Europäisches Patentamt
European Patent Office
Office européen des brevets

Environmental Report 2021

Annex to the Annual Review

epo.org

Executive summary

Minimising our environmental footprint is a top priority for the EPO. To reach the goal of going carbon neutral by 2030, we have adopted a holistic approach to environmental sustainability. In practice, this means addressing emissions caused directly by the EPO and indirect emissions originated along the value chain of our activities.

Making a real difference to mitigating climate change means going beyond compliance, however. So, in 2021, we decided to align our emissions accounting and reporting with the Greenhouse Gas (GHG) Protocol Corporate standard. This will complement the Eco-Management and Audit Scheme (EMAS) framework adopted for environmental reporting in 2009.

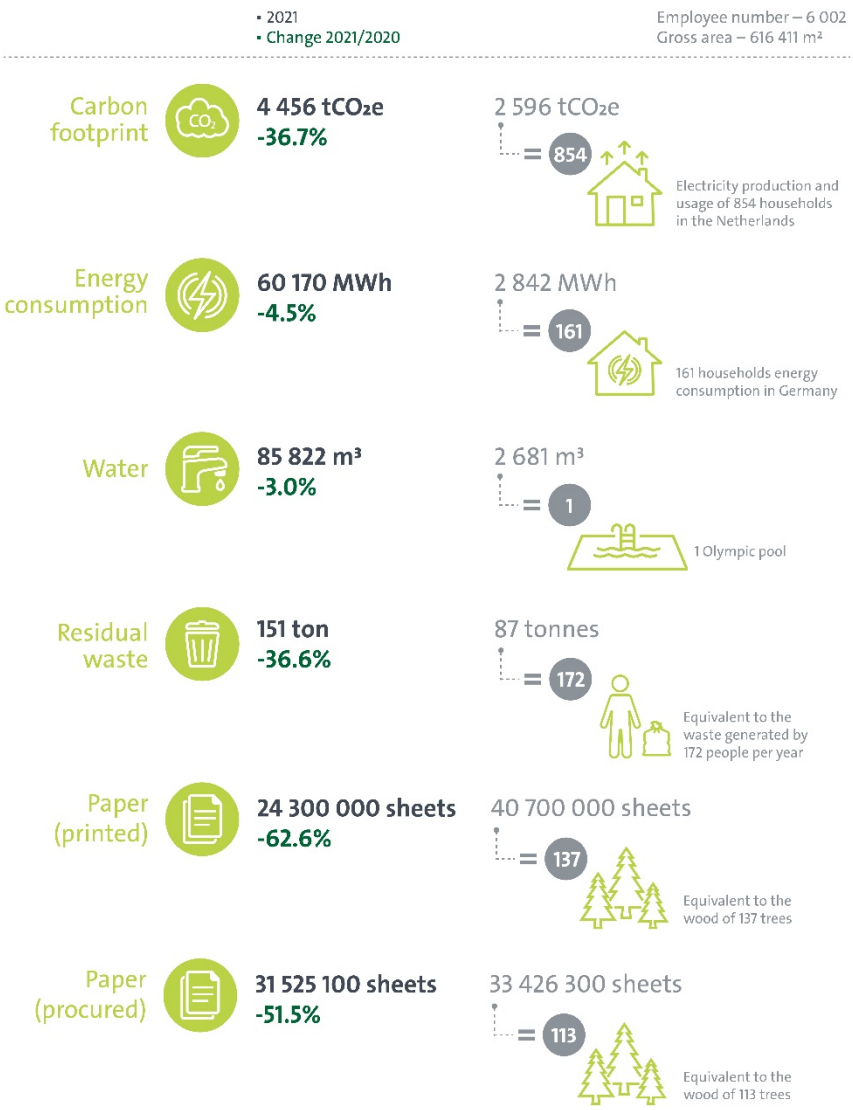
For the first time, this year's Environmental Report features a more detailed breakdown of the EPO's carbon footprint. It not only provides an assessment of emissions from areas such as employee commuting and teleworking, but also transparently discloses the basis for our calculations in the methodology annex.

Overall, we continued to embed environmental sustainability even deeper into all aspects of our operations in 2021. Rapid digitalisation of business processes slashed our paper consumption to a record low of 24.3 million printed sheets, a decrease of 40.7 (-62.6%) million versus 2020 and almost 100 million (-80.4%) compared with 2019, when the Strategic Plan was launched.

Emissions generated by our facilities also dropped considerably last year. The switch to biomethane heating for our buildings in The Hague marked a major breakthrough. This measure alone was largely responsible for an overall drop of 1 300 tonnes of carbon dioxide in the EPO's heating emissions from non-renewable sources.

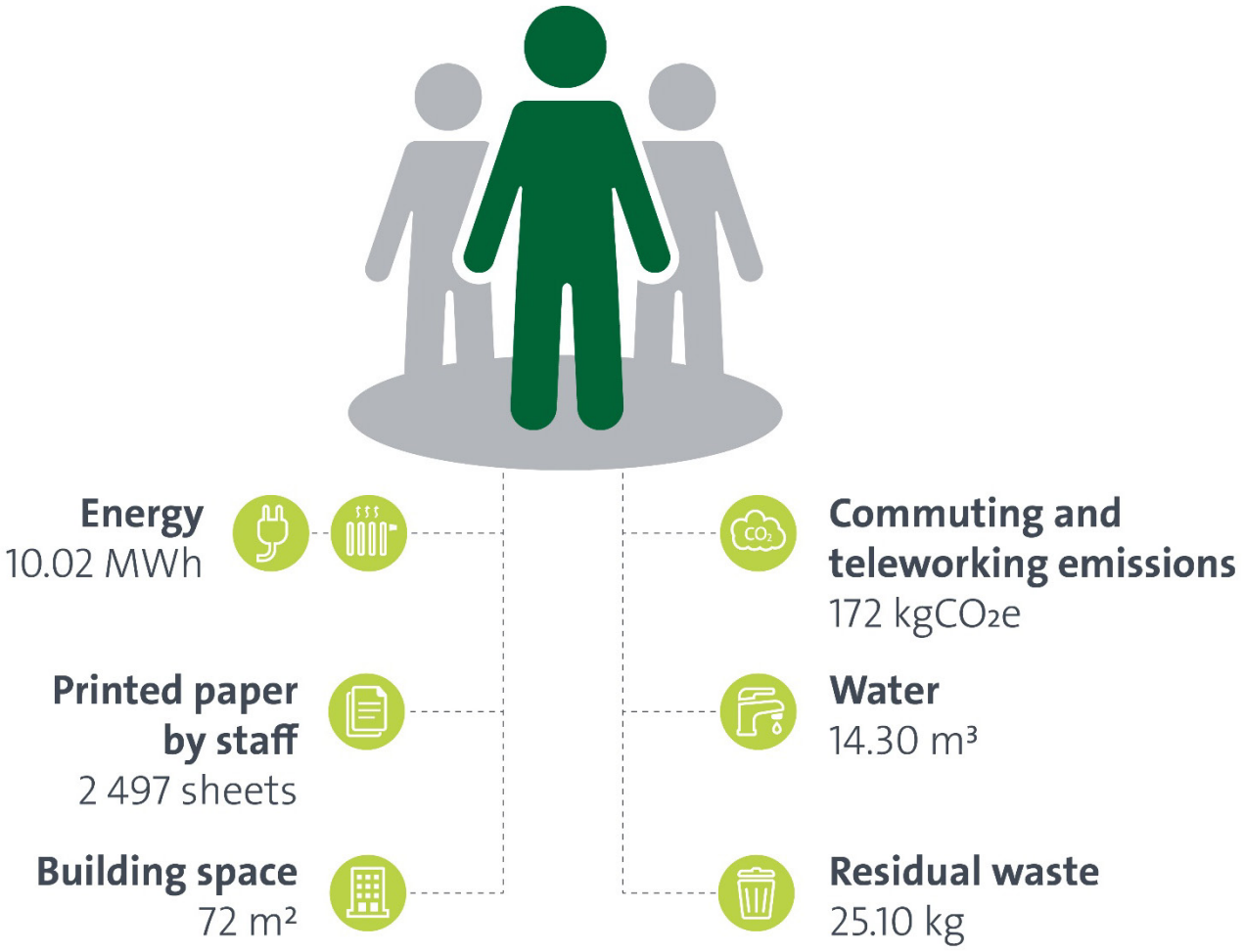
Our journey towards carbon neutrality will continue in 2022. We have already started collecting data on additional indicators to cover all aspects of our environmental footprint. In-depth analysis of this data will translate into high-level plans for the business units responsible. These plans will be underpinned by awareness raising campaigns to help staff and stakeholders adopt a mindset of environmental sustainability.

Figure 1 – Key environmental data



Source: EPO

Figure 2 – Footprint of staff in 2021



Source: EPO

Contents

1. The European Patent Office

With just over 6 000 staff, the European Patent Office (EPO) is the second largest international organisation in Europe. As the patent office for Europe, the EPO supports innovation, competitiveness and economic growth across the continent. Innovations play a vital role in mitigating and adapting to climate change. Through our core business of granting patents on inventions and making patent knowledge accessible to all, we contribute directly to technological advances that address climate change. In our work environment, we strive to continue reducing our environmental footprint year by year.

