challenge more fun, local and corporate actions related to walking and cycling were organised. More than 25 actions – including EMAS activities specifically promoting greener, sustainable mobility – took place during the campaign period, significantly more than in previous years.

Furthermore, many volunteers organised activities such as guided walks and biking tours. Another new component in this edition was the 'fundraiser for cancer' action. Participants were encouraged to donate directly to a selected group of organisations, offering a certain amount based on a target they set for themselves (such as €1 per 10 000 steps).

### 9.1.1.3 EU Green Week 2021 puts the spotlight on zero pollution



From 31 May to 4 June 2021, EU Green Week<sup>(43)</sup> - Europe's biggest annual event on environmental policy - explored possibilities to make the EU's zero pollution ambition a reality. It also allowed citizens across the EU to discuss zero pollution from its many angles at the virtual conference, and at almost 600 partner events taking place all over Europe. [Register](#) for free for the high-level virtual conference which includes dozens of virtual sessions, exhibitions and more taking place all over Europe. **Virginijus Sinkevičius, European Commissioner for Environment, Oceans and Fisheries**, open the event by

<sup>(43)</sup> <https://www.eugreenweek.eu/>

noting: "Environmental pollution negatively affects our health, especially of the most vulnerable and socially deprived groups, and is also one of the main drivers of biodiversity loss. We see that pollution is an issue that Europeans care very deeply about, as an unprecedented number of partner events are taking place across Europe this year. I am convinced that this year's Green Week will be an inspiring and mobilising success and it will show the EU's ambition to lead global action against pollution. Moreover, **Ursula von der Leyen, President of the European Commission**, said opening the conference: "It is painfully clear that human activity has negative impacts on other forms of life. Pollution is threatening the survival of more than one million plant and animal species, on land and at sea. It is one of the five leading causes of biodiversity loss. We cannot be negligent any longer. Thus, we are determined to tackle this challenge through our European Green Deal."

### 9.1.1.4 #EUBeachCleanup in Zeebrugge



On 12 September 2021, **Virginijus Sinkevičius, European Commissioner for Environment, Oceans and Fisheries**, travelled to Zeebrugge, Belgium, to participate in the ENeco Clean Beach Cup, an annual clean-up event organised since 2010 in Belgium to raise awareness on the problem of plastic and waste in our seas and ocean. The gathering in Zeebrugge of around 100 EU and UN colleagues has been organised by the Representation of the Commission in Belgium as part of the #EUBeachCleanUp campaign. After a number of years, where events have mainly been organised by Delegations and Representations, the wave is really rolling now. As the Commissioner said: "EUBeachCleanup is no longer just a campaign. It is becoming a citizens' movement".

Preparing for the UN conference on biological diversity, the 2021 campaign was dedicated to protecting and celebrating the rich life of the ocean. The campaign is jointly organised by the European Union and the United Nations (Act Now – SDGs), in partnership with the Smurfs.

### 9.1.1.5 EU Mobility Week: safe and healthy with sustainable mobility



EUROPEANMOBILITYWEEK 2021<sup>(44)</sup>, the European Commission's awareness-raising campaign promoting clean and sustainable urban transport, celebrated its 20<sup>th</sup> edition between 16-22 September. Around 3 000 towns and cities from approximately 50 countries participated by hosting events on the theme "Safe and healthy with sustainable mobility," giving people the opportunity to explore the role of mobility in their daily lives by experimenting with clean transport modes. Importantly, the campaign supports the use of public transport as a safe, efficient, affordable, and low-emission mobility solution for everyone. It culminated as every year in the popular car-free day, which sees streets closed to motorised traffic and open to people. To celebrate its 20<sup>th</sup> anniversary, EUROPEANMOBILITYWEEK launched in 2021 a

<sup>(44)</sup> [https://us20.campaign-archive.com/?e=\\_\\_test\\_email\\_\\_&u=b8f6852a133a22b2480ccb532&id=09df00f500](https://us20.campaign-archive.com/?e=__test_email__&u=b8f6852a133a22b2480ccb532&id=09df00f500)



virtual museum, which showcased the history of the campaign, the impact it has achieved, and its links to the European Commission's broader sustainability priorities, such as the EU Green Deal. **EU Transport Commissioner Adina Vălean** in a video <sup>(45)</sup> reflected on this year's campaign theme - *Safe and Healthy with Sustainable Mobility* - and how it relates to the European Commission's ambitious target of a carbon-neutral continent by 2050, as laid out in the European Green Deal, which highlighted the history of the campaign, the impact it has achieved, and its links to the European Commission's broader sustainability priorities, such as the EU Green Deal.

### 9.1.1.6 *Second award ceremony rewards innovative, green Commission events*



On 8 October 2021, precisely a year after the first ever edition took place, the award ceremony of the 2<sup>nd</sup> corporate competition on sustainable conferences and events was held, in the presence of **Commissioner Hahn and the Directors General of DG Human Resources and Security (DG HR), Gertrud Ingestad and DG Interpretation (DG SCIC), Genoveva Ruiz Calavera**. The event was full of interesting insights and inspiring thoughts on the topic of sustainable conferences and events! Apart from getting to know the winning projects, the audience had the opportunity to learn more about EMAS/Greening the Commission and the future vision for conference organisation. Commissioner Hahn noted during the award ceremony: *"We need to make smart choices and combine the best of both worlds. It is imperative that we use this opportunity to demonstrate that as Commission, we care about the environment and apply the ambition and commitment of the Green Deal also to our events."*

## 9.1.2 Communication to staff

### 9.1.2.1 *Corporate seasonal communication campaigns:*

There were three main corporate communication campaigns during 2021:

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<sup>(45)</sup> <https://www.youtube.com/watch?v=pKyMDSqimCA>

## Corporate Summary

- The *EMAS spring campaign* initiative (March-April);
- The award ceremony of the first corporate competition on sustainable conferences and events (October);
- The *Less Waste, More Action* - Waste Reduction campaign (November-December)

### 01 The EMAS spring campaign



Launched in March, the campaign has given staff the chance to get a deeper understanding of the new and even more ambitious environmental commitments of the Commission through a series of events, including hands-on webinars, panel discussions and a variety of local environmental actions across Commission sites. More specifically: (a) **The promotion of the New Commission's Environmental Policy** (2020), including a flash-animation<sup>(46)</sup> and new posters, including Commission's main environmental commitments and its 2030 climate neutrality goal; (b) **The organisation of 5 green@work webinars**, where in-house experts offered valuable insights on how to get greener@work

through various thematic webinars. As for other virtual events, nearly 400 participants have taken part in vivid online discussions and exchanged best practices on how to organise greener events and on how to make our professional trips even greener. Colleagues could also listen to practical tips and tricks on how to be greener working from home, zero-waste lifestyles, composting and cooking with leftovers, sustainable food choices, as well as advice on purchasing and producing renewable energy. In addition, the EMAS site coordinators from Brussels, Luxembourg, JRC-sites, Grange and EC Representations joined their voices for an interesting panel discussion on "Lessons-learnt during the CoviD-19 lockdown that can help us reach climate neutrality in 2030" (20/04/202) and (c) At the same time, **several local environmental actions** are organised by the EMAS teams across Commission's services/sites, as for example the Plogging initiative (walking/running and picking up litter) organised by DG AGRI: DG Agriculture and Rural Development in collaboration with the Swedish Embassy in Brussels, the "Green Photo Challenge" in the European Personnel Selection Office (EPSO), the Countdown Earth Day initiative by the European Research Council Executive Agency (ERCEA), Greening, the webinar on sustainable food in European Research Executive Agency (REA), the walking and picking-up litter action in DG Translation (DG DGT).



<sup>(46)</sup> <https://ec.europa.eu/environment/emas/pdf/Emas-2021-Animation-720p-29032021.mp4>





### 02 The award ceremony of the second corporate competition on sustainable conferences and events



The second corporate competition on sustainable conferences and events focused on virtual events and conferences held in 2020, the lessons learnt from the pandemic, and preparing the ground for the way forward and the 'new normal' for Commission events and conferences. The 2021 EMAS Sustainable Events Awards were held virtually, like the first

award ceremony, and boasted the participation of **Commissioner Hahn** as well as the **Directors-General of DG HR, Gertrud Ingestad, and DG SCIC, Genoveva Ruiz Calavera**. In total, the jury got over 30 applications vying for the recognition of environmentally friendly events, and it welcomed the fact that more DGs joined the initiative. The awards were divided into three categories: internal events, external small events, and external large events. The winners were:

- JRC's 'Square series' won the first prize for internal events, on behalf of Joint Research Centre (JRC). The Square series is a unique virtual space with a human touch to meet and talk with the Director-General, Stephen Quest, and inter-connect with the more than 3 000 JRC staff spread over various sites in a dynamic and very participatory format. The second prize went to the Publications Office for their EU DataViz webinars, a series of online training sessions dedicated to data visualisation. Still in category 1, European School of Administration (EUSA) and European Research Council Executive Agency (ERCEA) got a special award for innovation; the former for their 13 inter-institutional 'Leadership walks' for managers, focussing on nature and collective intelligence, and the latter for their ERC online talks held between October and December 2020.
- There were 15 nominees in category 2 (external small events), and the jury bestowed the first prize upon REA for its 'Virtual H2020 Coordinators' Day'. The jury rewarded the organisers for having been able to re-design an event completely and successfully using different IT tools not yet known enough one year ago. A special 'more with less' award went to JRC, and more specifically JRC's final technical working group meeting in Seville. The Commission's Representation in Berlin and DG DG Education, Youth, Sport and Culture (DG EAC) both got a special award in the same category. DG COMM-Berlin for their 16 virtual Councils of Ministers at which youth could role-play online, and EAC for transferring their 'Gifted jumpers' event from a physical to a virtual format.
- As for category 3 (external large events), EASME – since April 2021 Executive Agency for Small and Medium-sized Enterprises (EISMEA) – won the first prize for their EU Sustainable Energy Week and its live streaming that attracted 11 000 viewers over 120 countries. The organisers succeeded in successfully transferring an established conventional event into an online conference within extremely tight deadlines (seven weeks!), whilst boasting over 70 million impressions on Twitter. In addition, all this, whilst being inclusive and truly sustainable. DGs Regional and Urban Policy (DG REGIO) and DG Research and Innovation (DG RTD) won the second prize in that category. REGIO for the 2020 Week of Regions and Cities: three weeks of online events bringing together 12 000 participants and 40 000 unique viewers; and RTD for the European Research and

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Innovation Days: by creating an interactive platform rather than having a filmed conference, the organisers managed to attract a high number of attendees.

- Finally, DG Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) got a **special award for innovation**; the jury praised them for the way the European Social Economic Summit was held, and DG Financial Stability, Financial Services and Capital Markets Union (DG FISMA) was rewarded with a special 'less is more' award for the Stakeholder dialogue on sustainable finance.



Further innovations of this year's event included an **e-brochure with all winning projects** of the 2<sup>nd</sup> edition of the sustainable events competition (October 2021) and to benefit from the expertise gained in these events, DG SCIC organised a workshop on how to organise more sustainable virtual/hybrid events: Lessons-learnt from the winners of the second corporate competition on sustainable events with the winning teams from European Sustainable Energy Week (EUSEW) organising team and DG FISMA (November 2021).

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



This "**Less waste, More action TOGETHER**" campaign (22/11 – 3/12) in the framework of the European Week for Waste Reduction, focused on forming collaborations and acting together to shape circular communities aimed to prevent the waste production and transition towards sustainable consumption and production patterns.

The novelties of this year's campaign included:

- **Digital mindfulness tips and tricks** in collaboration with DG Informatics (DIGIT), launched via the Practical information section on My Intracomm and **e-brochure** "Digital tips on how to cool down the planet."
- Promotion of the **GOAL: Give your Objects other Life Action**, for the collection and reuse/donation to charities of old office supplies, furniture and decorative items during the internal moves, in collaboration with Office for Infrastructures and Logistics in Brussels (OIB).
- **Walking challenge - autumn cleaning trail**, initiated by DG DGT – went corporate! A perfect opportunity to combine walking with waste fighting. Participating colleagues could post a photo or a comment at the relevant forum and the also all team members' walking steps could be counted via the Walking Challenge App, available all year round.
- **Zero waste lifestyle workshops**, in collaboration with DG DGT, Eurostat (ESTAT) and DG AGRI, specifically:
  - 24/11: The EcoMatters Group of DGT Unit EN03 hosted an online lunchtime presentation by Kasia Krzyzanowski, the "dreamer" behind Neighbour Magazine, a brand new quarterly focusing on sustainable living here in Luxembourg.



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- 26/11: Zero-waste experts from the ESTAT EMAS eco-team are organising a free online workshop addressed at EU institution staff in Luxembourg, where they provided information on shopping with less packaging and organic composting practices; offering quite easy alternatives to reduce the environmental impact in everyday life. In this year's workshop, sustainable fashion will be also addressed.
- 3/12: Effortless ways to live a greener life, where information on waste is provided, in particular plastics, but also food, textile, and digital waste, etc.; offering quite easy alternatives to reduce the environmental impact in everyday life.
- **Sustainable events' organisation online seminar (30/11/2021)** in collaboration with DG SCIC, based on lessons-learned for the 2nd corporate competition on virtual/hybrid events. More specifically: (a) Less in more – best value for money – quick adaptation to the new normal - Interview with the team from DG FISMA – winner of "Less is more" award and (b) Reusable material – waste reduction - Focus on Refuse out of the 5 Rs - Interview with team from European Sustainable Energy Week (EUSEW) – winner of 1<sup>st</sup> prize for "Large conferences with more than 1 000 participants" category.



Lastly, following an initiative by DG Maritime Affairs and Fisheries (DG MARE) a **collection of small electrical appliances and IT equipment** was organised in several DGs/services between 24 January 2022 and 2 February 2022. These items will be donated to a local charity, Cyreo.be, who repairs and sells second-hand electrical items. This activity prolongs the life of electrical appliances, whilst allowing unemployed people to be trained and to reintegrate the workplace.

Other actions included **three latest videos** by Office for Infrastructures and Logistics in Luxembourg (OIL) presenting the fields of activity, the functioning, and the philosophy of three organizations that treat or reuse waste. Each of them has a unique way of working, but their common goal is to give a new life or a second life to waste. These organisations are: Valorlux, who has the mission to collect and process bottles and other plastic products, SIVÉC, an inter-municipal association with an ecological vocation located in Schiffflange, which put actions into place to give a second life to goods that would otherwise be thrown away, and BENU, an ecological village in Esch-sur-Alzette based on circular economy. The village is built only with material that is no longer useful elsewhere.

### 9.1.2.2 Additional campaigns

Additional corporate environmental campaigns have been conducted in relation to:

- The **5<sup>th</sup> edition of the inter-institutional VéloMai challenge**, this year combined with the Walking Challenge as **VeloWalk** (April-May 2021): The action resulted from successful collaboration among several actors: HR units, the fit@work programme <sup>(47)</sup>, EMAS Site Coordinators and EU Cycling Group (EUCG). Several local events were also organised at site level (as described in the site Annexes).
- The **World Ocean Day (8/6)**, colleagues from DG RTD and DG MARE, but also external experts were invited to explain about coral reefs functioning and importance.
- The **greening your summer** - *“The art of sustainable holidays”* campaign before the summer holidays in June-early July;
- Communication to staff on the **EMAS highlights** in relation to the EMAS Steering Committee’s meetings, especially in relation to the upcoming Greening the Commission Communication and action plan highlighting the roadmap to climate neutral by 2030 and the extension of EMAS scope to the Executive Agencies and the EC Representations across member states.
- **Two sessions of a Together-Ensemble participatory workshops** on 27 and 28 October, to provide another staff engagement opportunity, but without connecting them directly to a specific draft of the Communication on the Greening of the Commission:
  - “creating the energy for more sustainability at work and at home”- focusing on behavioural changes;
  - “mobilising our collective energy on a more sustainable world” - focusing on staff advocacy in the context of COP26.
- The **EMAS staff survey 2021 on environmental awareness and behaviour** (November 2021).
- The **publication of the Environmental Statement 2021** (data 2020) and an **on-line promotional brochure** highlighted the main results.

- The **“Keep it Green this Christmas”** campaign before the end of the year holidays.

### Interinstitutional GPP Helpdesk for Buying Green



[gpp-helpdesk@europarl.europa.eu](mailto:gpp-helpdesk@europarl.europa.eu)  
+32 78 480949

HR.D.7 also promoted the **Inter-institutional Green Public Procurement (GPP) helpdesk**, coordinated by the European Parliament. It is open to all Commission services since 2017, as well as to 7 other EU Institutions. There has been one GPP Helpdesk’s event on 12/10 on *Eco labels and verification of environmental criteria*. This Green Public Procurement (GPP) Helpdesk presentation introduced participants to the efficient use of environmental criteria and guide you through the eco label jungle. Over 200 persons connected to the GPP Helpdesk event on

Ecotags. On 17 November 2021, the EMAS team in REA organised an especially interesting introductory training on GPP, in collaboration with DG HR, DG Environment (DG ENV), DG GROW and JRC-Ispra. At the end of this course, participants were able to understand the basic principles and application of GPP in the different procurement procedures implemented in the EC services (including executive agencies). The main contents included: introduction, procurement role in the context of EMAS and promotion of the inter-institutional GPP helpdesk, Introduction to GPP and available tools, legal aspects of green and strategic public procurement, GPP in the procurement life-cycle and Public Procurement Management Tool (PPMT). Lastly, articles were published on the electronic newsletter of the Network of Commission’s Financial Officers and Procurers (RUF), managed by DG Budget (DG BUDG).

<sup>(47)</sup>fit@work is the Commission's cross-cutting, multi-annual health and wellbeing programme.

### 9.1.2.3 Other corporate communication

In addition, the Commission:

- Published six articles in the Commission’s on-line news portal “Commission en Direct”;
- Published four articles on the new Simpler.Smarter.Together section on Commission’s intranet (My IntraComm);
- Made several announcements on the Commission’s intranet under “Practical Information” and “Events”;
- Revised the overall structure and further improved the internal EMAS webpages.

### 9.1.2.4 Communication actions initiated by the EMAS Correspondents

EMAS Correspondents organised local environmental actions in the **20 DGs/services**, compared with 19 services in 2020 (and 26 in 2019) and **5 Executive Agencies**, despite the constraints imposed by the physical lockdown on all EC-sites since March 2020. Characteristic examples included:

(a) **Events/conferences addressing EU Green Deal topics and the upcoming Greening Communication and action plan:** Brainstorming sessions and staff surveys sessions on the pillars of Greening the Commission Communication (involving senior management), sessions on how climate change is interconnected with digital transformation and the principles of Green public procurement (GPP), on how to pursue a sustainable and healthy plant-based/seafood-based diet, sustainable living/zero waste lifestyle webinars.

(b) **Waste reduction actions:** Promote the cancelling of newspaper print editions, art auctions to encourage waste reduction and the recycling of discarded paintings and photos that were left behind following internal moves, “plogging” activities and spring/autumn cleaning trails: strolling while picking up trash, special awareness-raising activities on how to sort waste at the workplace, organization of the Less waste, more action info-fairs and quiz games, collection of old electrical items and giving them a second life as charity donations.

(c) **Sustainable mobility initiatives:** Targeted communication actions on sustainable commuting during EU mobility week (September 2021) and VéloMai corporate events (May 2021), e.g. Conference on ‘how to buy an e-bike’, videos to promote sustainable commuting, installation of plugs for electric bikes and additional electric car parking, bike tours combined with visits to urban farms.

(d) **Staff awareness actions:** Green and eco-tips included in e-Newsletters, a ‘digital mindfulness’ campaign, a ‘New year’s resolution project’: Staff invited to fill in a specially designated carbon footprint survey online and benchmark against average citizen consumption, a ‘Count down to Earth Calendar: advent-calendar style daily tips on initiatives and actions addressed to preserve the Earth, Green coffee for the newcomers and the creation of formal and structured Green Committees with regular meetings among volunteers.



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Moreover, **all EMAS site coordinators** set up local staff awareness actions across EC-sites and EC Representations, in line with the corporate EMAS campaigns, for further information please refer to the relevant Annexes.

In 2022, the Commission will organise its main communication campaigns around the EU Green Deal and the upcoming Greening the Commission Communication and action plan and focus on what the Commission and its staff will do to meet the 2030 climate neutrality challenge. New initiatives will include:

- The Greening the Commission staff awareness raising campaign will focus on both EC corporate actions (EMAS in EC), as well as individual climate action countering rebound effects of teleworking, in reference to the **European Climate Pact** <sup>(48)</sup>: an EU-wide initiative inviting people, communities and organisations to participate in climate action and build a greener Europe; and providing a space also for individuals to connect, debate and collectively develop and implement climate solutions, big and small, for example via individual pledges.
- HR.D.7 will contribute, support and promote EMAS actions in the **EC Executive Agencies and EC Representations** across member states;
- HR.D.7 will contribute, support and promote EMAS / Greening the Commission actions as part of the **Modernisation communication campaign: Simpler, Smarter, Together** with success stories concerning "EMAS in EC" during 2020-2022, as well as the **internal corporate communication relevant to the EU Green Deal** during 2020-2024.

### 9.1.3 Dialogue with internal stakeholders

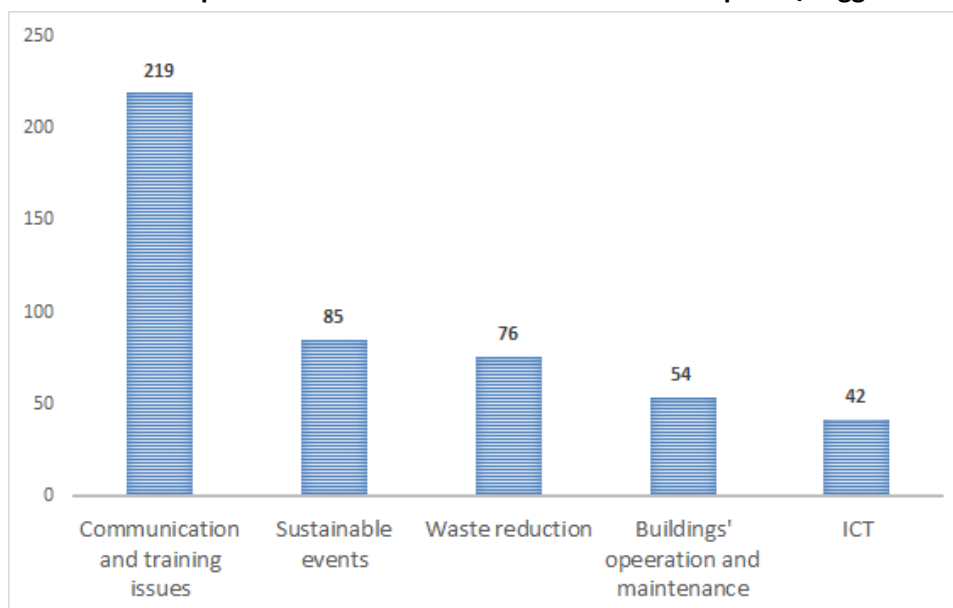
The Commission has a corporate register of internal questions and suggestions submitted via the EMAS in EC functional mailbox and Staff Fora, which recorded **537** entries (the highest ever in relation to 158 entries in 2020, 328 in 2019, 185 in 2018, 188 in 2017 and an average of 40-60 entries during the previous years), all of which received responses. This impressive increase during 2021 may be attributed to the success of the EMAS communication campaigns and the high anticipation of EC-staff in view of the upcoming Greening the Commission Communication and action plan, following the "COV19 pandemic shock-effect" that shifted the interest of staff to practical issues on how to deal with the new lockdown /teleworking reality after March 2020.

The three most popular environmental topics for Commission's staff are i) communication and training issues, as a direct reaction to the successful EMAS corporate staff awareness and training initiatives (e.g., EMAS staff survey, EMAS spring campaign and waste reduction campaign), ii) organisation of sustainable events issues (especially in relation to the 2<sup>nd</sup> edition of the corporate sustainable conferences and events competition, focused on virtual/hybrid events), and iii) waste reduction (in relation to the corporate *Less waste, more action TOGETHER* campaign).

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<sup>(48)</sup> [https://europa.eu/climate-pact/index\\_en](https://europa.eu/climate-pact/index_en)



**Figure 9.1 The main topics of interest of internal stakeholders' inquiries/suggestions in 2021**

In addition, at a local level, EMAS Site Coordinators and EMAS Correspondents keep records of questions and suggestions from staff along with responses.

The Commission conducted a two-yearly on-line survey on staff environmental behaviour and awareness in October 2021, also covering topics related to the environmental impact of teleworking. For the first time, all Commission staff members were invited to take part in the assessment (in the previous surveys only a sub-set of staff members were invited), resulting in 7 693 staff members filling out the survey representing a response rate of 18%.

The most important findings of the staff environmental behaviour and awareness survey during 2021 are the following:

- General awareness of Commission staff members about environmentally responsible behaviour at work is currently at an all-time high, with **85%** of staff feeling well or reasonably well informed about (vs. 84% in 2019).
- The share of staff members taking regular actions to reduce environmental impact increased since the last survey (from 68% in 2019 to **72%** in 2021). Considering the profound changes in the workplace dynamics caused by the pandemic, these are strongly positive results and should be celebrated!
- **64%** of Commission staff is aware that the Commission implements a management system to evaluate, report on and improve its environmental performance (EMAS) showing a 7% points improvement compared with 2019.
- Involvement of senior management (selected by 23% of staff members as the top choice), electronic newsletter (14%) and news/story on My IntraComm (14%) are considered the most appropriate means to increase staff environmental awareness at work.
- Among the high-impact environmental actions to be prioritized by the Commission considering the new HR Strategy and the Greening Commission action plan, majority of staff opted for **optimising the energy of EC building** (54% mentioned it as the first priority), followed by **reducing the environmental impact of missions** (32%) and **better use of office space** (12%).
- Overall, **43%** of respondents provided qualitative suggestions on how to make improvements mainly in the areas such as mobility – commuting and local travel (13%) and buildings - energy consumption /emissions (10%).

Lastly, additional useful findings contributed in the fine-tuning the environmental impact of teleworking, for example: the typical size of the dwelling for the EC staff members, the size of the space physically occupied when teleworking. Working from home led to significant increase of energy use at home, relevant primarily for heating the household during the winter. The main type of energy used for heating when working from home is natural gas (68%), followed by electricity (14%) and light fuel oil (9%). Energy comes primarily from the grid as normal mix, however green mix coming from renewable sources is also quite popular (reported by 27% of staff members)

## 9.1.4 Communication among EMAS Correspondents and Site Coordinators

As shown in the table below the annual survey demonstrated a further enhancement in the performance of the Commission's EMAS teams in relation to 2020, despite the difficulties created by the COV19 lockdown since March 2020 and the fact that we experienced the highest ever turn-over in the EMAS teams (with 36 new members). This has been achieved only due to the high commitment and enthusiasm of the new EMAS team members and strong support by their senior management. Overall, **33 out of 46** EMAS teams demonstrated a performance above average, representing **77.5%** of the total population (in relation to 88% in 2020). 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 **20 DGs/services**), (ii) the increased number of local EMAS action plans in **26 DGs/services** (in relation to 24 in 2020), (iii) the setting up of local environmental actions in **20 DGs/services** (in relation to 19 in 2019), (iv) the contacts of the EMAS teams with senior management (currently in all 8 sites and EC Representations and **27 DGs/services**, in relation to 31 in 2020).

Survey year <sup>(49)</sup>	2013 (max. 10)	2014 (max. 10)	2015 (max. 10)	2016 (max. 10)	2017 (max. 9)	2018 (max. 10)	2019 (max. 9)	2020 (max. 9)	2021 (max. 10)
Average EMAS team score	5,3	5,5	4,4	4,3	3,6	4,6	6,5	6,1	6,9



In 2021, there was no service without an assigned EMAS Correspondent, and nearly all new EMAS teams had attended a relevant introductory training. HR.D.7 planned several steps to strengthen the EMAS correspondent (ECOR) role. These included: (i) provision of additional hands-on trainings and practical toolboxes, (ii) enhanced role of the EMAS Correspondents as the contact-points for the compilation of the "Sound Environmental Management" section in their DGs/services' Management plans 2021 and Annual Activity Reports 2021 and (iii) the setting up regular monthly virtual meetings (e.g. EMAS virtual coffee) and regular communication/announcements among the EMAS Network via the

newly created EMAS Network MS Teams Channel (also included e-library for sharing documents and promotional material) and (iv) creating a corporate group of environmental volunteers across the Commission to be shared among the EMAS network, as well as promotion of additional synergies among ECORs/site coordinators.

Moreover, all six (6) EU Executive Agencies participated in corporate EMAS campaigns (REA, ERCEA, EACEA, EISMEA, CINEA and HaDEA) <sup>(50)</sup> and took part in the annual EMAS Network Survey, with an exceptional average performance of **8** (out of 10).

Lastly, REA, ERCEA, EACEA and EISMEA participated with great success in the EMAS verification exercise during June 2021 and CINEA and HaDEA in the EMAS internal audit exercise in November 2021, due to (i) the high commitment of all Executive

<sup>(49)</sup> The criteria are: participation in the annual survey, presence at the network meetings and training sessions, presence of local volunteers, local action plans, evidence of direct contact with top management, implementation of centrally prepared campaigns and local actions.

<sup>(50)</sup> European Education and Culture Executive Agency (EACEA), Executive Agency for Small and Medium-sized Enterprises (EISMEA), European Health and Digital Executive Agency (HaDEA), European Research Council Executive Agency (ERCEA), European Research Executive Agency (REA) and European Climate, Infrastructure and Environment Executive Agency (CINEA).

Agencies' EMAS Correspondents and eco-teams and (ii) their senior management's leadership and engagement in their respective "greening agenda".

In 2021, HR.D.7 will work to improve the EMAS network's efficiency via synergies with the local Logistics Proximity teams <sup>(51)</sup>, the Account Management Centres (AMCs) <sup>(52)</sup>, as well as local groups of environmental volunteers shared among the EMAS Network.

### 9.1.5 Training

Corporate level EMAS training organised during 2021 included:

#### 9.1.5.1 EMAS training for all staff



EMAS training for newcomers: In Brussels, since November 2016, this has consisted of an interactive 1hr 45 min session held every 2-3 months entitled "EMAS basics for EC Newcomers". A similar session was introduced in Luxembourg in 2018. As part of the COV19 lockdown measures, all physical training has been cancelled since end of March 2020. HR.D.7 has designed an online "EMAS basics for all" training offered to all staff across EC-sites since October 2020 on a monthly basis with approx. 100 participants/session. This online version received incredibly positive feed-back and received several interesting environmental suggestions by the participants across EC-sites, including Representations in member states. In total **517 colleagues** attended an EMAS basics training in 2020 (in relation to 432 colleagues in 2020 and 269 participants in 2019).

The most common topics of interest included the upcoming *Greening the Commission Communication*, the Commission's carbon footprint from teleworking and the reduction of GHG emissions related to missions and sustainable commuting.

The efficiency of the corporate EMAS trainings is monitored via the biannual EMAS staff surveys, as well as the standard evaluation surveys conducted via the EC training IT tool (EU Learn). According to the 2021 EMAS staff survey, general awareness of Commission staff members about environmentally responsible behaviour at work reached an all-time high, with **85%** of staff feeling well or reasonably well informed about it. This represents 1% points increase since 2019.

In addition, a 10–15-minute presentation is included in the introductory program for Commission newcomers in the JRC-sites and Grange <sup>(53)</sup> and in few other DGs/services e.g. 'ERCEA Green coffee for the newcomer' – a 'coffee break', during which ERCEA EMAS file and the Greening Group initiatives were presented to newcomers.

Lastly, the EMAS section in the new Commission's Training Portal (including a variety of training material from e-books to documentaries, videos, and cartoon animations) was updated and further enriched.

In 2022 (i) the online "EMAS basics for all" sessions will be intensified in periodicity, aiming to reach out to at least 600 participants and extend the scope to include the environmental impact of teleworking, and (ii) HR.D.02 will define ad-hoc tools

<sup>(51)</sup> The new Logistics Proximity Teams (LPTs), coordinated by the Office for Logistics and Infrastructure in Brussels (OIB), took over the tasks carried out by the Building Managers, Inventoried Items Managers (GBIs) and Office Supplies Managers (GDFs).

<sup>(52)</sup> The Account Management Centre in DG HR is a new Directorate, which takes over responsibility for the local HR services which were previously delivered by HR units in each DG. (From 16 February 2017, the Account Management Centre is your??? first point of contact for all your??? personal HR issues.)

<sup>(53)</sup> The periodicity of the newcomers' presentations depends on the number of new staff. Information relevant to JRC and Grange newcomers' trainings are provided in the relevant annexes.



to monitor the efficiency of EMAS-related trainings offered to EC-staff (e.g. via EMAS staff survey 2021) and adapt the EMAS documentation accordingly.

### 9.1.5.2 Environmental Management System (EMS) Training

There have been four (4) training sessions for new EMAS Correspondents (ECORs) and EMAS site coordination teams, i) one online training on 12<sup>th</sup> January (23 participants), ii) a second online session on 8<sup>th</sup> of March (26 participants), iii) a third online session on 22<sup>nd</sup> June (29 participants) and iv) a fourth online training on 13<sup>th</sup> October (15 participants). In total, **93 members of the EMAS teams** (in relation to 31 in 2020 and 24 in 2019) have attended an introductory EMAS training. An interesting feature of this year was that many older and more experienced EMAS team members decided to refresh their knowledge by attending an introductory training session and profit with the interesting exchanges among the network. It should be noted during 2021, nearly all new EMAS Correspondents (besides tow ECORs) have attended an EMAS training despite the extremely high turn-over rate (36 new members in relation to 25 in 2020).

Following the suggestion of the EMAS Site Coordinators, there have been two sets of Site Coordinators' workshops during 2021 (approx. **15 participants/workshop**): (i) Three virtual half-day workshops during March 2021 focused on EMS improvements and (ii) three (3) virtual half-day workshops on 20/11, 24/11 and 27/11 that focused mainly of EU Green Deal implications on the Global EMAS Action Plan, communication and training actions. This brought together the EMAS Site Coordinators for all EC sites. These gatherings are essential to ensure mutual learning and to harmonise local EMAS implementation.