Our headquarters are in Munich, and we have offices in The Hague, Berlin, Vienna and Brussels. Since 2009, the EPO has been certified as complying with the EMAS eco-management and audit scheme at the following sites: Munich Isar, Munich Pschorr Höfe (PH), The Hague, Berlin and Vienna (presented in more detail in Annex 3).

In accordance with EMAS Regulation (EC) No 1221/2009, Commission Regulation (EU) 2017/1505 and Commission Regulation (EU) 2018/2026, we issue an annual Environmental Report, setting out our environmental data and reporting on our environmental performance. The present report can be downloaded from our website (www.epo.org).

Towards the new normal

The COVID-19 pandemic has affected our environmental performance in many ways. During 2021, we maintained the preventative measures introduced since March 2020 in line with the recommendations issued by national and international health authorities. Building occupancy was drastically reduced and staff generally continued to work remotely. To a large extent, canteens, coffee bars and fitness rooms remained closed or opened with reduced capacity. The accelerated digitalisation of our processes and the experience gained during the pandemic has enabled us to design new ways of working. We intend to leverage the lessons learned in the past two years in achieving our carbon neutrality goal by 2030.

2. Our environmental policy

Every year, the impact of climate change on our planet is more tangible, making mitigating or adaptive actions increasingly urgent. For this reason, the EPO has decided to step up its commitment to sustainability by designing an ambitious, comprehensive and collaborative environmental policy to guide all aspects of its work, including its core business: the patent granting process.

The EPO contributes to the United Nations Agenda 2030 with its 17 UN Sustainable Development Goals and to the European Union action plan for climate neutrality, the European Green Deal, by implementing positive change in two ways. Firstly, as a responsible institution, the EPO takes direct action towards a greener vision and, secondly, fosters innovation and access to knowledge on climate change technologies.

The following objectives guide our actions:

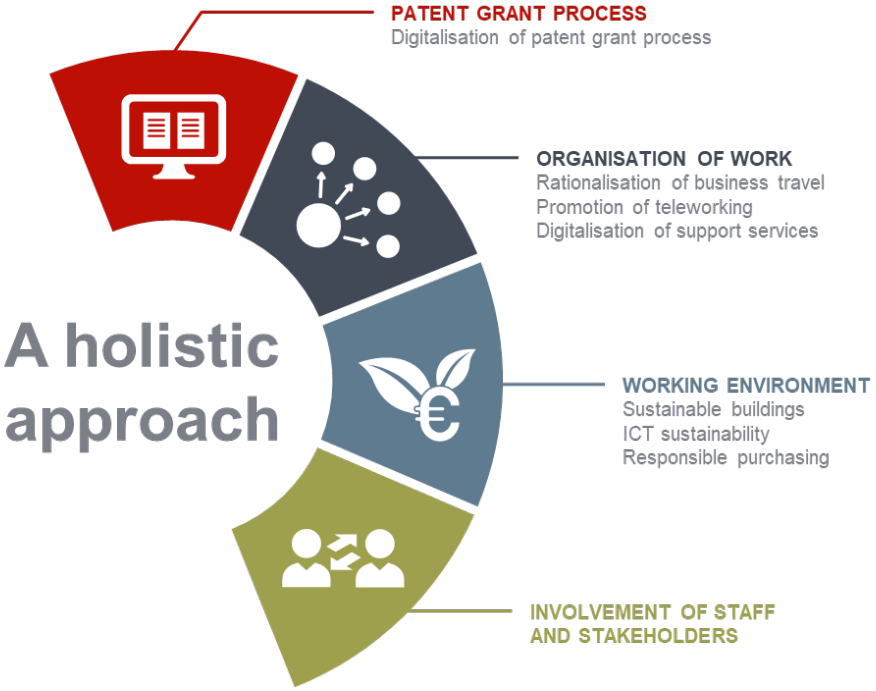
- minimise the EPO's environmental footprint, reducing the consumption of resources and the generation of waste
- comply with relevant environmental legislation and regulations
- promote, encourage and contribute to local environmental initiatives and schemes in member states and at our sites of employment
- involve all staff in the endeavour, whereby each and every staff member is asked to contribute – and encouraged to develop – innovative ideas on how to implement this policy effectively.

Accordingly, we will:

- define and review measurable targets, assessing their achievement on the path to the overall objective of carbon neutrality
- engage with local and regional institutions
- provide our staff with appropriate training, advice and information on how they can play a part in reducing the EPO's environmental footprint
- report transparently on the implementation status of this policy, internally via the environmental dashboard and externally via the annual Environmental Report.

We take a holistic approach to meeting our commitments, aiming to cover emissions directly attributable to our organisation's activities, indirect emissions resulting from our energy consumption and other indirect emissions caused along the value chain of our activities. Overall, we foster environmental sustainability in and through the patent grant process, our core business, by optimising workflows and creating a working environment that minimises the EPO's environmental footprint while ensuring high-quality services. Through internal and external communication, the EPO seeks to disseminate sustainable thinking among its stakeholders and the public, and to actively involve staff as multipliers of its environmental policies and activities.

Figure 3 − A holistic approach



Source: EPO

3. Strategic Plan 2023 – environmental goals

In the Strategic Plan 2023 (SP2023), Goal 5: Long-term sustainability, we committed ourselves to environmental in addition to social and financial sustainability, and to transparency in governance. In 2021, the EPO set itself the ambitious objective of becoming a carbon-neutral organisation by 2030. We are thus also playing our part in reaching the goals of the European Union's Green Deal (no net emissions of greenhouse gases by 2050) and the goals of the United Nation's Paris Agreement (limit global warming to well below 2, preferably 1.5 degrees Celsius, compared with pre-industrial levels).

Figure 4 – SP2023 environmental goals: status

Source: EPO

Our overarching objective of carbon neutrality is complemented by seven environmental key performance indicators (KPIs) and corresponding targets set out in the Strategic Plan 2023. All targeted improvements relate to the period 2019-2023. The year 2018 is used as a reference to measure achievement of the goals. As we proceed on our way towards carbon neutrality, these targets are adjusted as necessary and aligned with our strategy. For example, the paper-saving goal had been adjusted from 30% to 70% in 2020; we exceeded the revised goal in 2021.

As an administrative organisation, our main direct impact on the environment is caused by the operation of our buildings, in other words, by providing a physical working environment for our staff. Consequently, five of the seven goals are connected to building operations, three of these to energy consumption. Reducing energy consumption and increasing the proportion of renewable energy will support our goal to reduce CO_2 emissions and become carbon-neutral by 2030.

We have already met the SP2023 targets for five of the seven KPIs. While these results represent significant success, they can be partially attributed to the small number of staff working on the EPO premises and the limited possibilities for business travel. It is therefore premature to consider these targets fully achieved, based on the 2021 figures. For example, energy and water consumption have been shifted in part to our employees' households, which is not reflected in the figures presented above. Under the new normal, we will continue to monitor these goals and consider whether the current targets still represent our level of ambition.

As our service providers had to cope with the practical and economic consequences of the pandemic, progress towards the objective on the share of organic food compounds could not be properly measured for the past two years. The canteens in Munich and Berlin were completely closed throughout 2021 and partly substituted by snack vending machines, where the share of organic compounds is unknown. Once regular catering services are available again, we will build on the work carried out in pre-pandemic times to pursue this goal.

4. Assessment of environmental aspects

All EPO activities have an environmental impact. In accordance with our environmental policy, we strive to reduce this impact by applying an environmental management system and continually improving our environmental performance.

To establish a basis for developing environmental objectives and measures, we have identified and evaluated our environmental aspects according to the following criteria:

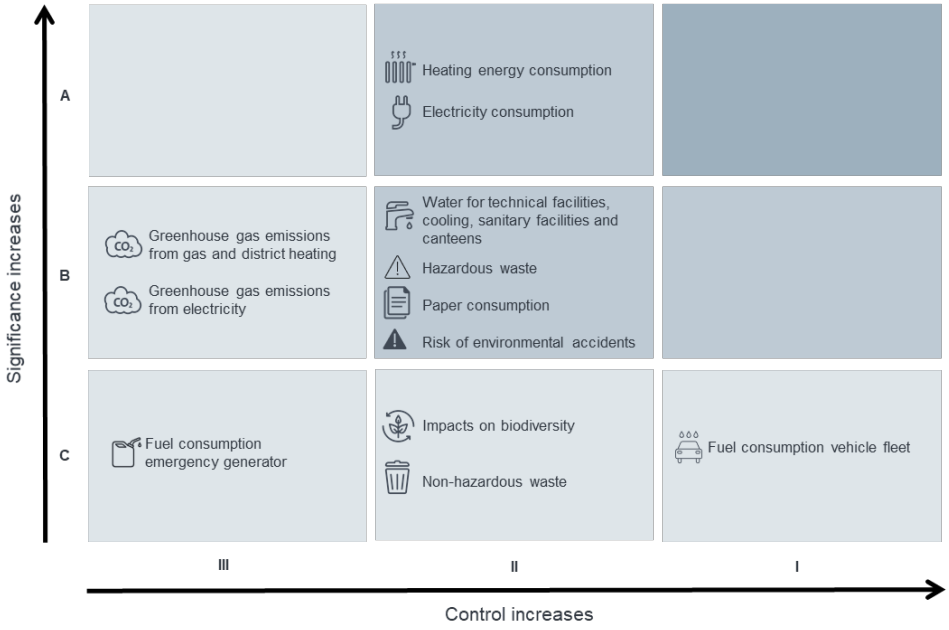
- the potential harm or benefit to the environment
- the condition of the environment
- the size, amount, frequency and reversibility of the aspect or impact
- the existence and requirements of relevant environmental legislation
- the concerns of interested parties, including EPO staff.