In addition, there have been two preparatory training as part of EMAS verification exercise for the 4 Executive Agencies: REA, EASME, EACEA and ERCEA during May 2021 (9 participants). The efficiency of the corporate EMAS trainings addressed to the

EMAS Network is monitored via the annual EMAS Network survey and the subsequent benchmarking exercise (see paragraph 9.1.4). The 2021 EMAS Network survey revealed a continuing high average of **6.9** for the network of EMAS Correspondents/Site Coordinators (and an impressive average of **8** among the Executive Agencies), demonstrating that the network has been performing exceptionally well despite the COVID19 lockdown strain. Concerning the EMAS teams in EC Representations in Vienna and Valetta, a GAP analysis was successfully performed during 2021 internal audit, in order to prepare the ground



for their gradual inclusion to the EMAS scope.

In 2022, HR.D.7 will (i) also host EMAS site coordinators' workshops, introducing a new approach: instead of two main workshops, opt for several shorter online workshops during the year, (ii) Introduce monthly virtual coffee meeting among the network and exploit the full potential of new collaborative tools available (e.g. MS Teams) and (iii) define ad-hoc tools to monitor the efficiency of EMAS-related trainings offered to EMAS Network (e.g. via the annual EMAS Network benchmarking exercise, GAP analysis for EC Representations) and adapt the EMAS documentation accordingly.

### 9.1.5.3 Specialised courses

Selected staff whose activities may have potentially significant environmental impacts may benefit from externally provided environmental training sessions. Examples are the energy counsellor's course by Brussels Environment (IBGE) and eco-driving training for Commission drivers. External suppliers provide these training sessions. HR.D.7 as a system requirement, has however established a register of training needs for such staff and is seeking to map the current offer of specialist trainings arranged by the sites. During 2021, the majority of the EMAS Site Coordinators updated this register.

In 2022, the Commission will design and offer GPP trainings for EC Financial Officers/Procurers/Project Managers, in collaboration with GPP experts from JRC-Ispra, DG BUDG and DG ENV, in the framework of the Greening of the Commissions and the Interinstitutional GPP Helpdesk thematic conferences/events.

## 9.2 External communication

### 9.2.1 Environmental Statement and websites

- This document is the "go to" document for most responses to questions on the subject. It contains information from all the EMAS sites (as annexes) and is subject to external verification. It is published on DG ENV's EMAS website<sup>(54)</sup>. Since 2019, two pages of infographics have been added as part of the Executive Summary, demonstrating visually the main EMAS highlights and achievements. Additional "EMAS in EC" webpages have been created at the Commissions Europa homepage under: "Organisational structure" / "Modernising the European Commission" at: [People first – Greening the European Commission | European Commission \(europa.eu\)](#)



In 2021, the "EMAS in EU Institutions" section at the official EMAS website (approx. 3 000 hits/year) was updated including overall environmental results and best-practices and success stories by the 12 EMAS-registered EU Institutions and bodies, as part of an inter-institutional communication project in the framework of the Inter-institutional Group on Environmental Management (GIME).

In 2022, in the framework of the EU Green Deal, the EMAS logo and information about "EMAS in EC" will have a more prominent position at the Commission's official Europa homepage.

### 9.2.2 Press announcements

The participation of the European Commission and other EU Institutions and agencies in the social media #WeforEMAS campaign, promoted by the EMAS Helpdesk and the German EMAS Advisory Board (Umweltgutachterausschuss, UGA), as well

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<sup>(54)</sup> [http://ec.europa.eu/environment/emas/emas\\_registrations/emas\\_in\\_the\\_european\\_institutions\\_en.htm](http://ec.europa.eu/environment/emas/emas_registrations/emas_in_the_european_institutions_en.htm)

as the highlights of the Commission’s environmental performance have been promoted via EMAS in EU Institutions section of the official EMAS website on Europa managed by DG ENV.

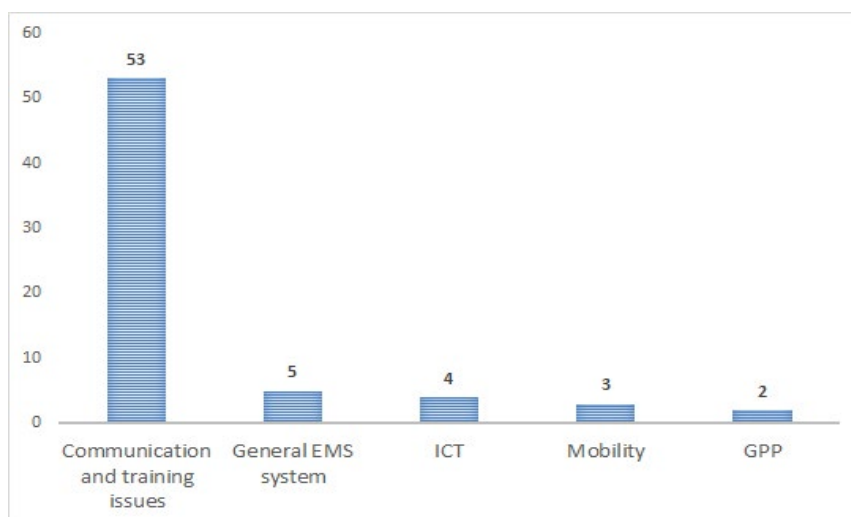
### 9.2.3 Parliamentary questions

HR.D.7 responded to four parliamentary questions in 2021, in relevance to Green-house Gas (GHG) emissions’ reduction and paperless working approaches in the framework of the EU Green Deal, paper consumption, the Pollinator Park’ project and sources of energy used in Commission premises.

### 9.2.4 Communication with external stakeholders

HR.D.7 responded to all **69** external queries recorded during 2021 (in relation to 20 in 2020, 58 in 2019, 45 in 2018 and 30 in 2017 and significantly increased from 8 in 2016). The significant increase in the Commission’s EMAS team outreach is due its more visible role as coordinator the interinstitutional EMAS communication workgroup, in the framework of the *Group Interinstitutionnel de Management Environnemental* (GIME). The three most popular topics of interest for external stakeholders were EMAS communication/training issues in relation to specific successful Commission’s actions and the preparation of the Interinstitutional EMAS Days 2022, the “EMAS in EC” operational procedures and documentation (especially in relation to the upcoming *Greening the Commission Communication*) and topics related to the environmental impact of teleworking and digital footprint.

**Figure 9.2 The main topics of interest of external stakeholders' inquiries/suggestions in 2021**



Inter-institutional collaboration was established on specific themes on a regular basis with EU or international organisations. These include the European Parliament, the General Secretariat of the Council, the European Economic and Social Committee, the European Committee of the Regions, the European Central Bank, the European Court of Auditors, the European Court of Justice, the European Investment Bank, the European Decentralised Agencies, Inter-agency Greening Network and other EU bodies.



The 29<sup>th</sup> edition of the EU Institutions’ Open Day was 100% virtual. The EU institutions opened their ‘virtual’ doors to celebrate Europe Day on 9 May. People across the EU and beyond will be able to find out more about the European Union and what it does via the Europe Day portal and virtual visits to the European Parliament, the Commission’s Berlaymont headquarters, and other EU institutions. An interactive online space allowed visitors to play games, watch videos and test their EU general knowledge, as well as what they know about issues like a green and digital Europe. With one click, users could join online debates on EU topics and explore online events. There was

also the multilingual Conference on the Future of Europe platform, where citizens could share your ideas for shaping the EU's future.

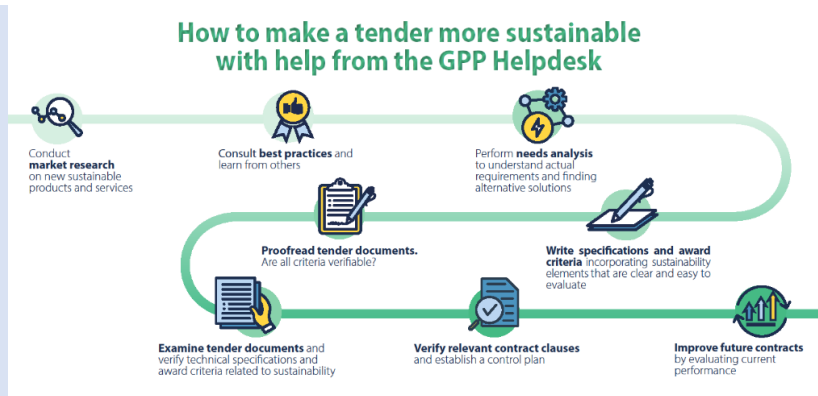
Lastly, during 2021 the following external communication initiatives were organised:

- Design and coordination of the **Interinstitutional EMAS Days 2022**, which run during February 2022, first time-ever with the participation of all twelve EMAS-registered EU institutions and agencies, dedicated to climate neutrality strategies and action plans, sustainability of EU buildings, mobilizing the EMAS networks and groups of volunteers, gamifications for environmental sustainability, organisation of sustainable conferences and events, and common projects and joint surveys.
- Collaboration with the **UN Sustainability Group – UN Greening the Blue**, exchanging best-practices on EMAS /Greening the Commission practices. Specifically, presentation about EMAS/Greening the Commission at the 36<sup>th</sup> Meeting of the Issue Management Group on Environmental Sustainability Management (16/06).
- HR.D.7 participated in the virtual **Inter-agency Greening Network** on 13 October 2021.

In 2022, the Commission will continue to play a leading role among EU Institutions and bodies, in promoting EMAS implementation, as well as in green public procurement (GPP) via the re-launching of the **GIME meetings**. Moreover, HR.D.7 will coordinate the organisation of **Interinstitutional EMAS Days 2022** in the February 2022.

### 9.2.5 Information for suppliers and sub-contractors

The Register on EMAS information sessions for EC suppliers and sub-contractors was considered obsolete and withdrawn, since the annual follow-up of the common template (Annex 2 to EMS-PRO-001) concerning the needs and expectations of external stakeholders both at corporate and site level, already covers all the additional requirements of the revised Annexes of EMAS Regulation III.



In 2022, the Commission will (i) continue to 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.

## 10 Costs of implementation and resource reductions

The Commission estimates costs of implementing EMAS and savings that can be associated with reduced resource consumption (for some parameters). The availability of data varies from site to site and by year.

### 10.1 Costs of staff and contracts for implementing EMAS

Table 10.1 summarises the estimated direct cost of human resources of Commission staff <sup>(55)</sup> along with those of consultancy, and other contracts directly linked with coordinating EMAS implementation.

**Table 10.1 Direct total and per capita costs of implementing EMAS for each site (EUR)**

Site							Change in 2020-21	Per person costs in:						Change in 2020-21
	2014	2017	2018	2019	2020	2021		2014	2017	2018	2019	2020	2021	
HR.D7+ECOR network <sup>1</sup>	1 007 252	1 049 252	1 119 252	1 133 252	1 147 252	1 182 252	35 000	30,7	30,5	32,1	32,0	31,4	30,7	-0,7
Brussels	132 000	138 000	148 000	150 000	152 000	157 000	5 000	4,82	4,89	5,19	5,18	5,08	4,99	-0,1
Luxembourg	462 000	483 000	370 000	375 000	380 000	392 500	12 500	114	100,9	73,8	73,0	72,5	69,0	-3,5
JRC Petten	66 000	69 000	74 000	75 000	76 000	78 500	2 500	234	262	298	301	308	327	19,4
JRC Geel	66 000	69 000	74 000	75 000	76 000	78 500	2 500	191	260	286	286	286	298	12,8
JRC Karlsruhe <sup>1</sup>	71 000	74 000	79 000	80 000	81 000	83 500	2 500	222	230	249	254	262	274	11,6
JRC Sevilla	132 000	138 000	148 000	150 000	152 000	157 000	5 000	457	429	433	408	398	403	4,7
JRC Ispra <sup>1</sup>	383 760	486 945	491 928	473 595	476 515	475 175	-1 340	164	214	215	203	198	192	-5,7
Grange <sup>1</sup>	47 400	49 356	51 856	56 100	56 600	57 850	1 250	265	263	290	319	327	325	-2,2
<b>Commission</b>	<b>2 367 411</b>	<b>2 556 553</b>	<b>2 556 035</b>	<b>2 567 947</b>	<b>2 597 367</b>	<b>2 662 277</b>	<b>64 910</b>	<b>67,3</b>	<b>69,8</b>	<b>68,8</b>	<b>68,0</b>	<b>66,7</b>	<b>65,0</b>	<b>-1,7</b>
of which % contracts	10,2	13,1	12,6	11,8	11,6	0,0								

Note: Includes all staff at Luxembourg and Brussels sites, based on sites participating in verification

1 – Cost includes contracts

The size of the teams supporting the EMAS system at the sites has been relatively stable for several years, and consequently the cost per staff member has fluctuated between 65 and 70 EUR. JRCs Petten, Geel, Karlsruhe and DG SANTE at Grange report the equivalent of less than one employee (as Full Time Equivalent). A slight cost reduction was recorded in 2020-21.

### 10.2 Savings from reduced energy consumption in buildings

Energy consumption represents the greatest single resource cost recorded under the environmental system. Figure 10.1 shows energy costs in 2021 along with the evolution of per capita expenditure in recent years.

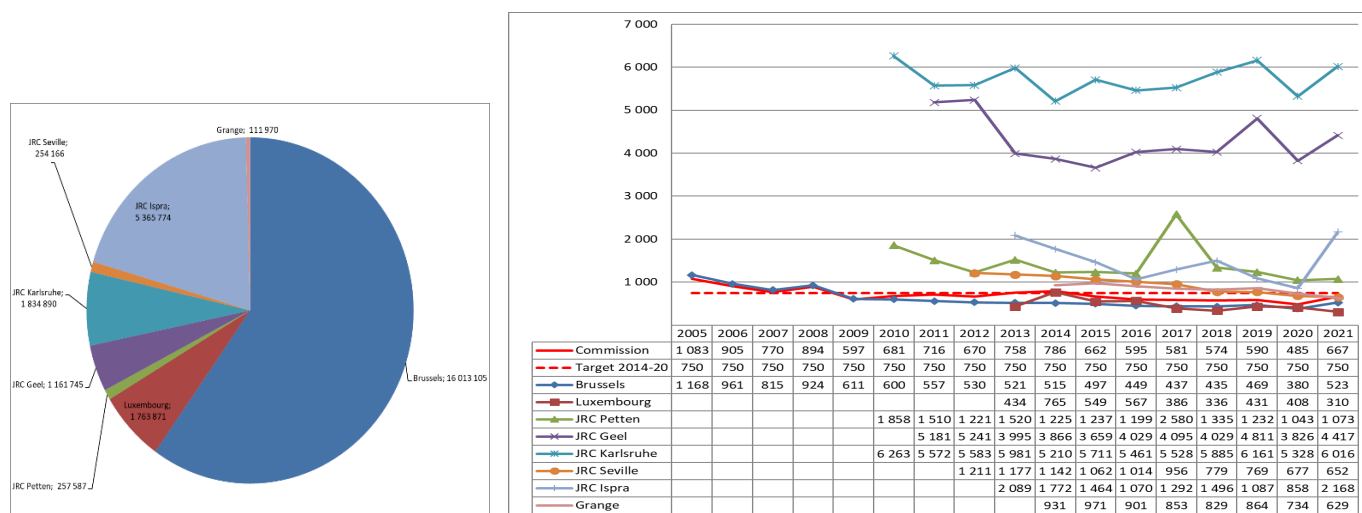
Per capita costs varied widely between the sites in pre-COVID years with those comprising mostly office buildings, (Brussels and Luxembourg) both below 500 EUR and JRC sites with their more energy intensive experimental and/or nuclear activities such as JRCs Geel and Karlsruhe close to 5 000 and 6 000 EUR respectively. The COVID pandemic resulted in significantly reduced costs in 2020 but increased significantly in 2021, (especially at JRC-Ispra). The Commission is still

<sup>(55)</sup> Using standard average cost of administrators published by DG BUDG for the Financial units, 157 000 EUR in 2021.



meeting its 2014-20 target value<sup>(56)</sup> of 750 EUR/p for per capita energy consumption, although it increased by 38%. Financial targets for resource consumption no longer apply.

**Figure 10.1 Building energy costs in 2021 (EUR) and evolution of per capita costs (EUR/p)**



Note: Brussels data in 2005 applied to 8 buildings, but since 2014 most buildings are included

Brussels reduced in 2020 its per capita costs but in 2021 it increased due to an increase in energy use. Luxembourg's costs nearly doubled in 2014 because two data centres were included in EMAS reporting but since then they decreased apart from in 2019 and 2020 which reflects higher energy prices. Energy prices which vary significantly between sites, as shown for selected sites where changes have been recorded (Table 10.2).

**Table 10.2 Evolution of energy prices at selected EMAS sites, 2020-21 (% change in Eur/MWh)**

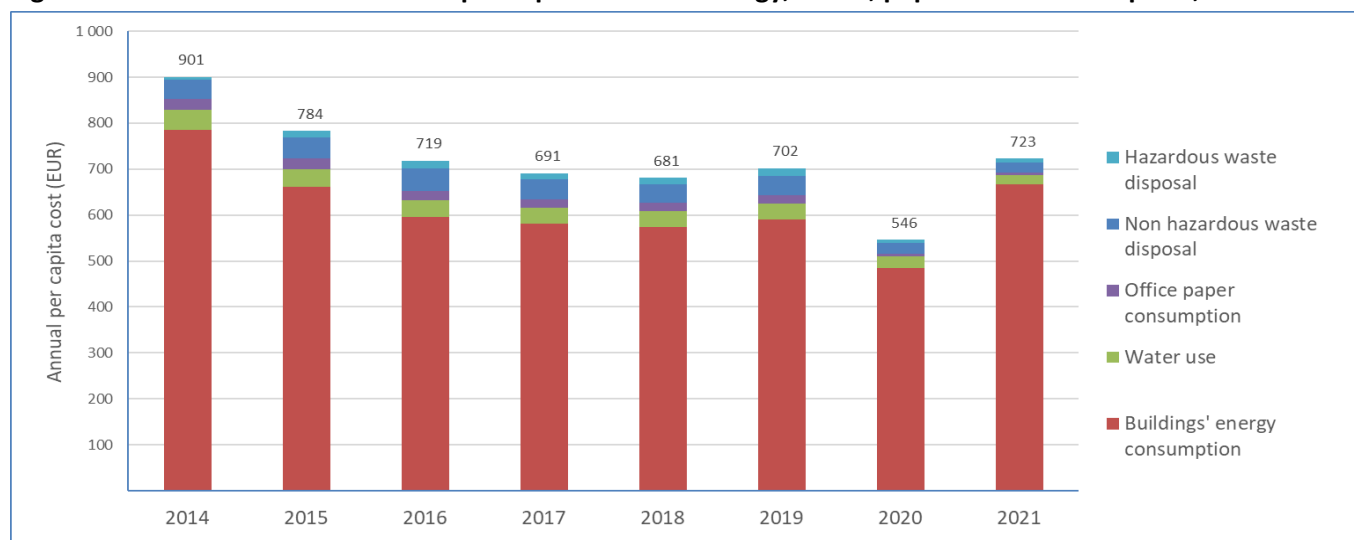
Site	Electricity	Gas
Brussels	14	246
Luxembourg	-15	-2
JRC Geel	-11	166
JRC Seville	-16	-4
JRC Ispra	53	196

### 10.3 Costs of energy, water, paper and waste disposal

The per capita costs for non-energy resource consumption parameters and for waste disposal, at typically 20 to 50 EUR, is far lower than for buildings energy consumption as demonstrated in Figure 10.2. Resource costs reduced considerably in 2020 owing to the COVID pandemic for all the parameters, but increased again in 2021.

<sup>(56)</sup> The EMAS Steering Committee has discontinued targets for resource consumption costs, as resource consumption is itself subject to targets



**Figure 10.2 Evolution of Commission per capita costs for energy, water, paper and waste disposal, 2014-21**

While the unit cost for disposal of hazardous waste is greater than that for non-hazardous waste, the much smaller volumes of the former lead to overall costs that are typically one third to one quarter for the latter. The data suggest cumulative savings of approximately 17,5 Mio EUR since 2014 based on per capita costs applied to the EMAS population.

## 11 Lessons learned and the way forward

This report summarises the Commission's overall performance using data from the eight largest Commission sites. In addition, annex I reports on the first two of the Commission's representations in Member States to register. It represents consolidation 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 and the pilot Representations (Vienna and Valletta) in 2021.

### 11.1 Conclusions

1. The COVID pandemic that resulted in teleworking for almost all staff for most of 2020 and 2021 resulted in a reduction in the Commission's environmental impact indicated by lower values for the core environmental performance indicators compared to 2019. The carbon footprint reduced considerably in this period, even considering the carbon footprint of teleworking, owing to very significantly reduced missions' emissions. Having already met its 2020 targets, the Commission, owing to the pandemic situation had also sometimes in 2021 met the 2023 and 2030 targets.
2. The EMAS site coordinators reviewed previously defined site level targets for core environmental performance parameters for 2023 and 2030 for the Global Annual Action Plan. This continues to be subject to considerable uncertainty particularly under existing 'non-normal' conditions it is not yet evident how the working environment will change. Integrating the Greening the Commission communication's action plans with the Global Annual Action Plan has commenced.
3. To improve the Commission's carbon footprint, the Corporate coordination team added two components. In consultation with several site coordinators and emissions experts, it estimated the most significant aspects of teleworking of which emissions from heating energy was the most important. The Corporate Coordination team also calculated the CO<sub>2</sub> emissions for external experts' travels for that are paid for by the Commission using the approach formerly adopted by experts during DG CLIMA's study for data in 2019. Furthermore, it integrated missions emissions data for 2021 from the

internal missions database, which will simplify analysis of such information at DG level, particularly important for reducing the Commission's carbon footprint.

4. In 2021, buildings emissions represented 69% of the carbon footprint (42% operation, 27% construction). This was a far greater percentage than in 2018 and 2019, because of much reduced mission travel, which represented 7% even considering the experts' missions.
5. The first year of starting to include EC representations in Member States (an exercise conducted with the European Parliament) has been important in extending the reach of the Commission's management system to Member States, starting with Vienna and Malta.
6. The Executive Agencies are now fully incorporated within EMAS.

## 11.2 Going forward

In order to continue to improve environmental performance, and meet stakeholder expectations, we need to:

7. Incorporate under EMAS the operational requirements resulting from the Commission's own Green Deal communication.
8. Improve the Carbon Footprint calculation. The following are required to have a more robust system
  - ❖ Further develop the calculation of homeworking impacts using as much real data as possible from specific staff survey and estimating the teleworking contribution in 2019 and 2020
  - ❖ Develop a Commission wide survey incorporating, besides teleworking emissions, information to estimate emissions from staff commuting across the EMAS sites.
  - ❖ Work with internal partners (including and especially the PayMaster's Office (PMO) to ensure that the basis for reporting of missions' emissions, within MIPs is as broad as possible. Ideally missions data for external experts' (whose travel is funded by the administrative budget) should be recorded in a similar manner as for staff.
9. Continue discussions with DG COMM and the European Parliament to improve the procedure for incorporating the Commission Representations and Parliament Houses of Europe in Member States within the EMAS Registration.
10. Continue efforts to **improve on the data collection and reporting** tool that currently uses spreadsheets and has recently moved online to TEAMS. This will build on steps taken internally and externally to identify a more robust alternative.
11. Determine the feasibility of delivering a simpler reporting format.



# APPENDICES

## 1 EMAS implementation in the Commission

### 1.1 Who implements EMAS in the Commission?

A College of Commissioners Decision <sup>(57)</sup> ensures EMAS implementation at a high level. DG.HR's Director General chairs the **EMAS Steering Committee** <sup>(58)</sup> (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.

A 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. Four 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 that HR.D7 works with a network of over 40 staff across the Commission services whose job descriptions include their EMAS responsibilities. The network includes:

1. **EMAS site coordinators** at each of the eight sites are HR.D7'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
2. **EMAS correspondents** (Brussels 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.

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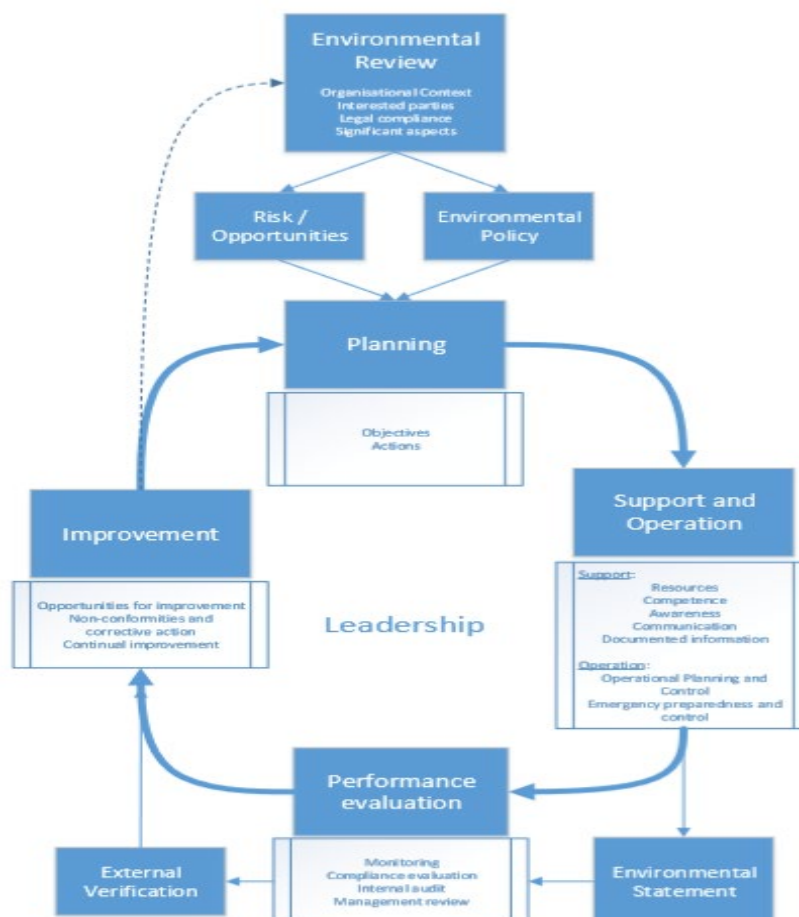
<sup>(57)</sup> COMMISSION DECISION C(2013) 7708 of 18.11.2013 on the application by the Commission services of the Community eco-management and audit scheme (EMAS).

<sup>(58)</sup> The Steering Committee is made up of the following directorates-general and services: BUDG, CLIMA, DIGIT, ENER, ENV, HR, JRC, MOVE, SG, SANTE, MARE, RTD, SCIC, OIB and OIL (and several Executive Agencies are in the process of applying).

## 1.2 Key components of the EMAS system

Figure 1 shows the main elements of the EMAS system with the steps required to achieve and maintain an EMAS registration.

**Figure 1 The EMAS Cycle**



Further description of some of the elements are defined below. Most of the activities occur annually, but the whole cycle is completed in three years for practical purposes. The size and spread of the Commission's premises across Europe dictates that activities such as auditing are phased over the three year cycle.

### 1.2.1 Environmental review

The Environmental Review provides a global overview of environmental considerations and a basis for defining strategy and objectives. The Commission defines its operational context, legal obligations and determines which environmental aspects <sup>(59)</sup> related to its activities, products and services have (or may have) a significant impact on the environment and on the environmental management system (EMAS).

<sup>(59)</sup> Aspects evaluation undertaken according to Annex 4 of EMAS PRO 001 and considers for each aspect considering frequency, severity, breach of law, magnitude, applicable legislation, stakeholders concern, previous incidents and the possibility of taking action

It also considers the needs and expectations of interested parties and decides which of these can become obligations in the management system. The EMAS sites each considers these elements although context and interested parties are also defined at corporate level. This helps define actions considering risk and opportunity.

## 1.2.2 System documentation

HR.D7 maintains the system documentation of which the most important elements are the EMAS Handbook, which provides a system overview and defines roles and responsibilities. Sites must apply the three "central" procedures (i) EMAS environmental review; ii) Monitoring, reporting, and planning and iii) Management of audits and verifications findings) or equivalent alternatives, and may develop their own standard operating procedures to cover local conditions.

## 1.2.3 Monitoring of indicators and setting of objectives

EMAS requires organisations to continually improve their environmental performance, so they must identify indicators to measure and set objectives. While indicator and objective definition logically follows the environmental review conducted at each site and may therefore vary from site to site, Annex IV of the EMAS Regulation nevertheless defines "core" indicators for which data is expected to be collected, including energy efficiency, material efficiency, water consumption, waste generation, biodiversity, and emissions.

According to the Regulation, and as an administrative organisation, the Commission expresses the core indicators first as output per person. The total number of employees within the EMAS area, is therefore a common denominator of most indicator measurements. In addition, in facilities managers use indicators, such as energy consumption and gas emissions that are commonly expressed per square metre.

Every year the Commission updates its Global Annual Action Plan. This comprises:

- a review of the evolution of indicators against targets, and the setting or future targets; and
- an update in the status of existing actions and the identification of new actions to improve environmental performance and meet targets.

The EMAS Steering Committee approves the Global Action Plan annually. After consultation with the sites the ESC adopted medium- and long-term objectives for the periods 2014-23 and 2030.

Data tables contained in the individual reports for each site in Annexes A to H include indicators that can be grouped under eight main headings encompassing the political objectives set out in the Environmental Policy and as shown below. Not all sites report on all parameters:

**Table 1 Summary of main policy objectives and associated indicators**

No	Environmental Policy Objective	Indicators
<b>Physically based parameters <sup>(60)</sup></b>		

<sup>(60)</sup> Usually requiring invoices and/or measurements for their definition. For several resource consumption parameters, technical staff may also report results per square metre. This applies to "useful surface" areas which are often defined in lease or service contracts.

## Corporate Summary

No	Environmental Policy Objective	Indicators
I	More efficient use of natural resources	a) Total energy consumption (buildings), b) total energy consumption (fleet vehicles), c) renewable energy use (%), d) water consumption, e) paper consumption
II	Reducing CO <sub>2</sub> emissions, (including CO <sub>2</sub> equivalent of other gases) and other air pollutants	a) CO <sub>2</sub> emissions from buildings energy consumption, b), other greenhouse gas emissions (as CO <sub>2</sub> equivalent from buildings (ie refrigerants), c) vehicle CO <sub>2</sub> emissions (manufacturer (and actual), e) actual total air emissions including SO <sub>2</sub> , NO <sub>x</sub> , PM. (Also evaluated for the Commission's carbon footprint are emissions from other business travel, commuting, and additional criteria adopted in 2018 and 2019 (fixed assets for buildings, IT, Commission vehicle fleet, goods and service contracts, and waste disposal). Teleworking emissions and experts travel were adopted in 2021.
III	Improving waste management and sorting	a) Non-hazardous waste, b) hazardous waste and c) unseparated waste (% of total, tonnes/person).
IV	Protecting biodiversity	a) Total use of land, b) sealed area, c) nature-oriented area on/off site
<b>Communication/training "soft" parameters <sup>(61)</sup></b>		
V	Promoting "greener" procurement	a) Percentage of contracts over 60.000 EUR incorporating additional "green" criteria and, b) degree of greening achieved in contracts according to criteria adopted <sup>(62)</sup> c) percentage, fraction and value of "green" products in the office supply catalogue,
VI	Ensuring legal compliance and emergency preparedness	a) Risk prevention and management, b) progress in registering for EMAS, c) non-compliance in external EMAS audits and d) emergency preparedness.
VII	Improving communication (sustainable behaviour of staff; suppliers, and training)	a) Centralised formalised EMAS campaigns, b) environmental training for new colleagues, d) staff awareness (through two yearly external survey), e) register of training needs and f) response to internal questions.
VIII	Enjoying transparent relations with external partners	a) Response to external questions, b) register of local and regional stakeholders (needs and expectations) and c) dialogue with external partners.

This document summarises results for each site along with a Commission wide summary presented in the order in the above table and consistent with the Global Annual Action Plan.

### 1.2.4 Legal compliance

The Commission maintains European, National and, where relevant, Regional registers of applicable legislation for its sites. It applies host country legislation, and requires its contractors to do so, with a particular focus on maintenance and inspection contracts. Expectations and needs of interested parties can become an obligation for the Commission if accepted.

In addition to complying with general legislation applicable to its facilities, the Commission must fulfil the requirements of environmental permits that are granted by the authorities. In Brussels and Luxembourg individual buildings each have their own

<sup>(61)</sup> Results will ultimately appear through improvements in the areas of policy objectives I to IV, and most parameters measured input based.

<sup>(62)</sup> As per recommendations of the ECA Special Report of 2014 on how the European Institutions measure and mitigate their Carbon Footprints.



## Corporate Summary

environmental permit. The Commission seeks, when it is not the permit holder for example when renting premises, to ensure that the permit holder is compliant.

Each site is responsible for its own legal compliance which is checked through sampling each year as part of the activity of two audit campaigns that HR.D7 organise and coordinate:

- "verification" audits to maintain the EMAS registration and which will take place at the end of spring/beginning of summer; and
- "internal" EMAS audits in the autumn.

HR.D7 also monitors the follow-up of these audit findings on a corporate register and reports on progress twice yearly to EMAS Steering Committee. Furthermore, each site undertakes routine operational checks and puts in place corrective actions under the normal working conditions (usually infrastructure services and/or health and safety units).

The sampling method for buildings audits considers that the Commission is a multi-site organisation with EMAS buildings or facilities in eight sites across seven countries. The buildings and facilities of the sites of **Geel** (Belgium), **Petten** (The Netherlands), **Seville** (Spain), **Karlsruhe** (Germany) (although JRC Karlsruhe was not subject to verification audit in 2022), **Ispra** (Italy) and **DG SANTE at Grange** (Ireland) are verified each year. On the basis of reporting for 2021 two pilot Representations in the Member States have been added to the Commission's EMAS Registration, Vienna and Valletta. The administrative buildings of the Commission headquarters Brussels and Luxembourg are verified on a sampling method based on the EMAS users guide<sup>(63)</sup>. Any new buildings entering the scope are verified the year they enter along with some previously registered buildings. On average 12 buildings have been visited in recent years<sup>(64)</sup>.

### 1.3 Corporate organisational context and interested parties

The evaluation of the context and interested parties has been undertaken for each site individually and is described in the corresponding annexes to this report.

The most important longstanding corporate level contextual issue was the high expectations of the system versus the relatively limited resources available. These expectations arose from the political, social and technological context but also the culture of excellence and staff expectations. Implementation requires constant efficiency improvements and some negative prioritising of EMAS actions. The associated risk is summarised as a high level of stress and delivery constraints, but this offers the opportunity to promote the EMAS and its achievements at the Commission in the context of the Green Deal.

HR.D7 has identified needs and expectation of 14 interested parties in relation to the EMAS system at corporate level, with reputational risk being the most common. This is mainly due to their expectations of information, support, coordination which exceed the available means. Internal interested parties are more concerned by operation support and cooperation. The major target to respond to their expectations is to maintain high quality EMAS deliverables and coordination.