All significant environmental aspects are recorded and assessed on an annual basis. This assessment is taken into consideration when developing new environmental objectives and measures for further improvement.

Environmental aspects are subdivided into direct and indirect aspects. To align EMAS reporting with the requirements of the Greenhouse Gas Protocol, our direct environmental aspects include our scope 1 and scope 2 emissions, while our scope 3 emissions are mostly covered by the indirect environmental aspects. As Figure 5 shows, our most relevant direct environmental aspects are those related to the buildings. This refers especially to the consumption of electricity,

heat and water. In terms of resource consumption, we consider paper both an impactful but also a controllable aspect.

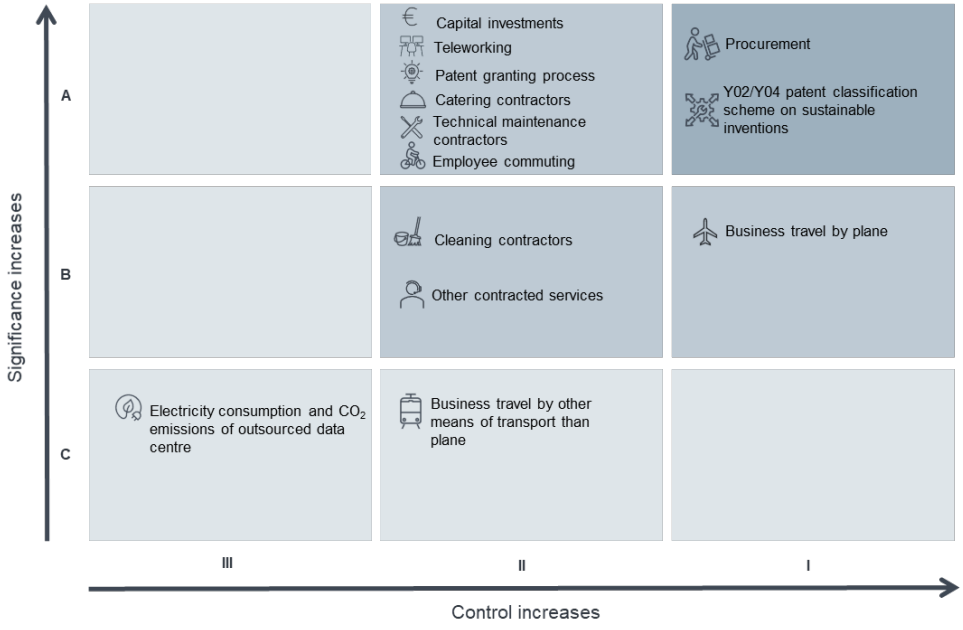
Figure 5 – Direct environmental aspects of EPO activities



Source: EPO

All indirect environmental aspects under the EMAS III Regulation have been assessed for their relevance to the EPO. Figure 6 illustrates the indirect environmental aspects identified at the EPO. A detailed assessment of the indirect environmental aspects is included in Annex 2.

Figure 6 – Indirect environmental aspects of EPO activities



Source: EPO

5. Environmental performance

The consumption data for each site and the resulting index figures are an important instrument for assessing current environmental performance, as well as planning and monitoring environmental activities and regularly reviewing the continuous improvement process. The following sections present the major environmental data for all sites.

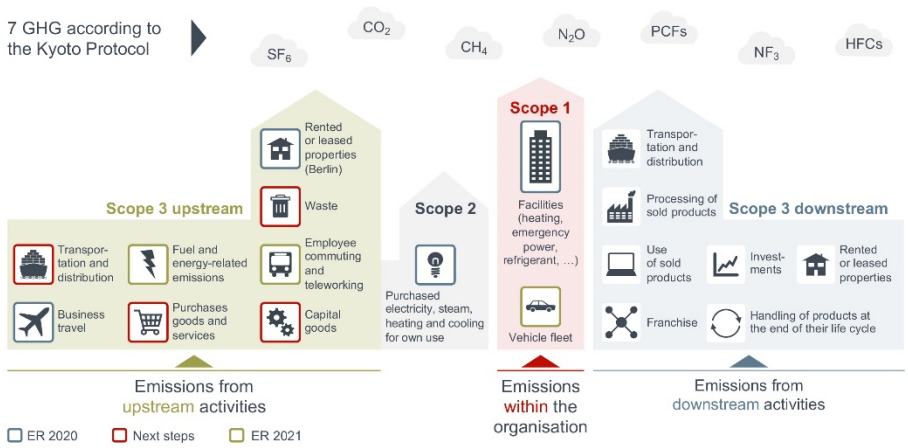
5.1 Greenhouse gas emissions

Total GHG emissions 2021:
4 456 t CO_2e

-36.7%
compared with 2020

In 2021, the President of the EPO decided to align the accounting and reporting of EPO emissions to the Greenhouse Gas (GHG) Protocol Standard. GHG emissions are thus reported in three scopes (Figure 7). Scope 1 includes direct GHG emissions from facilities owned or controlled by the reporting organisation, such as natural gas burnt in premises owned by the EPO, fuels used for vehicles or leakages of cooling agents. Scope 2 covers indirect GHG emissions from purchased energy, for example, electricity and district heating[1]. Scope 3 includes all other indirect GHG emissions originating in the value chain. Biogenic CO_2 emissions, for example from the combustion of gas obtained from biomass, are reported separately. GHG emissions are indicated in CO_2 equivalents (CO_2e), which includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

Figure 7 – Scope 1, 2 and 3 categories, according to the Greenhouse Gas Protocol



*ER: Environmental Report
Source: EPO

The GHG inventory presented in this chapter includes GHG emissions in scopes 1 and 2 for the owned sites Munich Isar and Munich PH, The Hague and Vienna. GHG emissions in scope 3 include the categories of fuel and energy-related activities (if not already included in scopes 1 and 2), business travel, commuting and teleworking, and upstream leased assets (Berlin). In line with our environmental policy, we will gradually expand the perimeter of the GHG

[1] District heating distributes heat (steam) centrally generated for residential and commercial purposes.

inventory to include other significant emission sources to obtain a complete picture of the climate impact of our activities.

Table 1 presents our current GHG inventory for the years 2019, 2020 and 2021. Details of the calculation approaches and emission factors used to calculate the carbon footprint as well as site-specific scope 1 and 2 emissions are included in Annex 1 and Annex 3 respectively. Since we have expanded the perimeter of the GHG inventory, the carbon footprint presented here is higher than in previous reports.

Table 1 – Total GHG emissions (t CO_2e per year)

	2019	2020	2021	Change 2020-21 in %
Scope 1	**2 070**	**1 625**	**147**	**-90.9**
Facilities	1 475	1 222	21	-98.2
Vehicle fleet	14	12	11	-12.2
Cooling agents' losses	581	391	115	-70.5
Scope 2	**2 829**	**2 400**	**1 358**	**-43.4**
Purchased electricity[2]	0	0	0	0
District heating	2 829	2 400	1 358	-43.4
Scope 3	**4 950**	**3 019**	**2 950**	**-2.3**
Upstream emissions from energy[3] (not included in scope 1 or 2)	1 194	1 075	1 444	+34.3
Business travel	1 297	115	3	-97.4
Employee commuting and teleworking	1 984	1 358	1 032	-24.0
Upstream leased assets (Berlin)	474	471	471	0
Total scope 1, 2, 3	**9 849**	**7 044**	**4 456**	**-36.7**
Biogenic CO_2	-	-	**1 357**	**+100**

The EPO's total carbon footprint in 2021 was 4 456 t CO_2e in scopes 1, 2 and 3, resulting in a 36.7% reduction compared with 2020. More than half of this

[2] For calculating GHG emissions from purchased electricity, we use the market-based approach from the GHG Protocol, reflecting the emissions from the electricity mix (100% green electricity) purchased by the EPO via its electricity contracts.

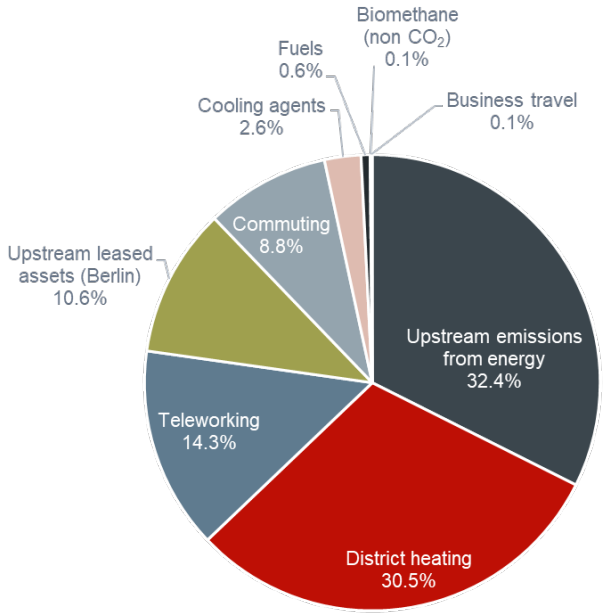
[3] This emission source refers to "Category 3.3: Fuel- and energy-related activities" according to the GHG Protocol.

reduction was achieved by procuring biomethane produced by the fermentation of kitchen and garden waste instead of natural gas for the EPO site in The Hague. Consequently, 1 357 t CO_2 from heating energy consumption now come from renewable resources and are reported separately as biogenic CO_2. This measure also contributed to the increased proportion of renewable energies from 58% in 2020 to 66% in 2021.

Although district heating energy consumption at the Munich sites increased compared with 2020, the associated GHG emissions decreased as a lower conversion factor provided by the energy supplier has been used since November 2020.

Further reductions compared with 2020 are mainly due to the pandemic: lower electricity demand for buildings, less business travel and reduced emissions from commuting. Further details of these emission sources are provided in Sections 5.2 through 5.9.

Figure 8 – GHG emissions in 2021 (% of total, without biogenic emissions)



Source: EPO

The biggest source of GHG emissions in 2021 was the upstream supply chain of the electricity, biomethane and fuels consumed at our own sites (32.4%)[4]. Emissions from district heating in Munich and Vienna accounted for just over 30% of the total. It is therefore essential to maintain a strong focus on reducing energy consumption while increasing the proportion of energy from renewable sources.

Losses of cooling agents are another building-related source of emissions. These occur sporadically due to defects in cooling facilities and regular maintenance is performed at frequent intervals to minimise the risk of losses.

[4] According to the GHG Protocol, the category includes emissions for the extraction, production and transportation of fuels consumed by the EPO; emissions for the extraction, production and transportation of fuels consumed in the generation of electricity, steam, heating and cooling that is consumed by the EPO; and transmission and distribution losses.

As all electricity used by the EPO has come from renewable sources, mainly hydropower, since 2019, emissions from electricity consumption are zero.

Building-related emissions (electricity, natural gas, cooling agents) at our rented site in Berlin make up 10.6% of our total GHG emissions in 2021. We do not have full operational control of the building, but we are encouraging the landlord to implement energy efficiency measures and switch to more climate-friendly energy sources.

Other emissions, such as SO_2 (sulphur dioxide), NO_x (nitrogen oxide) and particulates, are considered only if they arise directly at one of our sites. This applies exclusively to natural gas and biomethane consumption at the sites Berlin and The Hague, and diesel and petrol used for our emergency generators and cars. Since these emissions are of minor relevance, they are presented with the core indicators in Annex 3.

5.2 Energy

Energy consumption in the form of electricity and heating is the most significant environmental aspect at the EPO and generates the highest costs. Electricity consumption essentially consists of:

- cooling/ventilation and air conditioning
- lighting in offices and public areas, and other equipment
- IT equipment (e.g. PCs and printers).

Total electricity consumption in 2021: 29 620 MWh

-15.5%
compared with 2020

Heating energy at the different sites is generated from various sources. While Munich Isar, Munich PH and Vienna use district heating, the buildings in Berlin and The Hague use natural gas. In the New Main building in The Hague, a heat recovery system and heat pumps are operated to provide heat energy.

Total weather-adjusted heat energy consumption in 2021: 29 313 MWh

-2.3%
compared with 2020

In The Hague, Munich and Vienna, the energy monitoring and control system provides valuable information that can be used to optimise heating, ventilation, and air conditioning (HVAC) systems, thereby helping reduce energy consumption.

In 2021, electricity consumption decreased by 15.5% compared with 2020, which is attributable to the effects of the ongoing pandemic (Table 2). Accordingly, electricity consumption dropped from 5.7 to 4.9 MWh/employee (Figure 9). As for the previous year, run times of air conditioning and ventilation units were significantly extended for health and safety reasons, despite the low occupancy rate. For the Munich Isar and Vienna sites, the reduced number of staff assigned (see Annex 3) translated into higher electricity consumption per employee.

For the same reasons, the ventilation systems were set to use only fresh instead of recirculated air, thereby increasing heating consumption, especially when outside temperatures were low. Moreover, part of the Hinge building in The Hague was constantly heated to maintain the temperature for the plants in the tropical garden. Overall, total heating energy consumption increased by 9.3% (Table 3), with Vienna and The Hague recording the sharpest increase (14.8% and 13.0% respectively). Nevertheless, when accounting for the colder weather in 2021, compared with 2020, total weather-adjusted heat energy consumption decreased in absolute terms by 2.3% (Table 4, see also Figure 10 for weather-adjusted heat energy consumption per heated floor space).

We acknowledge that some reductions in energy consumption are counterbalanced by a shift in energy consumption due to staff working from home. More details are included in Section 5.9 "Employee commuting and teleworking".

Biomethane

At our premises in The Hague, we still use natural gas for heating, although the principal heating energy for the buildings is generated by heat pumps below the main building. Since 2021 we have been purchasing certified biogas. Biogas is a methane gas produced by renewable sources, such as animal manure or garden and food waste. A biogas certificate documents the quantity of biogas produced and fed into the natural gas grid, similar to buying "green electricity". It is thereby guaranteed that the amount consumed by the EPO is actually biomethane. By doing so, the EPO shifted 1 300 t CO_2e emissions from a non-renewable source to a biogenic source.

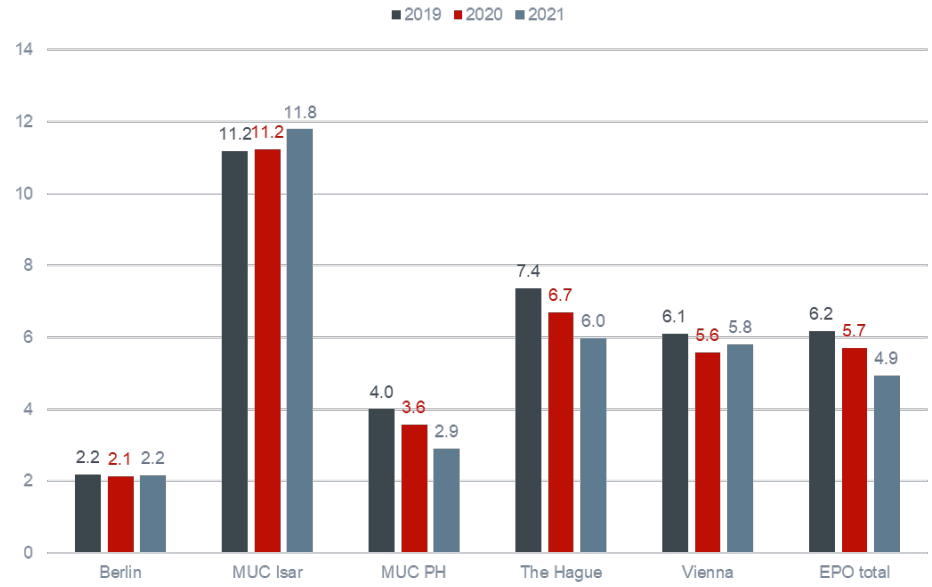
Table 2 – Total electricity consumption for all sites in 2019-2021 (MWh per year)

	2019	2020	2021	Change 2020-21 in %
Berlin[5]	480	429	429[6]	0
MUC Isar	8 052	7 763	5 943	-23.4
MUC PH	10 863	9 403	8 021	-14.7
The Hague	19 301	16 998	14 808	-12.9
Vienna	531	457	419	-8.4
Total	**39 227**	**35 050**	**29 620**	**-15.5**

[5] The figures for electricity consumption at the EPO's Berlin site are estimates, based on the landlord's division of overall electricity consumption among the tenants according to the size of the area rented in the building.

[6] The Berlin data for 2021 was not available at the time of compiling this report. To ensure comparability, the 2020 data was used as an estimate to calculate the figure shown here.

Figure 9 – Total electricity consumption per employee (MWh/employee)



Source: EPO

Table 3 – Total heat energy consumption (MWh per year)

	2019	2020	2021	Change 2020-21 in %
Berlin[7]	2 051	2 051	2 051	0
MUC Isar[8]	8 212	8 746	9 814	+12.2
MUC PH	9 835	9 951	10 525	+5.8
The Hague[9]	7 948	6 592	7 446	+13.0
Vienna	684	622	714	+14.8
Total	**28 731**	**27 962**	**30 550**	**+9.3**

[7] Berlin data for 2019 has been slightly revised compared with last year's report following an update of the conversion factor. Berlin data for 2020 and 2021 was not available at the time of compiling this report. To ensure comparability, 2019 data was used as an estimate to calculate the figures shown here.

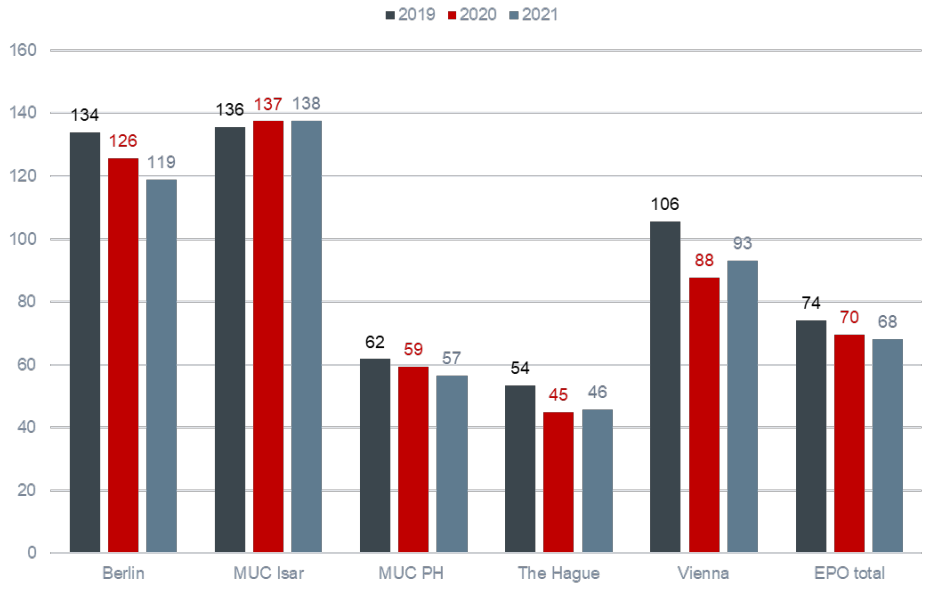
8 District heating in Munich Isar is provided as steam. The conversion factor from steam to kWh is provided by the energy supplier. This same factor is used for the entire Munich district heating system.