As a more targeted part of the exercise to identify stakeholders needs and expectations at corporate level, the services represented on the Steering Committee have expressed their views resulting in an external study proposed and financed by DG

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<sup>(63)</sup> Commission Decision (EU) 2017/2285 of 6 December 2017 Amending the user's guide setting out the steps needed to participate in EMAS, under Regulation (EC) n° 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

<sup>(64)</sup> The guide requests verification of the square root of the number of buildings multiplied by 2 for a registration renewal. That means for Brussels and Luxemburg a minimum of 17 buildings in the three years period before the registration renewal (based on 2019 figures).

CLIMA to investigate possible pathways to climate neutrality by 2030. This was particularly relevant in the context of the Commission's Green Deal but puts additional demands on the heavily stretched EMAS Coordination team who are sought by internal stakeholders to provide high level briefings, and further assistance, and guidance.

On 5<sup>th</sup> April, the College of Commissioners adopted the new HR Strategy and a Communication on Greening the Commission. The objective is to reduce CO<sub>2</sub> emissions by at least 60% in 2030 compared to 2005 compensating the remaining emissions in 2030 with high quality carbon removals. These new targets and the actions foreseen in the Communication are integrated in the EMAS process.

### 1.4 Impact of Commission activities, indicators and targets

Each site reviews its environmental impact to identify those that are significant and determine how they should be managed. Details are presented in the sites' annexes to this report and summarised in Table 2.4. There is no separate review for the Commission as a whole.

Table 2 also includes objectives for Commission wide indicators associated with the target for 2023 and 2030. The table indicates that resource consumption, particularly in relation to energy, CO<sub>2</sub> emissions and other air emissions along with managing waste generation are particularly significant at most sites.

Corporate Summary

**Table 2: Significant environmental aspects at EMAS sites 2021, associated indicators and Commission level targets for 2019-2023/30**

A/ Significance of aspects at site level									B/ Indicator and Commission level target for 2019-2023 and 2019-2030 (where stated)							
Political objective group and significant aspect	BX	LX	PE	GE	SE	KA	IS	GR	Val	Vie	Indicator	Units	Target 2023 % <sup>(1)</sup>	Target 2023	Target 2030 % <sup>(1)</sup>	Target 2030
<b>1) Efficient resource use</b>																
Buildings energy consumption	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1a Total energy consumption (bldgs.)	MWh/p kW/m <sup>2</sup>	-13 -3,7	9,1 230	-23,3 -15,8	8 201
	✓						✓				1c Non-renewable energy use	%	7,9	63,8	-2,4	57,7
Vehicle energy consumption	✓						✓				1b vehicle energy consumption	MWh/p kW/m <sup>2</sup>				
Water use	✓	✓	✓	✓			✓		✓	✓	1d Water use	M <sup>3</sup> /p L/m <sup>2</sup> EUR/p	-5,1 0,8	17,1 416	-10 -5,6	16,2 390
Paper consumption	✓		✓	✓			✓			✓	1e Office paper consumption	T/p Sheet/p/	-15	15,9	-	13,36
<b>2) Reducing emissions to air</b>																
CO <sub>2</sub> emissions (from buildings energy consumption)	✓	✓	✓	✓		✓	✓		✓	✓	2a CO <sub>2</sub> emissions (buildings)	TCO <sub>2</sub> /p kgCO <sub>2</sub> /	-16,2 -8,7	1,3 32	-35,5 -30,2	1 25
Equivalent CO <sub>2</sub> emissions refrigerants (from buildings)	✓			✓	✓	✓	✓	✓		✓	2b Refrigerant losses	TCO <sub>2</sub> /p kgCO <sub>2</sub> /				
Emissions from transport, including all missions and commuting (indicators only applies to Commission)	✓						✓		✓	✓	2c CO <sub>2</sub> emissions (vehicle fleet) manufacturer actual	gCO <sub>2</sub> /km gCO <sub>2</sub> /km	--20	93	-54	53
Emissions of particles, dust, noise etc	✓		✓				✓	✓			2d Bldgs emissions (NO <sub>x</sub> ,SO <sub>2</sub> ,PM <sub>10</sub> )	Tonnes/ p				
Nuclear emissions		✓	✓	✓		✓	✓									
<b>3) Improving waste management</b>																
Non hazardous waste	✓	✓	✓	✓			✓	✓	✓	✓	3a Non-hazardous waste	T/p	-19	0,17	-24	0,16
Hazardous waste	✓	✓	✓	✓			✓	✓			3b Hazardous waste	T/p				
											3c Unseparated waste	%	8,2	36,3	6,2	35,6
Wastewater/liquid waste	✓	✓	✓	✓			✓	✓			3d Non dom. wastewater	m <sup>3</sup> /p				
Nuclear waste						✓	✓									
<b>4) Protecting biodiversity</b>																
Protecting biodiversity	✓						✓		✓	✓	4a Use of land, sealed area,	m <sup>2</sup> /p,				
<b>5) Promoting green procurement</b>																
Contractor behaviour	✓						✓		✓	✓	5a Contracts with "eco" criteria Degree of greening criteria	%				
<b>6) Legal compliance and emergency</b>																
Ensuring emergency compliance and	✓		✓	✓												

## 1.5 EMAS objectives and UN Sustainable Development Goals (SDG)

The 17 SDGs are part of the 2030 Agenda for Sustainable Development, which includes a Political Declaration and a High-Level Political Forum for follow up. They apply to all countries, incorporating economy, environmental and social pillars of sustainability, and underpinned by the ‘5Ps’ (people, planet, prosperity, peace and partnership). Countries report on progress in voluntary annual reports.

They have been referred to as the ‘closest thing’ the world has to an overall plan. The 17 high level objectives were developed by working groups of the UN Member States and other organisations and include a total of 169 targets under the 17 headings. They follow on from the Millennium Development Goals that applied only to developing countries. The 17 SDGs can be grouped as follows:

- 1 to 5 - parameters carried over from the Millennium Development Goals
- 6 to 11 - new areas
- 12 to 15 - the ‘green’ agenda
- 16 - peace
- 17 - means of implementation and partnership

Table 3 shows the coherence of the Commissions main EMAS objectives and core indicators with certain SDGs. There is considerable overlap in the definition.

**Table 3 EMAS core indicators of global objectives and selected SDGs**

EMAS global objectives and associated core indicators	Selected Sustainable Development Goals											
	3, Global health and wellbeing	4, Quality education	6, Clean water and sanitation	7, Affordable and clean energy	9, Industry innovation and infrastructure	11, Sustainable cities and communities	12, Responsible consumption and production	13, Climate action	14, Life below water	15, Life on land	16, Peace, justice and strong institutions	17, Partnerships for the goals
<b>1) Efficient resource use</b>												
1a Total energy consumption (buildings)												
1c Non-renewable energy use												
1b vehicle energy consumption												
1d Water consumption												
1e Office paper consumption												
<b>2) Reducing emissions to air</b>												
2a CO <sub>2</sub> emissions (buildings)												
2b Refrigerant losses												

## Corporate Summary

EMAS global objectives and associated core indicators	Selected Sustainable Development Goals											
	3, Global health and wellbeing	4, Quality education	6, Clean water and sanitation	7, Affordable and clean energy	9, Industry innovation and infrastructure	11, Sustainable cities and communities	12, Responsible consumption and production	13, Climate action	14, Life below water	15, Life on land	16, Peace, justice and strong institutions	17, Partnerships for the goals
2c CO <sub>2</sub> emissions (vehicle fleet) manufacturer, actual												
2d Buildings emissions (NO <sub>x</sub> ,SO <sub>2</sub> , PM <sub>10</sub> )												
Nuclear emissions												
<b>3) Improving waste management</b>												
3a Non-hazardous waste												
3b Hazardous waste												
3c Separated waste												
3d Non domestic wastewater discharge												
Nuclear waste												
<b>4) Protecting biodiversity</b>												
4a Use of land, sealed area, natural areas												
<b>5) Promoting green procurement</b>												
5a Contracts with "eco" criteria												
<b>6) Legal compliance and emergency preparedness</b>												
7) Communicating environmental responsibility and training												
<b>8) Promoting dialogue with external partners</b>												

## 2 Carbon footprint: factors and technical elements

**Table 1 Summary of components, and recommended factors used in the carbon footprint**

No	Description	Scope 1	Scope 2	Scope 3	
1	Mains gas for buildings PCI	Combustion 0,205 kgCO <sub>2</sub> e/kWh		Upstream supply 0,0389 kgCO <sub>2</sub> e/kWh	
2	Tanked gas for buildings <sup>(1)</sup>	Combustion 0,230 kgCO <sub>2</sub> e/kWh			
3	Gas oil for buildings <sup>(1)</sup>	Combustion 0,266 kgCO <sub>2</sub> e/kWh		Upstream supply 0,058 kgCO <sub>2</sub> e/kWh	
4	Commission vehicle fleet (petrol) <sup>(2)</sup>	Combustion 2,28 kgCO <sub>2</sub> e/L		Upstream supply: 0,528 kgCO <sub>2</sub> e/L	Fixed asset 0,04 kgCO <sub>2</sub> e/km
5	Commission vehicle fleet (diesel) <sup>(2)</sup>	Combustion 2,5 kgCO <sub>2</sub> e/L		Upstream supply: 0,658 kgCO <sub>2</sub> e/L	Fixed asset 0,05 kgCO <sub>2</sub> e/km
6	Refrigerant losses: (100 Year GWP, as kgCO <sub>2</sub> e/kg for Kyoto protocol gases) <sup>(3)</sup>	R410A (1 920), R134A (1 300) R404A (3 940), R407C (1 620), R407D (1 627), R507A ( 2 240), R422D (2 470), R23 (12 400), R32 (675), R427A (2 020), R508B (13 396), SF6 (23 500), R227A (2640), ISCEON89 (3805), R600A R290 (3), R32 (677), R12 (10 200), R452A (2239), R449A(1397)			
7	Refrigerant losses: (100 yr GWP kgCO <sub>2</sub> ee/kg commercial sources or calculated)	R22 (1760), NAF SIII (1447)			
8	Electricity supply: (kgCO <sub>2</sub> e/kWh) Market approach (For Brussels it is the smaller non renewable supply)		Contract factor BX(0.275), LX(0.256), SE(0.200), GR(0.300)	Supplier line losses: 8,9% of emissions	Upstream losses: 8,9% of emissions
8a	Electricity supply (kgCO <sub>2</sub> e/kWh) Country approach (IEA, CO <sub>2</sub> emissions per kwh of electricity only , 2019 data		BE (0.161), LX(0.110), NE(0.307), ES(0.153), DE(0.319), IT(0.266), IR(0.265), AU(0.120), MT(0.366)		
9	District heating: (kgCO <sub>2</sub> e/kWh)		Contract factor	Upstream factor 15,8 %	



## Corporate Summary

No	Description	Scope 1	Scope 2	Scope 3
10	Renewables for bldgs. energy (6 categories). <sup>(1)</sup>			Upstream supply (as kgCO <sub>2</sub> e/kWh) i) photovoltaic (0,055) ii) biomass (0,019); iii) geothermal pumps (0,045); iv) offshore wind (0,0148); v) onshore wind (0,0127); vi) hydroelectricity (0,006);
11	Business travel (staff) multiple categories)			From 2021 uses the EC MIPs output, factors indicated in ARES(2020)6821862
11a	Business travel (experts)			From 2019, using consultant's approach in DG CLIMA study (Ares(2022) <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022HR0007">hr.d.7(2022)4148775</a> )
12	<b>Fixed assets – buildings (7 categories)</b> Factors in kgCO <sub>2</sub> e/m <sup>2</sup> for the following construction types: <sup>(1)</sup>			i) Not specified – offices (650) , ii) Steel - industrial building (275), iii) Steel - parking underground (220), iv) Steel - restaurants (183), v) Concrete - industrial buildings (825), vi) Concrete - parking underground (656), vii) Construction type concrete - restaurants (550) <b>Design life, depends on site/building conditions, typically 30 to 50 years ( c )</b>
13	<b>Fixed assets – IT equipment (17 categories)</b> Factors in kgCO <sub>2</sub> e/unit for the following items: <sup>(1)</sup>			i) PC desktop (169); ii) Docking station (148); iii) Flat screen (235); iv) Laptop (156); v) Individual printers (124); vi) Network printers & copiers (2935), vii) Fax machines (1470); viii) Scanners (1470); ix) Telephones (simple) (20); x) Telephones (smartphone and i-phones) (29*); xi) Telephones (fixe) (17); xii), Servers, (600*); xiii) Projectors (94) ; xiv) Videoconference installations (501); xv) Televisions (501); xvi) Other small IT devices (firewall router switches) (81); xvii) tablet (9 to 11 inch (63) <b>Design life 4 years ( c )</b>
14	<b>Goods and services contracts (non catering – 6 categories)</b> Factors in kgCO <sub>2</sub> e per named unit <sup>(1)</sup>			i) Security contract (FTE) (561); ii) Cleaning contract (FTE) (1180); iii) Other service contracts - consultants (kEUR) (170); iv) Other service contracts - translators (kEUR) (170); v) Other service contracts - (kEUR) (170); vi) Purchased paper, used or new (tonnes) (919);
15	<b>Goods and services contracts (catering – 7 categories)</b> Factors in kgCO <sub>2</sub> e per tonne			i) beef (28600); ii) pork (5890); iii) fish (9220); iv) chicken (4752); v) milk (1220); xii) Other dairy products (average yoghurt and butter) (6185); xiii) coffee (3140)
16	<b>Waste disposal (11 categories)</b> Factors in kgCO <sub>2</sub> e per tonne <sup>(1)</sup>			i) Incinerated waste – domestic waste (362); ii) incinerated waste – food (47); iii) methanisation – food (87); iv) Recycled/reused – paper (36); v) Recycled/reused – cardboard (36); vi) Recycled/reused – wood (36); vii) Recycled/reused – glass (36); viii) Recycled/reused - plastic PMC (877); ix) Recycled/reused – others (36); x) Hazardous waste - all types (706); xi) Landfill (probably mostly projects) (33)
17	<b>Teleworking emissions</b>			Since 2021, see Ares(2022)4075097, includes electricity consumption, space heating, videoconferencing, fixed assets of IT equipment.

Notes (1) Europe average from ADEME, Base Carbone 2018; (2) France value from ADEME, Base Carbone 2018; (3) IPCC 5th Assessment Report (2014, from p 731) [https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5\\_Chapter08\\_FINAL.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf), As referenced by ADEME, Base Carbon 2018 (100 year GWP values) All factors supplied and revised by Commission's internal EMAS auditor

## Corporate Summary

The factors for energy consumption include both scope 1 (combustion) and scope 3 (upstream) components, the latter being typically 20 to 30% of the former. Scope 2 emissions are restricted to purchased electricity from the grid, which is applicable to all sites, and to district heating which is available at a minority of sites for example Luxembourg and Karlsruhe.

Scope 3 comprises emissions from a wide range of sources. The categories added in 2018/19 (items 12 to 16 in the above table), include 48 subcategories with potential data requirements at each site. In 2021 the approach to category 11 was modified, and both 11a and 17 were introduced.

The conversion factors used each year are relatively stable when based on physical or chemical properties of fuels, or refrigerants. They can be updated more frequently when considering for example the embodied energy of IT equipment that depend on complex supply chains. Of the 17 factors used for estimating embodied energy for IT equipment, several have reduced in recent years some of these, for example relating to servers, or laptops by quite a large margin. This reflects updated and improved methods of estimating the emissions and more efficient production processes.

Evaluating emissions for buildings and IT equipment is based on amortisation: the emissions are spread evenly across the assumed lifetime of the assets. The sites have used values they consider “appropriate” to their premises for buildings emissions. DG DIGIT provides information for calculating emissions from IT equipment for Brussels, Luxembourg and Grange, but not for the JRC. DG DIGIT has used an accounting lifetime of 4 years to determining how many units in each category of equipment have been amortised.

The following table shows the uncertainties associated with types of data, and conversion factors as introduced in Section 4.2.2 ‘Uncertainties’.