9 The Hague data does not include the electricity required to operate the heat pumps. The 2019 and 2020 data has been slightly revised, compared with last year's report, following an update of the conversion factor.

Table 4 – Weather-adjusted total heat energy consumption (MWh per year)

	2019	2020	2021	Change 2020-21 in %
Berlin[7]	2 420	2 274	1 909	-16.1
MUC Isar[8]	9 197	9 324	9 338	+0.2
MUC PH	11 016	10 586	10 086	-4.7
The Hague[9]	8 555	7 176	7 305	+1.8
Vienna	766	637	676	+6.0
Total	**31 954**	**29 997**	**29 313**	**-2.3**

Figure 10 – Weather-adjusted heat energy consumption per heated floor space (kWh/m²)[10]



Source: EPO

5.3 Water

At all sites, water is provided by the municipal supplier. It is mostly deployed in sanitary facilities and kitchens. In the Isar and PH buildings in Munich, and the New Main, Shell and Hinge buildings in The Hague, water is also used for the air conditioning systems and for watering plants and green spaces on site. Wastewater contamination consists mainly of organic substances. Where needed, grease traps are installed in specific locations to remove contaminants from wastewater.

Total water consumption in 2021: 85 822 m³

-3% compared with 2020

Owing to the pandemic, less water was needed for sanitary purposes and in the kitchens and canteens. Moreover, the cleaning cycle in offices was reduced and

[10] Data for 2019 and 2020 differs from last year's report due to new calculation methods.

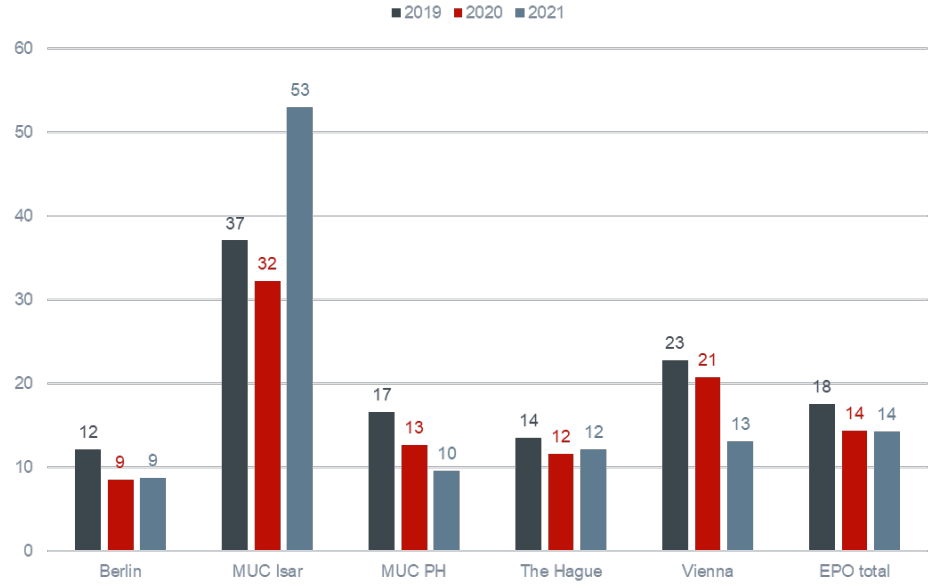
adjusted in line with actual occupancy. Overall, water consumption decreased by 3.0%, with individual contributions varying across all sites.

In Vienna, the old irrigation control system was replaced, providing more control options and flexibility. This measure contributed to the 44.5% decrease in water consumption. A malfunction in the irrigation control system in May 2021 caused a sharp increase in freshwater consumption at Munich Isar before it was identified and repaired. In The Hague, savings due to low occupancy were offset by the filling of the ponds in front of the main building, which had to be repeated due to a wall break. In general, the additional freshwater consumption due to the ponds will not lead to a corresponding increase in wastewater as losses mostly relate to evaporation.

Table 5 – Water consumption (m^3 per year)

	2019	2020	2021	Change 2020-21 in %
Berlin	2 657	1 725	1 725[11]	0.0
MUC Isar	26 684	22 246	26 682	+19.9
MUC PH	44 972	33 363	26 484	-20.6
The Hague	35 451	29 469	29 988	+1.8
Vienna	1 980	1 700	943	-44.5
Total	**111 744**	**88 503**	**85 822**	**-3.0**

Figure 11 – Freshwater consumption per employee (m^3/empl)



Source: EPO

[11] The Berlin data for 2021 was not available at the time of compiling this report, 2020 data is used as an estimate.

5.4 Waste

To guarantee that waste is collected and disposed of appropriately, the EPO has established a waste separation system with clearly identifiable and distinguishable waste containers at all sites. Staff are briefed on waste avoidance, recycling and correct disposal. Day-to-day residual waste and wastepaper constitute the main categories of waste at all sites. This year's report also includes data on plastic waste collected across all sites.

Total residual waste in 2021:
151 t

-36.6%
compared with 2020

In 2021, the EPO recorded a decrease across all waste categories except hazardous waste. The main driver remained the accelerated digitalisation of the patent granting process, which led to significant savings in paper consumption (see also Section 5.5) and thus in paper waste. The paper waste increase in the Isar building is a consequence of the clean-up action that took place in the Isar Daylight renovation project. The amounts of food waste and grease separator waste also decreased significantly due to low occupancy levels and the closure of canteens and cafeterias in Munich and Berlin.

The clearing out of storage rooms in Munich and The Hague, and renovation works in the Isar and PH 1-6 buildings, contributed to the increase in hazardous waste in the form of fluorescent tubes and batteries as well as insulation and electrical material.

In Berlin, the quantities of residual waste, plastics/packaging and food waste are calculated on the basis of container volume and the number of collections by the disposal companies. The same applies to residual waste and paper waste in Vienna.

Table 6 – Total residual waste generation (t per year)

	2019	2020	2021	Change 2020-21 in %
Residual waste				
Berlin	40	40	40	0
MUC Isar	59	34	21	-38.8
MUC PH	122	59	30	-48.8
The Hague	159	89	44	-50.2
Vienna	15	15	15	0
Total	**395**	**238**	**151**	**-36.6**
Paper waste				
Berlin	19	18	19	+4.5
MUC Isar	156	137	167	+22.1
MUC PH	148	96	64	-33.0
The Hague	239	157	105	-33.1
Vienna	24	24	24	0
Total	**587**	**432**	**379**	**-12.1**
Plastics				
Berlin	4.7	4.7	4.7	0
MUC Isar	0.86	0.80	0.72	-10.0
MUC PH	3.4	2.0	0.24	-87.7
The Hague	1.1	0.66	0.36	-45.5
Vienna[12]	0	0	0	0
Total	**10**	**8**	**6**	**-25.7**
Food waste				
Berlin	7.2[13]	7.2[13]	0.86	-88.0
MUC Isar	37	13	0.72	-94.5
MUC PH	81	30	0.63	-97.9
The Hague	71	24	11	-55.3
Vienna[14]	0	0	0	0
Total	**196**	**74**	**13**	**-81.8**
Grease separator waste				
Berlin	12	11	0	-100.0
MUC Isar	150	132	22	-83.5
MUC PH	118	102	23	-77.6
The Hague	114	53	23	-57.2
Vienna	0	0	0	0
Total	**395**	**297**	**67**	**-77.4**

[12] Plastic waste is not collected separately in Vienna and is therefore included in the figures of residual waste.

[13] Value updated compared with previous reports due to update of conversion factor (t/m^3).

[14] Food waste is directly disposed of by the caterer.

5.5 Paper consumption

Paper consumption is a key indicator of our environmental performance and the digitalisation of our processes. It can be measured as input (paper procured) or output (paper sheets printed). In the past, both approaches led to comparable results. With the rapid digitalisation of our core business since the beginning of the pandemic, this has changed: in 2021, the EPO experienced a record low of 24.3 million printed sheets of paper, a decrease of 40.7 million sheets compared with the previous year (-62.6%). For comparison, paper consumption based on the procured amounts totalled 31.5 million sheets, 51.5% less than in 2020 (Table 6) and almost 100 million sheets less than in 2019 when the Strategic Plan was launched (-74.5%). Consumption per product based on the procured sheets decreased by 46.3% compared with last year's figure, a new all-time low since the introduction of EMAS (Figure 12).

Total paper consumption in 2021 (procured): 31.5 million sheets

-51.5% compared with 2020

Total paper consumption in 2021 (printed): 24.3 million sheets

-62.6% compared with 2020

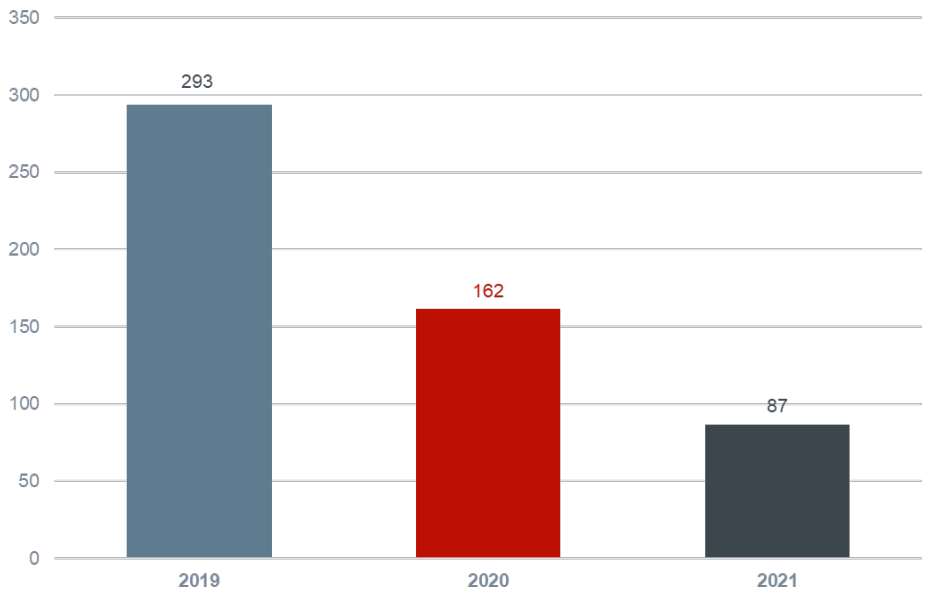
Previous Environmental Reports always referred to the procured amounts as precise statistics on consumption were not yet available. With the launch of the paper consumption dashboard in 2021, we are now in a position to better monitor the impact of paper-saving initiatives. As of next year, we will report on paper consumption based on printed sheets only. However, according to the GHG Protocol, we will account for emissions related to the production and transportation of the paper we procure once it reaches our premises.

Table 7 – Total procured paper (t per year)

	2019	2020	2021	Change 2020-21 in %
Berlin	2 227 500	1 403 000	410 000	-70.8
Munich[15]	58 730 000	29 600 000	14 140 000	-52.2
The Hague	62 330 000	33 840 000	16 900 000	-50.1
Vienna	326 525	108 400	75 100	-30.7
Total	**123 614 025**	**64 951 400**	**31 525 100**	**-51.5**

[15] In Munich, paper consumption is only available as a combined figure for Isar and PschorrHöfe.

Figure 12 – Paper consumption (procured sheets) per product[16]



Source: EPO

Office supplies and recycled paper

As in many aspects of our work, the EPO also strives for sustainability regarding its office supplies. The online shop provides articles ranging from paper to desk accessories. Sustainable products are highlighted in green in the internal office supplies catalogue. In total, the EPO has succeeded in converting more than 50% of its office supplies to green versions. The share of recycled cartridges increased from 38% to about 48%.
An important step in minimising the environmental footprint of our office supplies was taken by switching from fresh fibre paper to recycled paper for printing. Although we have significantly reduced our overall paper consumption through progressive digitalisation in recent years, we still use paper. No tree has to be cut down for recycled paper as it is made from wastepaper. Through these measures, the EPO contributes not only to the protection of the climate but also of biodiversity.

[16] A "product" is the output of a single patent examination process.

5.6 ICT sustainability

Some 4% of global greenhouse gas emissions originate in the IT sector, with this figure expected to rise in the coming years. As a knowledge-intensive organisation, the EPO is highly dependent on information and communication technology (ICT) for its core business and will become more so as the digitalisation of its entire processes continues. ICT sustainability is therefore an essential aspect of the EPO's environmental performance. With increasing demand placed on ICT systems and digital end-to-end workflows, it is essential to choose environmentally friendly options, and find sustainable and efficient ways of running them.

Overall electricity consumption in the data centres in The Hague and Luxembourg in 2021: 3 041 MWh

-2%
compared with 2020

To facilitate smart, sustainable decisions concerning its ICT systems, the EPO has developed a specific policy on ICT sustainability, launching a dedicated project in the Strategic Plan 2023. The project pursues the objective of reducing electricity consumption and CO_2 emissions associated with ICT. This is achieved by making ICT operations as sustainable as possible, partnering with other corporate functions to leverage ICT in making their business processes more sustainable, and by building a culture of ICT sustainability across the EPO.

Accordingly, in 2021, we launched the ICT Energy Consumption Dashboard. Available to all staff, it reports the consumption of the ICT infrastructure components of the main data centres (DC) in Munich, The Hague and Luxembourg, and of all central and decentral printers at the EPO.

The dashboard is also used to monitor the environmental impact of the re-platforming and decommissioning of the mainframe and the migration of our IT services from The Hague to the DC in Luxembourg, which is externally managed. The overall electricity consumption of the ICT infrastructure in the DCs in The Hague and Luxembourg decreased by 73 MWh in 2021, compared with 2020 (from 3 114 MWh in 2020 to 3 041 MWh in 2021), a saving equivalent to the average yearly electricity consumption of 24 households in Europe. Additionally, the dashboard allows us to assess the impact of the digital transformation of the patent grant process on the electricity consumption of the printers.

Web ecodesign best practices were applied in developing the new intranet and the new epo.org website to achieve a greener web presence through an improved ecolabel. Moreover, several stakeholders in BIT and other departments, as well as general staff, took part in awareness sessions on digital responsibility and sobriety.

Finally, a tender was launched in Q4 2021 to acquire a more sustainable ICT and electronic disposal service (e-Waste). As a concrete example, we collected 800 desktop printers no longer needed across all sites in 2021. These will either be used to replace broken devices and as spare parts or, if no further use is possible, responsibly disposed of via the e-Waste service, according to the highest European standard (WEELABEX).

5.7 Business travel

Business trips between the EPO sites constitute the main component of travel at the EPO. A lesser component is staff trips to meet customers and partners or attend conferences and other events. Since 2018, we have only reported on GHG emissions from air travel, as the railway companies in the Netherlands, Germany and Austria have been using renewable energy if not across the board, then at least for business customers. As part of alignment to the GHG Protocol, we have reviewed and harmonised our emissions factors with those used for our internal business travel dashboard. Therefore, we now include GHG emissions from the rail grid, public transport, private cars and taxi rides.

GHG emissions from air travel in 2021:
3 t CO_2e

-97.4%
compared with 2020

Table 8 – GHG emissions from business travel (t CO_2e)

	2019	2020	2021	Change 2020-21 in %
Flights	1 258	109	3	-97.5
Rail	3	0	0	-100
Public transport	9	1	0	-99.0
Taxi	17	3	0	-97.9
Private cars	11	2	0	-88.3
Total	**1 297**	**115**	**3**	**-97.4**

Duty travel restrictions were introduced at the beginning of the pandemic and subsequently extended to 2021. GHG emissions from air travel dropped by 91.1% between 2019 and 2020, and a further 97.4% between 2020 and 2021. Up to 2019, business travel was a significant contributor to the EPO's GHG emissions, dropping to just 0.1% of the EPO's GHG emissions in 2021.

Leveraging the lessons learned during the pandemic, we are continuing to rationalise business travel and expand options for working digitally. In line with our goal to reduce GHG emissions from business travel, we encourage staff to use alternative means of collaboration and communication, for example videoconferences. When business travel is deemed necessary, travel by train is recommended wherever feasible. Moreover, the EPO encourages the use of online meetings for its governing bodies and for oral proceedings, providing remote simultaneous interpretation where necessary.

5.8 Other procured goods and services

In terms of sustainable procurement, improvements have been achieved based on regulatory changes in recent years that enable environmental criteria to be taken into consideration when making procurement decisions. All staff responsible for procurement processes are required to consider environmental aspects wherever applicable.

The main contracted services with an environmental impact are catering, cleaning and technical facility management.

These services have been significantly affected by the pandemic. The percentage of organic food decreased compared with 2019 due to the difficult economic and operational conditions of our service providers. The canteens were eventually closed at most sites. We adjusted the cleaning cycle for our offices in line with the actual occupancy of the buildings, while still ensuring thorough cleaning and disinfecting of spaces. Wherever possible, the EPO avoids products containing hazardous substances and gives priority to carbon-neutral products, in line with its environmental goals.

Procured services offer the possibility of adopting various environmentally friendly measures that foster biodiversity and ensure a better, healthier environment. Concrete examples, leveraging the large green spaces around our buildings in Munich, The Hague and Vienna, are:

- only plant native tree and plant species to help insects and birds throughout the year
- whenever possible, only use certified types of organic fertilisers, bioherbicides and bioinsecticides instead of harmful synthetic products
- only use electrical equipment to maintain the green areas to reduce noise pollution and gas emissions.

5.9 Employee commuting and teleworking

Early in 2021, we launched the staff commuting dashboard to raise awareness of emissions caused by employees travelling to and from work. Commuting emissions are calculated as follows: (a) the estimated distance travelled per employee; (b) data collected from building occupancy levels; (c) the split between the different means of transport, based on mobility trends published by research institutes at sites of employment.