**Table 2 Uncertainty associated with types of data, and conversion factor**

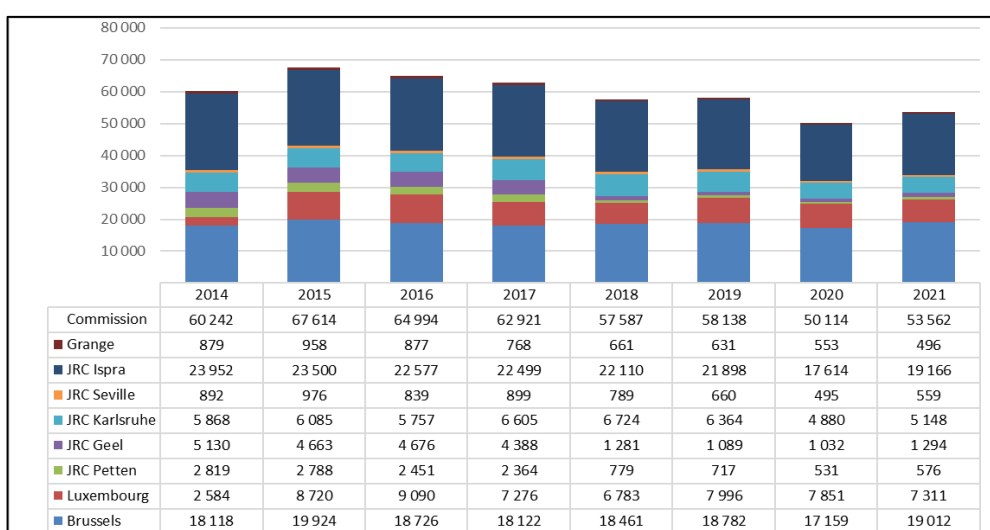
Uncertainty %	Type of data	Conversion factors to calculate CO2e for:
<b>Most certain</b>		
0	Data measured and validated by an external auditor. Data is directly used to calculate GHG emission without any additional transformation ( <b>Top quality</b> )	
5	Data with high level of certainty: measured precisely. Data has been processed with a high level of certainty (i.e. use of a conversion factor) ( <b>High quality</b> )	Combustion of heating fuels
10		Combustion of petrol, diesel (and upstream emissions)
20		Purchased paper (embodied)
30	Data measured with risk of small deviance or calculated using precise and commonly accepted assumptions Data processed by ratio ( <b>Medium quality</b> )	GWP potential of refrigerants/coolants; Upstream emissions PVs, embodied energy of small IT devices, service contracts security/cleaning, most catering emissions
50	Data available with a certain risk on accuracy or calculated based on many assumptions ( <b>Low quality</b> )	Embodied emissions of buildings, most IT, food; upstream emissions of geothermal pump; waste emissions (recycled/re-used PMC)s
70		Waste – recycled paper, cardboard, wood glass
80		Embodied energy of more complex IT servers, switches, routers, service contracts (consultants, translators etc)
90		Waste (hazardous waste, food (methanisation), incineration of food or domestic waste
<b>Least certain</b>		

### 3 Trends in selected components of the commission’s carbon footprint

#### 3.1 Emissions due to buildings’ energy consumption

Buildings’ energy consumption represents the part of the Carbon Footprint over which the sites have the most control. Figure 1 presents the relative contribution of individual EMAS sites in 2021. Brussels and JRC-Ispra together account for nearly two thirds of CO<sub>2</sub> emissions, with JRC Seville and Grange responsible for very small amounts.

**Figure 1 EMAS sites’ CO<sub>2</sub>e emissions from buildings' energy consumption, 2014-21 (tonnes)**



Brussels emissions are relatively low considering its energy consumption reflecting that, electricity is supplied from renewable sources.

At JRC Ispra the tri-generation gas plant provides for a more efficient energy supply for the site, than would be provided by the market. The grid supplies a small amount of electricity, and therefore the site accounts for a significantly greater proportion of the total emissions. Part of this emissions

are produced to carry out tests such as Vehicles Emission Tests, needed to support more sustainable EU environmental regulations. The Commission increased the emissions in 2021 by 9%, from 48 k tonnes to 52 k tonnes CO<sub>2</sub>e.

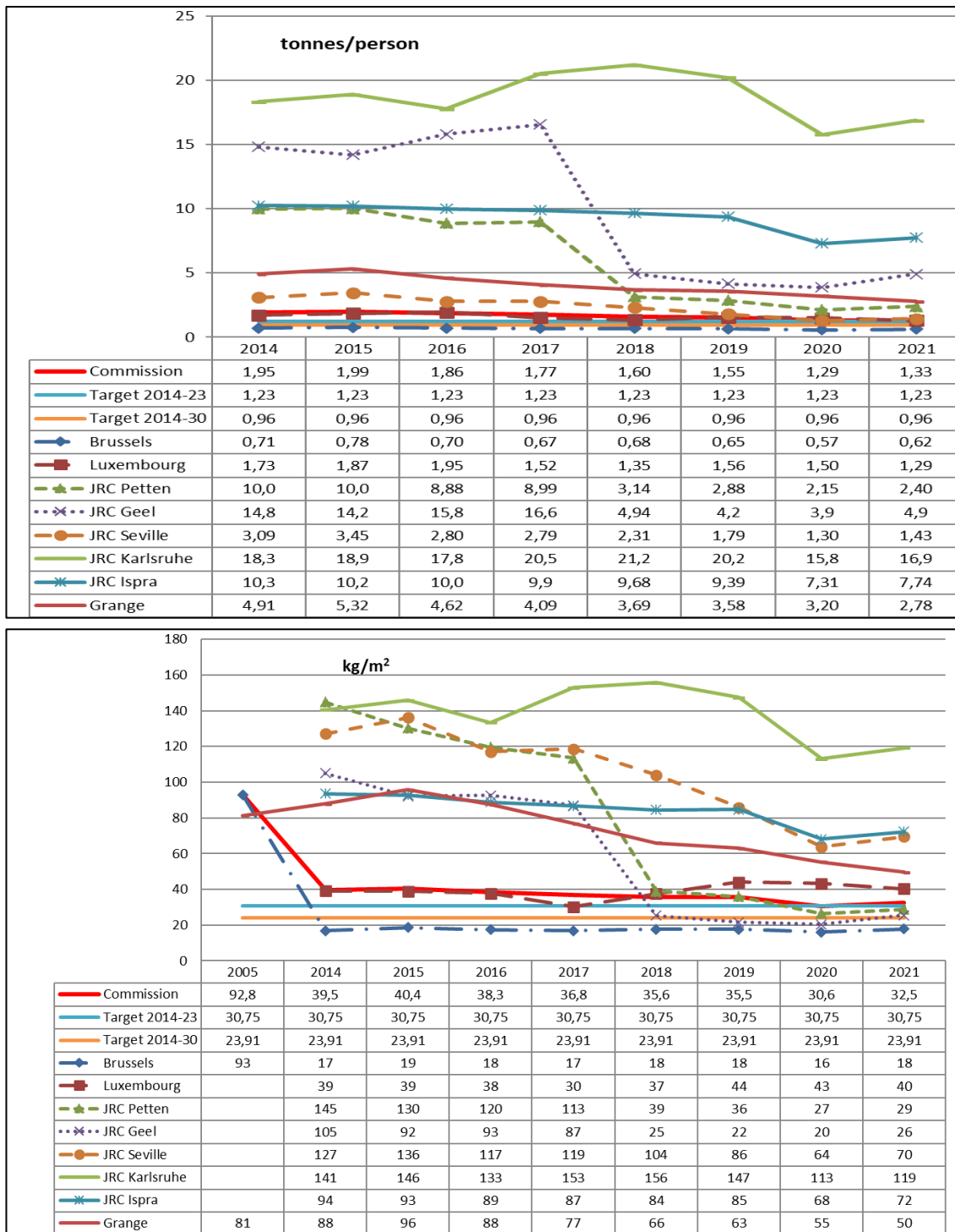
Figure 2 shows the historical trends in per capita and per square metre buildings emissions along with the aggregated Commission value and the 2014-23 and 2014-30 targets.

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, and JRC-Geel employs heat pumps in one of the main buildings. 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<sub>2</sub>e emissions from buildings, as this is often an additional benefit of actions that reduce energy consumption.

Figure 2 EMAS sites' CO<sub>2</sub>e emissions from buildings' energy consumption, 2014-21 (tonnes/person, kg/m<sup>2</sup>)



The sites identified the following **key** specific actions in the 2022 Global Annual Action Plan:

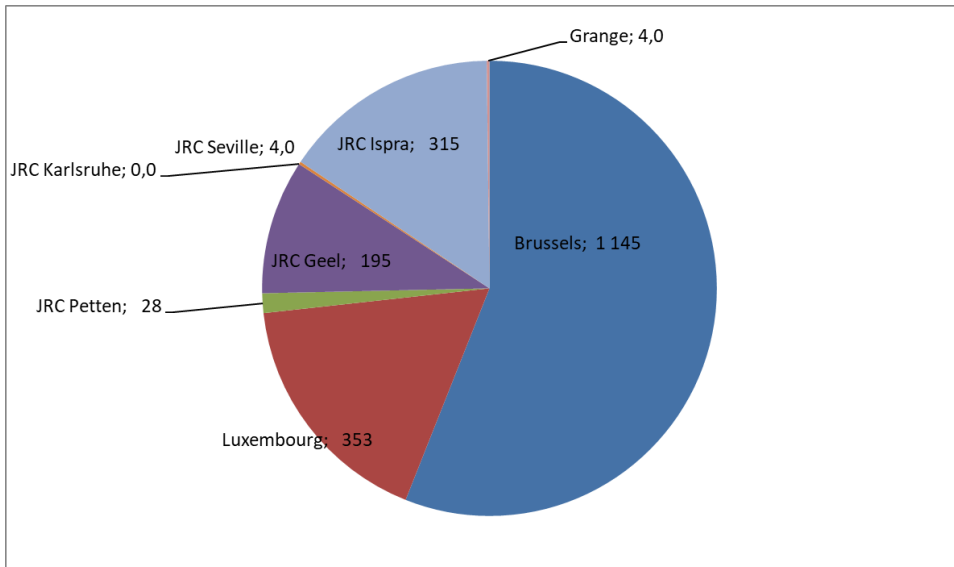
- Corporate actions: Continue the annual review of GHG approach to reporting through the specialist services of the internal auditor (ARCADIS, supported by CO2logic) and incorporate the impact of teleworking into the Carbon Footprint
- JRC-Ispra: apply BREEAM environmental standards to the project and construction of selected JRC building over 3 Mio EUR and life cycle analysis for buildings projects over 1 Mio EUR
- JRC-Petten: photovoltaic installations

- DG SANTE at Grange: use bio-Liquid propane gas (LPG) instead of LPG to heat water during the summer and avoid using diesel.
- DG COMM Reps: Development and operation of a monitoring system to measure CO<sub>2</sub> eq emissions

Notwithstanding the actions described above, Commission experience suggests that reducing emissions in existing buildings is extremely difficult and that a buildings policy that promotes occupation of newer, more efficient buildings will lead to greater gains.

### 3.2 Emissions due to refrigerant or coolant loss

**Figure 3 CO<sub>2</sub>e losses from refrigerant leaks at the Commission sites in 2021 (tonnes)**

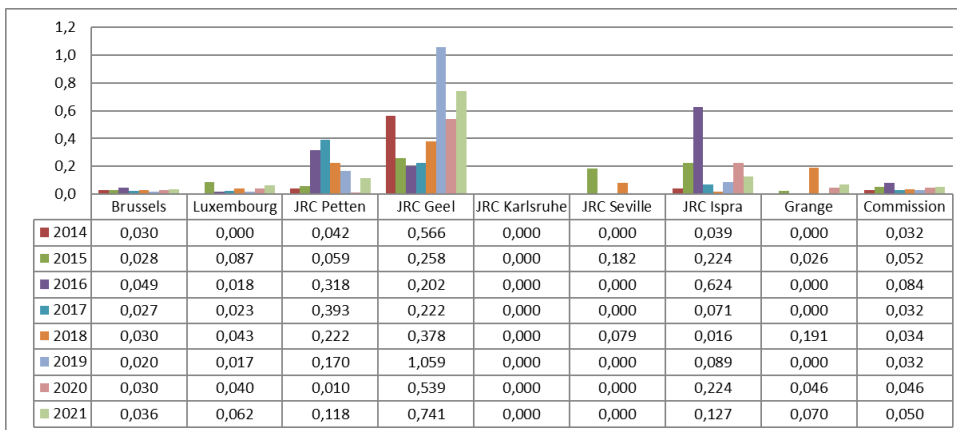


Refrigerants have Global Warming Potentials (GWP) typically between 1 000 and 10 000 meaning that a leak of just a few kilograms can have the equivalent atmospheric global warming impact of several tonnes of CO<sub>2</sub>e. But they typically account for no more than 1 to 2% of buildings' CO<sub>2</sub>e emissions. Between 15 and 20 refrigerants are recorded in EMAS reporting at JRC-Ispra and JRC-Geel, and fifteen at JRC Petten.

Figure 3 shows that the four largest sites (BX, LX, GE, IS) are responsible for over 98% of the total emissions. Figure 4 shows that the experimental sites tend to have the greatest per capita emissions.

sites tend to have the greatest per capita emissions.

**Figure 4 Refrigerant losses recorded at EMAS sites, 2013-21 (tCO<sub>2</sub>e/person)**



Per capita refrigerant losses are highest at the JRC site there is considerable experimental infrastructure, (notably at Petten, Geel and Seville).

The recent increase recorded at JRC-Geel was due to expanded reporting. JRC-Karlsruhe continues to report no losses during normal operation under its protocol (less than 3%).

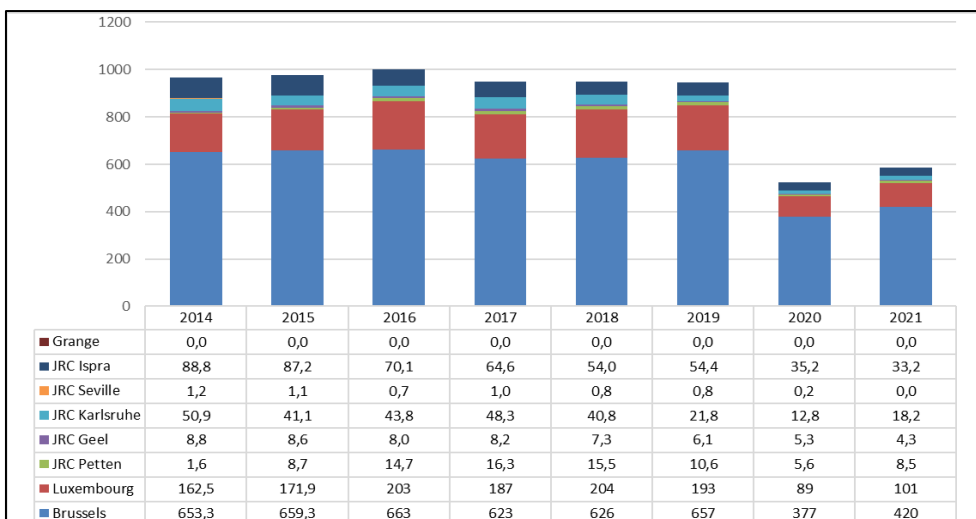
Overall, the Commission's total and per capita refrigerant losses have remained relatively stable since 2017.

Total losses reduced significantly at JRC Ispra in 2018 but increased in 2019 and 2020 and decreased in 2021. JRCs Geel and Petten that accommodate large experimental installations requiring cooling or insulation. Release of R410a, SF6 and ISCEON89 are the mainly responsible for the JRC-Geel emissions.

### 3.3 CO<sub>2</sub>e emissions from the site vehicle fleet

Emissions from vehicle fleet represent a very small, but highly visible, proportion of the total carbon footprint. Figure 5 shows CO<sub>2</sub> emissions from Commission fleet vehicles. The three largest sites have the largest vehicle fleets, and therefore generate the most emissions.

**Figure 5 CO<sub>2</sub>e emissions from Commission fleet vehicles at EMAS sites, 2014-21 (tonnes)**



Total vehicle fleet emissions reduced slightly between 2016 and 2019, but by 44% from 2019 to 2020 (944 to 526 tonnes) and increased a little in 2021 (584 tonnes). Brussels and Luxembourg accounting for 89 % of the total.

Table 1 shows the evolution of vehicle fleet size and distances covered for the Commission EMAS sites. The Commission has reduced the size of its vehicle fleet since 2015 by nearly 30%.

In 2020 and 2021 the overall fleet size hasn't changed much, but the total distance driven and the kms per vehicle changed significantly from 2019, especially in 2020, mainly due to the pandemic.

**Table 1 Site vehicle fleet characteristics**

Site	Fleet vehicles (average)							Total kms						
	2015	2016	2017	2018	2019	2020	2021	2015	2016	2017	2018	2019	2020	2021
Brussels	117	107	129	126	131	129	125	2 477 072	2 829 675	2 508 253	2 311 311	2 346 590	1 432 721	1 766 920
Luxembourg	25	30	30	33	32	32	31	665 992	771 824	731 060	812 152	781 567	322 876	408 831
JRC Petten	4	4	4	4	4	4	4	30 513	55 440	61 324	56 473	45 396	21 963	37 109
JRC Geel	7	7	7	7	7	7	7	NR	NR	NR	NR	11 909	6 940	6 708
JRC Karlsruhe	11	11	12	12	12	12	12	137 616	133 520	124 944	104 666	77 749	94 250	96 380
JRC Seville	1	1	1	1	1	1	1	4 356	3 192	4 016	3 859	5 521	714	
JRC Ispra <sup>(1)</sup>	122	123	121	110	110	119	115	286 517	240 217	208 053	192 277	200 893	149 008	136 077
Grange	1	1	1	1	0	0	0	NR	NR	NR	NR	NR	NR	NR
<b>Commission</b>	<b>288</b>	<b>284</b>	<b>218</b>	<b>207</b>	<b>210</b>	<b>217</b>	<b>208</b>	<b>3 607 221</b>	<b>4 036 796</b>	<b>3 640 578</b>	<b>3 483 666</b>	<b>3 469 625</b>	<b>2 028 472</b>	<b>2 452 025</b>

NR: Not reported; <sup>(1)</sup> Total kms and kms/vehicle presented for conventional (petrol or diesel) vehicles, ie 87 in 2017, in 74 in 2018

Table 2 indicates the type of vehicle in Commission site fleets in 2021.