As employees were asked to work from home during the pandemic, employee commuting and the corresponding estimated emissions decreased significantly. At the same time, we acknowledged the shift in emissions away from our premises due to teleworking. To align our emissions accounting to the GHG Protocol, the EPO has decided to report on teleworking emissions in scope 3: category 7 "Employee commuting and teleworking".

In the absence of a broadly accepted methodology to assess teleworking emissions, we have performed an exhaustive literature review, covering scientific articles, organisations' environmental reports, work papers and national statistics. The topic is indeed complex and our preliminary results are disclosed below. Figure 13 summarises the data elements considered for our current estimates.

Figure 13 – Basis for estimating teleworking emissions

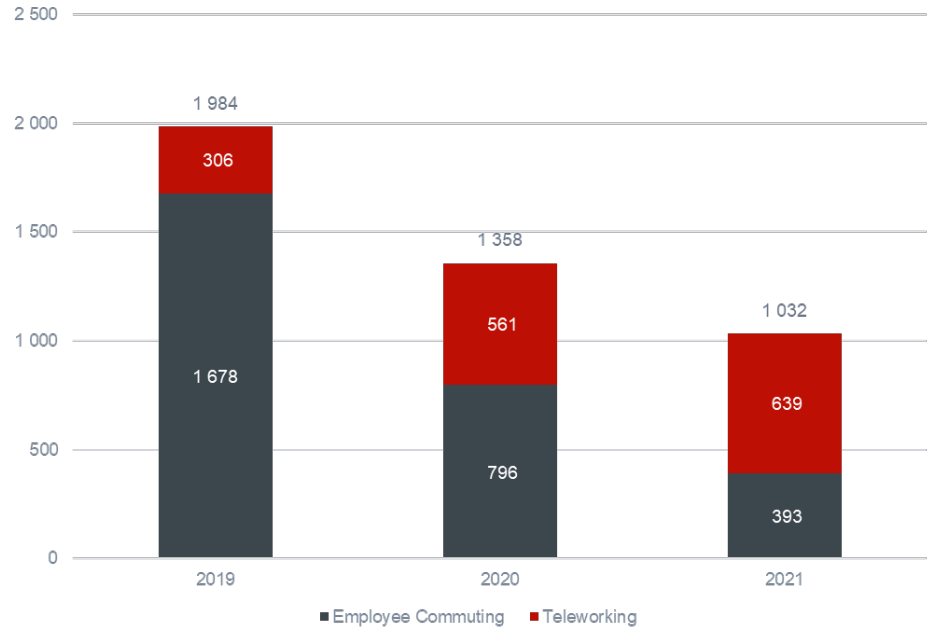
Source: EPO

On this basis, we have calculated the teleworking emissions for the past three years. Together with those from employee commuting, they totalled almost 2 000 t CO_2e in 2019, representing the second largest component of the EPO footprint at that time (after heating energy). With staff increasingly working from home due to the pandemic, overall emissions from employee commuting and teleworking fell significantly in 2020 (almost 1 400 t CO_2e, -32%) and in 2021 (1 032 t CO_2e, -48% compared with 2019). During this period, the relevance of teleworking has significantly increased: in 2019, it accounted for just 15% of the estimated category 7 emissions, with the percentage rising to over 62% in 2021.

Overall, employee commuting and teleworking are a significant albeit indirect source of greenhouse gas emissions from EPO activities, representing more than one-fifth of the reported GHG emissions in 2021. Leveraging the experience gained during the pandemic, we intend to offer staff greater flexibility concerning their place of work, thereby increasing their well-being. Therefore, it is important that, while improving our approach in estimating category 7 emissions, we will continue to incentivise the use of public transport and bicycles for staff travelling to our premises.

Additionally, in Munich and The Hague, the EPO is significantly increasing the number of e-charging stations for cars and bicycles. Finally, once the new ways of working are established, we will implement a comprehensive mobility concept to reduce emissions from business travel and commuting, taking the specific needs of each EPO site into account.

Figure 14 – GHG emissions from employee commuting and teleworking (t CO_2e)



Source: EPO

5.10 Communication and staff engagement

In 2021, the EPO took a more holistic approach to environmental measurement, reporting and actions to move closer to our objective of going carbon-neutral by 2030. Environmental dashboards were launched in the areas of paper consumption, ICT energy consumption, employee commuting and business travel. Staff could see the Office's performance in these areas, along with their unit's performance and, in the case of the paper dashboard, their personal consumption. Together with the newly launched Environmental Policy, the dashboards underscore the Office's transparency in its management and reporting of environmental matters.

Communication campaigns were organised to mark external events throughout 2021, such as Earth Hour and World Water Day. For Digital Clean-up Day, a campaign encouraged staff to delete superfluous emails and files, and avoid energy usage. The topics of reducing paper and ICT sustainability were also addressed at the EPO User Day.

Principal Directorate Communication and the Office's Environmental Group presented the EPO's environmental communication and staff engagement initiatives to seven German federal ministries that are in the process of implementing EMAS. The EPO was selected as an example of a best-practice organisation.

The Environmental Group is also involved in projects to increase biodiversity at the Office, such as increasing the number of beehives on the premises. There are already beehives at the Isar building, which are managed by the AMICALE Bee Club. We are now assessing the option of installing additional beehives at Munich PH and in The Hague. Other initiatives planned by the Environmental Group for 2021, particularly in-person events, were postponed due to the pandemic and will be taken up again when circumstances allow.

External co-operation and outreach on environmental topics were also intensified in 2021. The EPO and the International Energy Agency published a joint study on patents and the energy transition, providing context on trends in low-carbon energy innovation. The EPO study "Patents for tomorrow's plastics" provided an overview of trends in plastic recycling and alternative plastics.

Further external outreach initiatives include President Campinos speaking at the Icelandic Patent Office's 30th anniversary on "Innovation for a brighter future" and the EPO taking part in a live virtual broadcast on circular electronics alongside the COP26.

At the end of 2021, the Environmental Hub – a central point of staff access to information on environmental sustainability at the EPO – was under development. It was launched in early 2022. The staff engagement and discussion channel "EcoChat" is an integral part of the Hub.

5.11 Impact of services

The EPO actively promotes the dissemination of sustainable technologies by making information on inventions available to the public via its patent databases, thereby directly supporting the further development of climate-friendly technology. To facilitate access to this information, the EPO has developed a patent classification scheme dedicated to climate change mitigation and adaptation technologies. Mitigation technologies focus on controlling, reducing or preventing anthropogenic emissions of greenhouse gases, as covered by the Paris Agreement 2015, while adaptation technologies support human action in adapting to existing effects.

The resulting Y02/Y04S patent classification scheme simplifies the search for relevant patents, making it possible to map sustainable technology, identify trends and facilitate further R&D. Y02/Y04S has become a global standard when searching for patents in the field of climate change technology. It is commonly used by patent offices, governmental agencies, intergovernmental organisations and academics to produce empirical analyses and support decision-making in the field.

In co-operation with international partners such as the UN Environmental Programme, the International Renewable Energy Agency and the International Energy Agency (IEA), the EPO has studied the potential of the patent system in addressing climate change. These partnerships have been instrumental in disseminating relevant patent information well beyond the traditional patent expert circles. By these means, businesses, inventors, researchers and policymakers committed to combating climate change can exploit the full potential of this invaluable source of knowledge.

In April 2021, we published a joint study with the IEA to analyse the latest trends of innovation in low-carbon energy. The results show a growth of innovation in clean energy in the past five years, largely related to the rise in electric vehicles, while innovation in fossil energy has significantly decreased. A second study on tomorrow's plastic was published in September 2021. It showed that Europe and the United States together accounted for 60% of patent activity with regard to plastic recycling and alternative plastics technologies between 2010 and 2019.

6. Activities supporting SP2023

In accordance with our environmental policy, we seek to minimise our environmental footprint. Under SP2023, we have defined long-term environmental goals, including energy savings as well as improvements in resource efficiency, waste avoidance and organic food catering. These goals will enable us to take a strategic approach that will complement our annual monitoring and ensure the fulfilment of our objectives over time.

Total number of improvement measures completed in 2021:

33

To achieve these overall goals, the central environmental management team draws up an annual environmental action plan with targets and improvement measures. The action plan considers developments in environmental aspects, suggestions for improvements from internal audits and external inspections, and suggestions from staff and environmental groups. It also takes account of best environmental management practices as recommended in the European Commission's sectoral reference document for public administration[17] and uses them as inspiration in developing improvement measures.

Although the pandemic impeded some of the measures planned for 2021, we have since been able to implement most of them. The tables below present the main actions implemented in 2021 and those planned for 2022 and 2023. Measures regarding technical installations relate exclusively to the buildings owned by the EPO, as rented buildings are operated and maintained by the respective landlords.

Table 9 – Status icon

	Completed		Cancelled
	In progress		Planned

[17] Commission Decision (EU) 2019/61 of 19 December 2018.