**Table 2 Number of vehicles by type at Commission sites in 2021**

Type of vehicles	Brussels	Luxembourg	JRC Petten	JRC Geel	JRC Sevilla	JRC Karlsruhe	JRC Ispra	JRC Grange
Electric	14	4	1	1	0	2	50	0
Hybrid	62	10	0	0	0	0	1	0
Euro 6	39	16	0	1	0	4	5	0
Euro 5	0	0	2	1	0	5	1	0
Euro 4	0	1	0	0	1	1	34	0
Euro 3	0	0	0	0	0	0	14	0
Euro 2	0	0	0	1	0	0	2	0
Euro 1	0	0	0	0	0	0	4	0
Euro 0	0	0	0	0	0	0	4	0
<b>Total vehicle fleet</b>	<b>125</b>	<b>31</b>	<b>4</b>	<b>7</b>	<b>1</b>	<b>12</b>	<b>115</b>	<b>0</b>

Note: For Petten, Geel and Karlsruhe, total includes some specific utility equipment not included in these categories



## Corporate Summary

Brussels and JRC-Ispra lead the way with electric vehicles that are widely used for local journeys. Most of the Commission vehicle trips in Luxembourg are longer distance, for which electric vehicles currently lack sufficient range. JRC-Ispra has increased the number of electric vehicles from 3 in 2014 to 41 in 2020 and to 50 in 2021.

Brussels has a stable number of charging points for service vehicles and for staff in several Brussels buildings. Further installations are ongoing for staff vehicles. Luxembourg recently replaced 4 petrol vehicles with 3 hybrid vehicles, a significant step forward.

The Commission uses manufacturer’s specified tailpipe emissions as a core indicator to encourage the purchase of vehicles that emit less when they operate, as shown in Figure 6.

**Figure 6 Manufacturer tailpipe emissions <sup>(65)</sup> for vehicle fleet at EMAS sites, 2014-21 (gCO<sub>2</sub>e/km)**

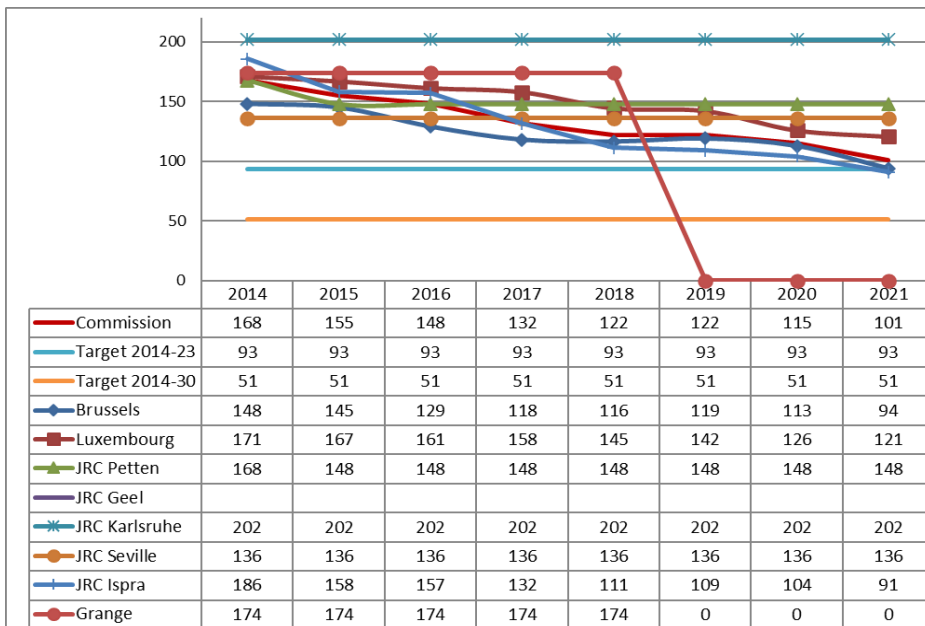


Figure 6 demonstrates that the Commission is nearly achieving the 2023 and 2030 targets for reducing the emissions of its fleet through purchasing decisions reflected also in the tables discussed above.

The sites have set ambitious targets for 2023 and 2030, eventually more than halving the manufacturer’s tailpipe emissions to 54 gCO<sub>2</sub>e/km by 2030.

The Global Annual Action Plan contains the following examples of site level actions to reduce CO<sub>2</sub> emissions for the vehicle fleet:

- Corporate/HR ECCT: Continue annual review of GHG approach to reporting through the specialist services of the internal auditor (ARCADIS, supported by CO2logic)
- Brussels: To include in the new call for tender (2021-2024) for the transport courier service, the obligation to use an electric car fleet (min. 50%); Greening of the fleet allocated to the College, increase the % of full electric or hybrid cars
- Luxembourg: Gradual replacement of owned / leased gasoline / diesel vehicles by hybrid or electric vehicles, when possible
- JRC-Ispra: Multi annual renovation of the fleet with additional electric and hybrid vehicles

<sup>(65)</sup> Note: For Petten, Geel and Karlsruhe, total includes some specific utility equipment not included in these categories

- JRC-Petten: Offering service bikes, showers and bike parking infrastructure and charging stations for electric vehicles. Staff members can rent electric bikes (which is part of the battery research program)
- JRC-Seville: Offering showers and bike parking infrastructures
- DG COMM/Reps: Progressive replacement of internal combustion engine vehicles with plug-in hybrid or battery electric models; Staff awareness actions on reducing greenhouse gas emissions, sustainable professional travel and commuting, and digital pollution

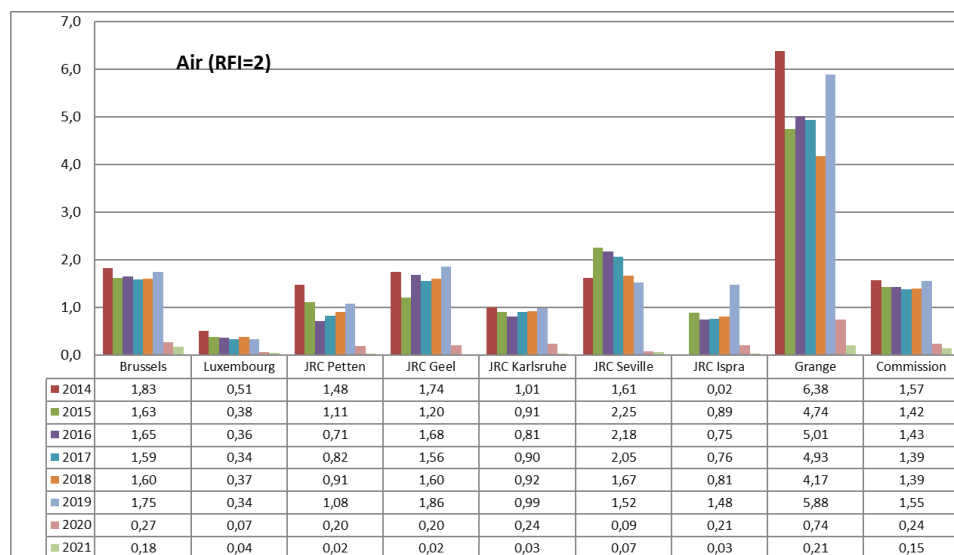
### 3.4 Staff missions, breakdown by EMAS site

The Commission has estimated CO<sub>2</sub> emissions for missions undertaken by staff at the EMAS sites using data provided by the Commission's travel agency <sup>(66)</sup> which made use of the Commission's proprietary management system <sup>(67)</sup>. The data indicate that air travel accounts for over 90% of missions emissions.

The overall warming effect of aircraft emissions, especially at higher altitudes, i.e. for flights exceeding 400 - 500 km, is greater than that produced by CO<sub>2</sub> emissions alone. This is because other jet engine emissions such as soot and water vapour are thought to contribute to an overall warming effect between two and four times that generated by CO<sub>2</sub> emissions alone. Although there is considerable uncertainty, and research is ongoing, a radiative forcing <sup>(68)</sup> index (RFI) of 2 <sup>(69)</sup> was used to calculate flight emissions.

Figure 7a-c shows the per capita emissions estimated for the main modes of transport booked with the Commission's travel agency (2014-20), and through the Commission's mission planning tool (MIPs) in 2021. The development of the MIPs tool for reporting staff missions' emissions ensures that all missions are included in the primary data source (not just those booked through Commission's the travel agency), and therefore requiring assumptions and extrapolation to represent all missions.

**Figure 7a-c Per capita emissions for missions by air (RFI=2), car rental and rail <sup>(70)</sup> (tonnes CO<sub>2</sub>e**



There has been a substantial reduction in emissions associated with air travel owing to the COVID pandemic, with per capita emissions approximately one tenth of the 2019 value and a further reduction compared to 2020.

DG SANTE at Grange has the highest per capita emissions for air travel because staff include a high proportion of food and veterinary inspectors who conduct frequent missions throughout the world.

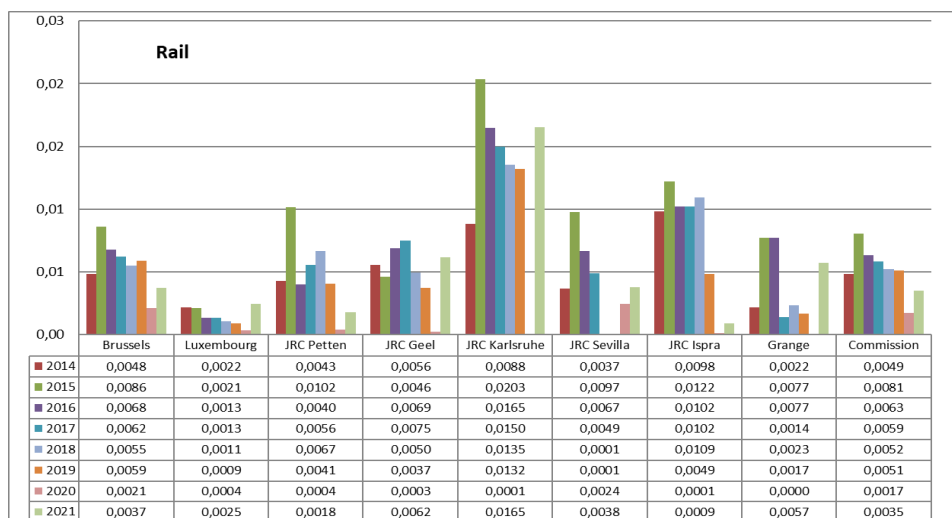
<sup>(66)</sup> American Express report emissions for air train and hire cars, as calculated by Atmosfair who use an approach developed with the German environmental authorities. Note that travel arrangements for JRC-Ispra staff are not generally made through this agency so figures are under reported in 2013, 2014, estimations made from 2015.

<sup>(67)</sup> Commonly known as MIPs.

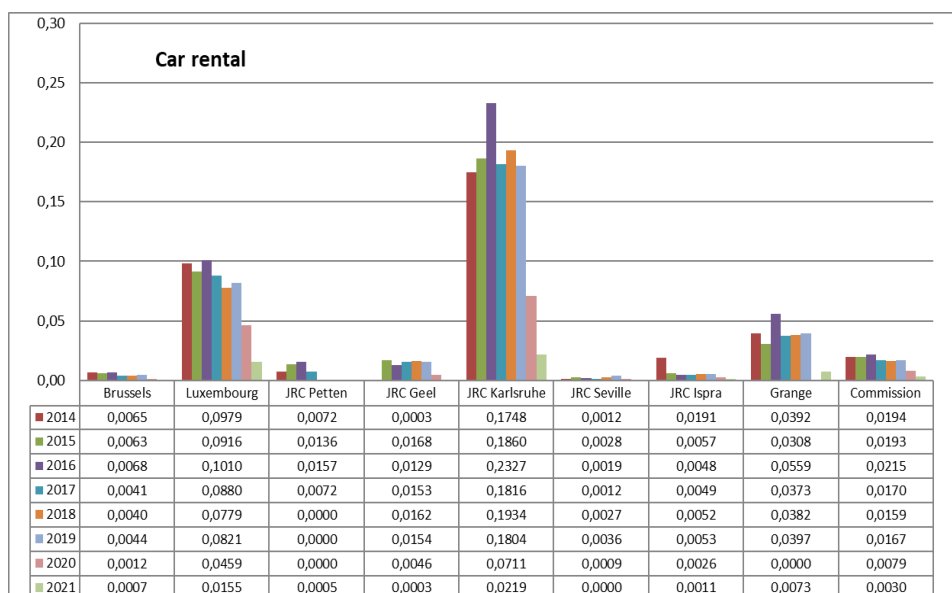
<sup>(68)</sup> Radiative forcing is a measure of man's contribution to disturbing the natural balance between incoming solar radiation and reflected outgoing radiation as measured at the top of the troposphere, the atmospheric layer extending 10 to 18km from the earth's surface, where weather processes occur.

<sup>(69)</sup> RFI=2 considered (minimum) acceptable (Internal Audit Report, Carbon Footprint of the European Commission, May 2018)

<sup>(70)</sup> Reduced from Agency data, corrections applied to account for journeys not booked through the Commission's travel agency



JRC Karlsruhe travel by train the most, along with JRC Ispra. Several sites increased the quantity of rail travel in 2021 after very low travel frequency in 2020.



Luxembourg staff travel far less frequently by air, but in common with JRC Karlsruhe, conduct more journeys by rental car for which per capita emissions (for sites other than Karlsruhe), are less than a tenth of those for air. It is important to note that:

Per capita rental car emissions are roughly one twentieth those for rail travel, and rail emissions roughly one hundredth of those for air travel.

### 3.5 Staff missions - breakdown by DG/Service

Although reporting under EMAS is site based, increasingly, and particularly since the inception of the Green Deal, individual DGs and services can download emissions data from the MIPs reporting tool. This simpler and more transparent approach to emissions reporting was developed in late 2020, and will help DGs develop their own initiatives to reduce their missions travel

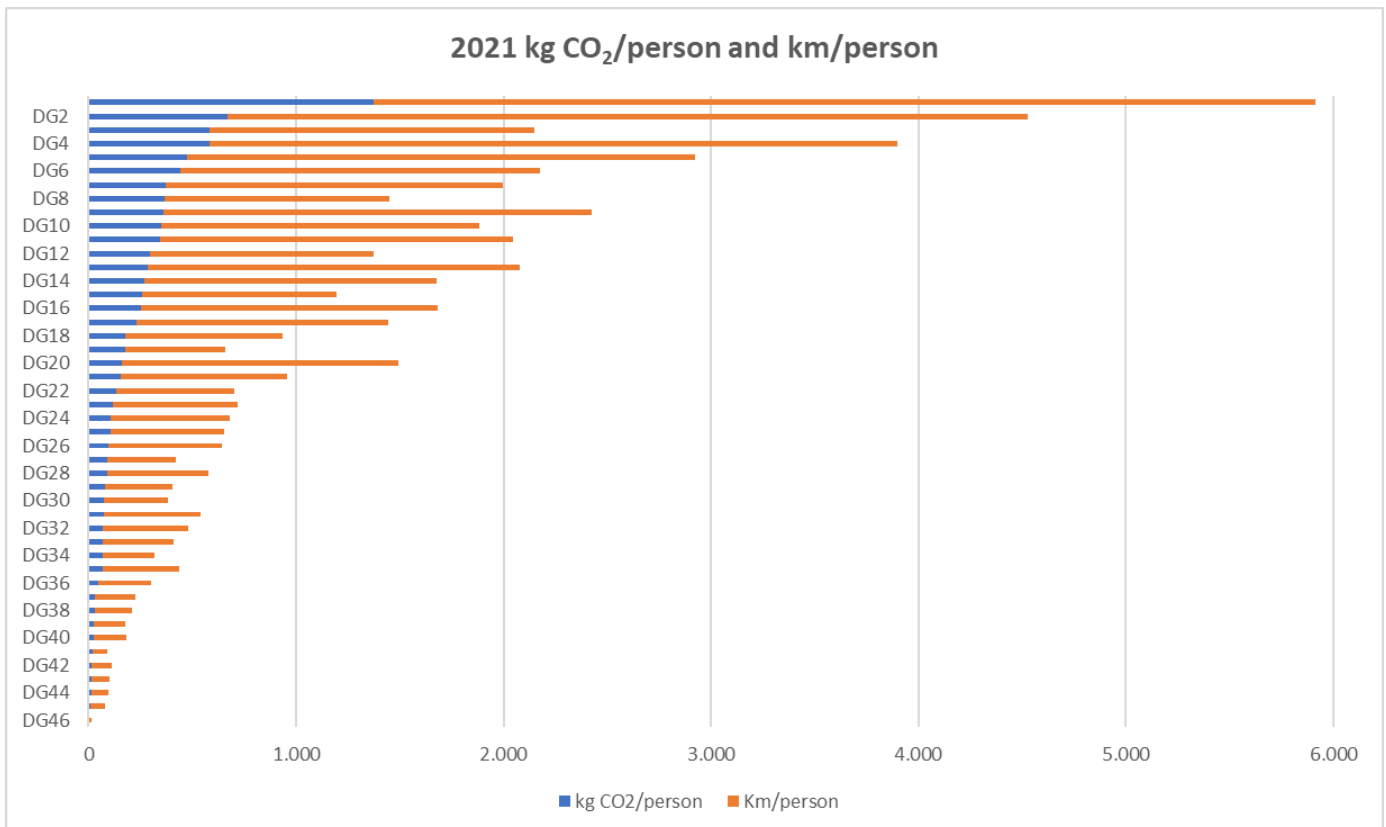
Table 3 Distribution of emissions among DGs/Services, 2019-2021

	N. of DGs		
	2019	2020	2021
>= 4 tonnes	4	0	0
1 to 4 tonnes	26	3	1
0,5 to 1 tonnes	6	13	3
<0.5 tonne	9	29	42

## Corporate Summary

	kgCO <sub>2</sub> /person		
Highest value	9.108	2.519	1.376
Average value	1.803	486	209
Lowest value	95	17	2

The curve of distribution by DG, for 2021 from highest to lowest kgCO<sub>2</sub>/person, is shown below. This along with the above table demonstrates the huge variation in missions travel between DGs and Services, and suggests that they will require very specific approaches to reducing their missions emissions in order to achieve reductions in the longer term.



### 3.6 Homeworking emissions breakdown by site

To calculate the most significant impacts of telework, it is necessary to consider the heating and cooling of the home workplace, the electricity consumption of computer equipment and lighting and other equipment used daily by the teleworker. The impact of the increase in videoconferencing can also be considered, whether the consumed electricity comes from renewable sources or not, and, if possible, the embodied emissions associated with new equipment purchased for teleworking.

## Corporate Summary

The calculation <sup>(71)</sup> gives rise to the following emissions CO<sub>2</sub>eq per site and per source of emissions, and Brussels presence data is assumed for all sites. The per site numbers will be updated when actual presence numbers at site level are available.

**Table 4 Sources of energy emissions per site (Tonnes CO<sub>2</sub>e, indicative)**

Source of Energy emissions	BRU	LUX	PE	GE	SE	KA	IS	GR	VIE	VAL	Total	Total per teleworker (kgCO <sub>2</sub> e)
Teleworking heating limited working area	5.891,3	1.262,7	23,1	54,7	14,1	50,2	263,7	28,6	2,2	0,1	7.591	215,3
Electricity for cooling limited working area	4,0	0,9	0,1	0,0	0,3	0,2	4,1	0,0	0,0	0,2	9,9	0,3
Electricity	1.956,2	127,9	29,9	16,8	27,4	40,6	186,4	21,3	0,7	2,0	2.409	68,3
Emissions of videoconferencing	339,2	13,0	0,5	0,6	0,9	0,7	5,5	0,4	0,0	0,0	361	10,2
IT equipment fixed assets (embodied energy)	355,0	52,1	1,4	2,6	3,2	3,1	11,8	0,0	0,0	0,0	429	12,2
<b>Total energy emissions</b>	<b>8.545,7</b>	<b>1.456,5</b>	<b>55,0</b>	<b>74,8</b>	<b>45,8</b>	<b>94,8</b>	<b>471,5</b>	<b>50,3</b>	<b>2,9</b>	<b>2,2</b>	<b>10.800</b>	<b>306,3</b>
Emissions per teleworker (kgCO <sub>2</sub> e) <sup>(72)</sup>	327,5	291,0	268,6	243,0	100,4	266,1	162,9	242,4	117,2	141,7	306	

### 3.7 CO<sub>2</sub>e emissions from commuting

As shown in Section 2, staff commuting emissions decreased by 24% in 2021, due to low presence in the office (with just 17% of staff presence registered in Brussels).

The Commission estimated commuting emissions for 2021 'pro rata' from 2019 data, according to the average presence in the office registered by site management. Estimates of emissions generated by staff commuting are available for most sites and use mobility survey data, although these are not undertaken annually. OIB undertakes a survey for Brussels staff every 3 years, the latest in 2017, to inform its local mobility plan that is a requirement of local legislation (as in JRC Geel), but the 2020 and 2021 exercises were postponed owing to the COVID pandemic.

The greatest reported per capita emissions are for those predominantly rural research sites or Luxembourg. Luxembourg, JRC sites in Geel and Ispra have per capita emissions around 0,20 tonnes. Commuting emissions for Luxembourg are relatively high owing to cross border travel from Belgium, France and Germany, Public transport has been free in Luxembourg since March 2020. Luxembourg is now subsidising cross-border public transport. In 2019, The JRC, through actions in its different sites held successful staff awareness campaigns on sustainable mobility. Luxembourg estimated its commuting emissions for the first time in 2020.

<sup>(71)</sup> Ares hr.d.7(2022)4134770

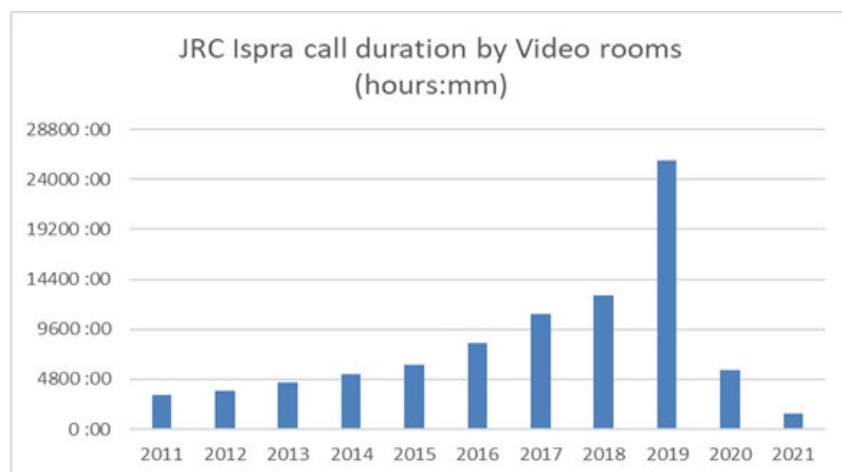
<sup>(72)</sup> Emissions per teleworker means that only the percentage of teleworker of staff population is taken as denominator.

## 3.8 Alternatives to missions and commuting

Additional generic actions to reduce emissions are recorded in Table 5.

**Table 5 Actions at site level in the EMAS Global Annual Action Plan to reduce emissions from mobility**

	Description	BX	LX	PE	GE	KA	SE	IS	GR	CO M	Reps
<b>Reducing emissions - business (and local work) travel</b>											
<b>Studies / awareness</b>	Promote VCs over missions						1				1
	Develop emissions calculator									3	
	Analyse mission patterns and linked carbon footprint										1
	Promote bikes, bike facilities, schemes	1						1			
<b>Large investment</b>	Introduce new electric or hybrid vehicles	5	1					1			1
	Install charging for service and private e-vehicles						2	1			1
<b>Reducing emissions - personal travel</b>											
<b>Studies / awareness</b>	Commuting study pilot										
	Carbon footprint from commuting						2			2	
	Promote car pooling					1					
	Promote public transport (inc. transborder)	3					1				
<b>Operational optimisation</b>	Plan/investigate to install e-charging for cars (and /or bikes)	1				1	4				1
<b>Reducing total emissions</b>											
<b>Studies / awareness</b>	External validation of carbon footprint approach									1	
	Develop common approach document for carbon footprint (response to ECA)									1	
	Implement LCA for organisation's impact							1			
	Implement "smart" policy							1			
<b>Operational optimisation</b>	Install heat pump							1			



DG DIGIT has steadily increased the amount of video conferencing infrastructure available across the Commission responding particularly to DG SCIC's requirements for meeting rooms.

Reduced office presence in JRC-Ispra in 2020 and 2021 resulted in a considerable reduction in the use of video rooms as shown here.



### 3.9 External experts' missions' emissions

Within the framework of the EMAS Registration and the calculation of the Commission GHG emissions, and under the Greening Communication, it is necessary to consider the CO<sub>2</sub> emissions for external experts' travels for which the cost is borne by the Commission. Calculations for 2019-2021 are presented below:

**Table 6: CO<sub>2</sub>e emissions\* generated by experts' travels**

Travel mode	2019		2020		2021	
	CO <sub>2</sub> emissions experts (tonnes)	Km	CO <sub>2</sub> emissions experts (tonnes)	Km	CO <sub>2</sub> emissions experts (tonnes)	Km
<b>Air</b>	30.919	127.108.000	8.683	24.365.391	722	2.005.006
<b>Train</b>	48	5.592.678	9	1.081.308	1	66.493
<b>Car</b>	250	983.540	38	151.113	26	86.999

\* Data for 2020, 2021 calculated using consultants' approach for 2019 and supplemented with additional information. The decreasing trend is clear, but the main reason is due to the pandemic and to the restrictions in travels all over the world.

### 3.10 Fixed asset emissions (buildings)

These accounted for nearly 20% of the carbon footprint in pre-COVID years, and 27% in 2021. The annual rate of emissions depends on the design life <sup>(73)</sup> selected to calculate amortisation, and which varies between sites. Older buildings may be "amortised" in relation to the CO<sub>2</sub>e emissions required for their construction. Table 7 shows the factors <sup>(74)</sup> used to calculate these emissions, which are subject to a relatively high degree of uncertainty (50%), along with the total reported emissions and emissions for 2021.

**Table 7 Total and annual buildings (fixed asset) emissions for 2021 (tonnes CO<sub>2</sub>e)**

	Unspecified construction offices	Steel construction			Concrete construction			Emissions	
		industrial buildings	underground parking	restaurants	industrial buildings	underground parking	restaurants	Total	2020
Conversion factor (kgCO <sub>2</sub> e/m <sup>2</sup> )	650	275	220	183	825	656	550		
<b>Site</b>									
Brussels	692 712					317 949	6 847	1 017 508	27 154
Luxembourg	115 369				3 396	32 879		151 643	4 298
JRC Petten	4 900	1 168			593			6 661	190
JRC Geel	6 477	449			31 672		366	38 963	540
JRC Seville									
JRC Karlsruhe									
JRC Ispra	93 413	697			44 466		3 155	141 731	2 835
DG SANTE at Grange	6 442			18				6 460	258
	<b>919 312</b>	<b>2 314</b>		<b>18</b>	<b>80 126</b>	<b>350 828</b>	<b>10 368</b>	<b>1 362 966</b>	<b>35 275</b>

<sup>(73)</sup> Design life in years - Brussels, Luxembourg, Petten 30, Geel 60 (varies by building), Ispra 50, Grange 25

<sup>(74)</sup> There is a large difference in the factors for steel and concrete construction. Offices of an unspecified nature must be considered to be largely made from concrete given the relatively high value of this factor.

### 3.11 Fixed asset emissions (Information Technology)

While conversion factors relating to the 16 categories of IT equipment are also subject to considerable uncertainty (50%), they can change as research evolves. Of the factors in Table of Appendix 2 that reduced in 2019, several related to larger equipment such as servers and video equipment. Equipment in use for longer periods or reduced inventories are alternative explanations for reduced IT emissions.

Table 8 shows the categories of IT equipment responsible for the largest annualised emissions in 2019, 2020 and 2021. Flat screens and network printers and copiers provide the largest per capita emissions.

**Table 8 Annualised total and per capita emissions (Tonnes, CO<sub>2</sub>e) for selected IT (fixed asset) categories 2018-2021**

Category of IT equipment	Total				Per capita			
	2018	2019	2020	2021	2018	2019	2020	2021
PC desktop	1 251	497	104	61	0,04	0,02	0,00	0,00
Docking stations	563	977	1 115	1 120	0,02	0,03	0,04	0,04
Flast screens	3 944	3 875	1 075	1 078	0,14	0,13	0,04	0,03
Laptops	5 461	1 015	1 181	1 181	0,19	0,04	0,04	0,04
Network printers and copiers	1 752	1 496	1 407	1 266	0,06	0,05	0,05	0,04

### 3.12 Emissions from purchased goods and services

This accounts for a relatively small proportion of the carbon footprint, but includes emissions related to catering, specifically seven categories of the most carbon intensive foods served, including meat, dairy and coffee). The data presented in Table 9 includes sites which manage their own canteens. Per capita annual emissions for catering at reporting sites in 2019 ranged from 0,11 to 0,22 tonnes, but in 2020 and 2021 were much lower owing to staff absence under COVID conditions.

**Table 9 Catering emissions for seven energy intensive food groups in 2021, (tonnes CO<sub>2</sub>e)**

	Brussels		Luxembourg		JRC Geel		JRC Ispra		Grange	
		%		%		%		%		%
Beef	62,0	52,9	47,8	36	5,3	47	32	18	2,2	59
Pork	15,0	12,8	5,0	4	0,8	7	30,1	17	0,13	3,3
Fish	18,1	15,4	25,1	19	1,0	9	57	32	1,07	28
Chicken	15,6	13,3	10,9	8	0,6	4,9	21,4	11,9	0,00	0,0
Milk	1,2	1,0	6,0	4,5	0,6	5,0	4,4	2,4	0,00	0
Other dairy (avg yogurt/butter)	4,4	3,7	35,0	26,5	3,0	27	11,2	6,2	0,01	0,2
Coffee	0,9	0,7	2,0	1,5	0,0	0,2	23,3	13,0	0,37	9,7
<b>Total (tonnes CO<sub>2</sub> e)</b>	<b>117</b>	<b>100</b>	<b>132</b>	<b>100</b>	<b>11,3</b>	<b>100</b>	<b>180</b>	<b>100</b>	<b>3,8</b>	<b>100</b>
<b>Total (tonnes CO<sub>2</sub> e/person)</b>	<b>0,036</b>		<b>0,041</b>		<b>0,050</b>		<b>0,053</b>		<b>0,022</b>	

The COVID pandemic reduced catering services significantly in 2021, where in Brussels eventually most canteens were closed. The catering related emissions for JRC Karlsruhe are null as the small café' was closed for the whole year.

### 3.13 Emissions from waste disposal

Table 10 shows emissions from the 11 categories of waste disposal in recent years.

**Table 10 Emissions generated through waste disposal from 2018 to 2021 (tonnes CO<sub>2</sub>e)**

Waste Disposal Category *	Tonnes				Percentage of total			
	2018	2019	2020	2021	2018	2019	2020	2021
Incinerated waste - domestic waste	2 733	2 772	1 097	857	36,3	34,7	30,0	22,0
Incinerated waste - food	0,00	0,00	0,00	0,00	0,0	0,0	0,0	0,0
Methanisation - food	394	456	231	105	5,2	5,7	6,3	2,7
Recycled/reused - paper	2 496	2 694	1 427	1 468	33,2	33,7	39,0	37,7
Recycled/reused - cardboard	14	12	10	12	0,2	0,2	0,3	0,3
Recycled/reused - wood	89	58	51	68	1,2	0,7	1,4	1,8
Recycled/reused - glass	78	88	49	25	1,0	1,1	1,3	0,6
Recycled/reused - plastic PMC	190	199	86	57	2,5	2,5	2,3	1,5
Recycled/reused - others...	946	920	380	799	12,6	11,5	10,4	20,5
Hazardous waste - all types	551	765	313	476	7,3	9,6	8,5	12,2
Landfill (probably mostly projects)	34	27	18	25	0,5	0,3	0,5	0,6
<b>Total</b>	<b>7 525</b>	<b>7 992</b>	<b>3 660</b>	<b>3 893</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

These account for a very small part of the carbon footprint, with four sites reporting less than 0,1 tonnes per person total annual emissions. Overall, however, they represented nearly 4% of the Commission's carbon footprint in 2018-19, falling to around 0,61% in 2021. Landfill represents 0,6% of the total emissions arising from waste disposal. Incinerated waste and paper recycling are the two largest sources of CO<sub>2</sub>e emissions.

### 3.14 Total air emissions of other pollutants

The EMAS regulation requires the reporting of emissions of 'other' air pollutants, where appropriate (including as a minimum NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub>). The results for 2019 to 2021 are as follows:

**Table 11 'Other' air emissions at Commission sites in 2019-21 (kg)**

Site	Emissions in 2019 of:					Emissions in 2020 of:					Emissions in 2021 of:				
	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	VOC	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	VOC	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	VOC	CO
Brussels	16 210	62	85	1 778		14 793	57	77	1 622		16 617	63	87	1 822	
Luxembourg	4 140	18	22	454		4 284	18	22	470		4 082	18	21	448	
JRC Petten	417	NM	NM	65		308	NM	NM	52		320	NM	NM	56	
JRC Geel	384	12	3	43	2	377	4	2	42		421	10	3	47	1
JRC Karlsruhe	NA	NA	NA	NA		NA	NA	NA	NA		NA	NA	NA	NA	
JRC Seville	21	NR	NR	NR	NR	25	NR	NR	NR	NR	25	NR	NR	NR	NR
JRC Ispra	37 322	NA	NA	NA	46 092	24 450	NA	NA	NA	25 240	26 040	NA	NA	NA	24 800
Grange	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Commission</b>	<b>58 494</b>	<b>92</b>	<b>109</b>	<b>2 340</b>	<b>46 094</b>	<b>44 237</b>	<b>79</b>	<b>102</b>	<b>2 185</b>	<b>25 240</b>	<b>47 504</b>	<b>91</b>	<b>111</b>	<b>2 373</b>	<b>24 801</b>

NA - Not Applicable, NR - Not Recorded, NM - Not Measured

In relation to these emissions:

- Brussels, owing to the large number of buildings, (and consequently boilers) is one of the two main contributors of NO<sub>x</sub>. JRC Ispra's tri-generation plant generates electricity and is therefore responsible for a large proportion of the reported NO<sub>x</sub> emissions and also reports a significant amount of CO emissions JRC Petten includes physical measurements and calculations for NO<sub>x</sub> whereas VOC data is based on purchase and consumption of solvents, SO<sub>2</sub> and PM<sub>10</sub> are excluded as the authorities consider them negligible.
- Owing to its active nuclear activities, Karlsruhe filters and tests its air emissions regularly for nuclear (alpha and beta) particles.