6.1 Action Plan: initiatives completed in 2021

Action	Site	Benefits	Status	Impact
Pilot project on paperless examination "On-demand examination files"	All sites	Over 3 million paper sheets per year	✓	
Collect desktop printers in the Office and dispose of them responsibly	All sites	Decommission 800 desktop printers, save over 10K printer cartridges per year	✓	
Reduce energy consumption of LAN printers	All sites	5.25 MWh per year	✓	
Launch a dashboard on paper consumption that tracks the amount of paper used	All sites	Raises awareness, identifies hot spots, monitors the impact of implemented measures	✓	
Launch interactive dashboards on employee commuting and business travel that allow full monitoring of the associated CO_2 emissions	All sites	Increases staff awareness of how everyone can contribute directly to improving the environmental footprint of the Office	✓	
Launch a dashboard to monitor energy consumption in the ICT infrastructure	All sites	Improves monitoring of energy consumption of ICT equipment	✓	
Set up an environmental hub on the intranet for internal communication and exchange on environmental topics	All sites	Raises awareness	✓	
Knowledge-sharing initiatives with other (European) international organisations and companies at sites of employment	All sites	Raises awareness	✓	
Extend software for weather-dependent regulation of heating and cooling to PH 1-5	Munich PH	982 thermal MWh and 97 electrical MWh per year	✓	

Action	Site	Benefits	Status	Impact
Assess the savings potential of software for weather-dependent regulation of heating and cooling in Isar and New Main buildings	Munich Isar The Hague	Reduce direct energy consumption	✓	
Renew lighting in underground car park PH 6	Munich PH	10 MWh per year	✓	
Optimise data centre: server virtualisation and right-sizing data centre physical infrastructure	Munich PH	Reduces direct energy consumption	✓	
Additional flowering plants on the roof of the PH 7 building to help save bees in Munich	Munich PH	Increases local biodiversity	✓	
Toy and clothes collection	Munich	13 m³ toys and 16.26 m³ clothes	✓	
Participate in local initiative Klimapakt2 (2019 – 2022)	Munich	20 000 t CO_2 estimated saving in 3 years between all participating companies	✓	
Adoption of biomethane in TH	The Hague	Shifts 1 300 t CO_2 emissions from non-renewable to biogenic sources	✓	
Replace catering elevator	The Hague	Reduces energy consumption	✓	
Replacing catering dishwasher installation	The Hague	Reduces energy and water consumption	✓	
Additional doors installed to reduce draughts	The Hague	Reduces energy consumption	✓	
Introduce microplastic-free liquid soaps in sanitary rooms	Berlin	Substitutes approximately 480 l of soap containing microplastic per year	✓	
Adapt the ventilation system of the canteen to actual number of users	Berlin	Reduces direct energy consumption	✓	

Action	Site	Benefits	Status	Impact
Raise awareness of closing the heating valves in offices before working from home several days in a row	Berlin	Reduces direct energy consumption	✓	
Extend carbon footprint calculation and reporting according to the Greenhouse Gas Protocol: scope 1, scope 2, scope 3 (upstream activities leased assets (Berlin), business travel and employee commuting (including teleworking))	All sites	Raises awareness, improves transparency of reporting on emissions	✓	
Online session with the Central Procurement team to raise awareness and share tips on green procurement	All sites	Reduces environmental impact relating to the procurement of goods and services	✓	
Minimise travel for consultancy projects (from on-site to off-site)	All sites	Reduces environmental impact relating to the procurement of goods and services	✓	
CO_2 footprint per consultant requested on offer form	All sites	Reduces environmental impact relating to the procurement of goods and services	✓	
Integrate sustainability criteria into the following contracts (start date in 2021):		Reduces environmental impact relating to the procurement of goods and services		
▪ Hardware acquisition channel	All sites		✓	
▪ Technical maintenance	Munich		✓	

Action	Site	Benefits	Status	Impact
▪ Floor covering and sun blinds	The Hague		✓	
▪ Cleaning and related services	The Hague		✓	
▪ General planner for new office building	Vienna		✓	
Identification of environmentally friendly stationery consumables	All sites		✓	
Study "Patents for tomorrow's plastics – global innovation trends in recycling, circular design and alternative sources"	n/a	Easier access to patent information on climate change mitigation or adaptation technologies	✓	
Adapt the cooling system of the caterer in the New Main building	The Hague	Reduces direct energy consumption	✗	Cancelled as canteen is no longer used.
Connect booking system of meeting rooms with building management system to efficiently manage energy supply of meeting rooms	The Hague	Reduce direct energy consumption	✗	Cancelled as current booking system will be replaced.

6.2 Action Plan: initiatives planned for 2022-2023

Action	Site	Benefits	Status	Impact
Extend carbon footprint calculation to further material scope 3 categories	All sites	Reduce carbon footprint		
Include emissions from teleworking in the environmental dashboard	All sites	Raise awareness, reduce emissions from teleworking		
Develop a high-level plan for carbon-neutral buildings by 2030	All sites	Reduce energy consumption and related emissions		
Develop and implement corporate mobility management at the EPO for business travel and employee commuting	All sites	Reduce emissions from business travel and employee commuting, taking the specific needs of each EPO site into account		
Install e-bike chargers	All sites	Reduce emissions from employee commuting		
Install e-charging stations in 8% of parking lots (up to 139 in Munich and 109 in The Hague by the end of 2022)	Munich, The Hague	Reduce emissions from employee commuting		
Donate old EPO furniture to staff and local charities to extend its life cycle	Munich	Reduce waste		
Thermal insulation and district heating in Isar and PH	Munich	63 MWh per year		
Exchange of escalator controls (start/stop automation)	Munich Isar	110 MWh per year		
Develop concept on LED lighting in Isar	Munich Isar	Reduce direct electricity consumption		
Install LED lighting in PH 1-6	Munich PH	1 435 MWh per year		
Install LED lighting in corridors of PH 8	Munich PH	33 MWh per year		
Assess feasibility of installing beehives on the roof of PH 7	Munich PH	Increase local biodiversity		

Action	Site	Benefits	Status	Impact
Increase the flowering plants on the roof of the PH 7 building to help save bees	Munich PH	Increase local biodiversity		
Install LED lighting in bridge from Shell to Hinge building	The Hague	6 MWh per year		
Participation in local green mobility initiative Zuid-Holland Bereikbaar	The Hague	Reduce emissions from employee commuting		
Replace light bulbs in desktop lights with LED lights	Berlin	135 kWh per year		
Encourage staff to reduce paper consumption by printing less and shifting to printing mode P5000, which saves on green cover sheets	All sites	Up to 5 million paper sheets per year		
Assess the feasibility of adding chargers for e-cars for up to 20% of parking spaces	Munich, The Hague	Reduce emissions from employee commuting		
Participate in local initiative Klimapakt3	Munich	Reduce carbon footprint		
Planting trees initiative	Munich	Raise awareness		
Implementation of a software for weather-dependent regulation of heating and cooling in Isar	Munich Isar	1 917 thermal and 223 electrical MWh per year		
Pilot on energy storage	Munich PH	Reduce upstream emissions from electricity consumption		
Organise lunch event with a high-profile speaker	All sites	200+ participants expected		
Organise lunchtime talks on different topics (e.g. pollution of the oceans, transfer of green technology, home cooling systems, home battery and solar panels, plastics/packaging)	All sites	50+ participants expected		
Organise e-mobility fair	The Hague	100-150 participants expected		

Action	Site	Benefits	Status	Impact
Integrate sustainability criteria into the following contracts (start date in 2022):		Reduce environmental impact relating to the procurement of goods and services		
▪ Canteen	Berlin			
▪ Construction company in charge of (partial) demolition and renovation of new office building	Vienna			
▪ Framework contract for New Normal Furniture Concept	All sites			
▪ Handling of e-waste	All sites			
▪ Physical removal of EPO patents and related documents to an external archive with environmental and sustainability measures in place	All sites			
▪ Companies providing e-learning products and services should present certification of their carbon footprint or outline environmental measures they implement	All sites			
Patent insights report on the following topics: ▪ Electrolysers (May 2022) ▪ Offshore wind plants (September 2022) ▪ Earth observation of green applications (October 2022) ▪ Innovation in the hydrogen value chain (November 2022)	n/a	Easier access to patent information on climate change mitigation or adaptation technologies		
Review preparations of the Y tags for waste and water (Y02W)	n/a	Easier access to patent information on climate change mitigation or adaptation technologies		

Annex 1 Methodology

Greenhouse gas emissions are calculated in accordance with the requirements of the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard and the Corporate Value Chain (Scope 3) Standard. The sources of activity data and the emission factors used for the calculation are shown in the table below.

Table 10 – Conversion factors for GHG emission sources

Emission source	Source of activity data	Emission factor 2021	Source of emission factor
Energy			
Natural gas[18] (The Hague)	Invoices, meter readings (if invoices are not available)	0.183 kg CO_2e/kWh (scope 1) 0.010 kg CO_2e/kWh (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO_2emissiefactoren 2021
Natural gas[18] (Berlin)	Data provided by landlord	0.218 kg CO_2e/kWh (scope 3 – leased assets)	Umweltbundesamt Deutschland, 71/2021, Emissionsbilanz erneuerbarer Energieträger 2020
Biomethane[18] (The Hague)	Invoices, meter readings (if invoices are not available)	0.182 kg CO_2/kWh (biogenic) 0.000485 kg CO_2e/kWh (scope 1)	Factor for natural gas (The Hague) due to comparable chemical composition; CO_2 reported under biogenic, CH_4 and N_2O reported in scope 1
		0.083 kg CO_2e/kWh (scope 3)	Certificate from energy provider
Diesel (Munich)	Fuelling records of cars, runtimes and refuelled quantities of emergency generators	2 700 kg CO_2e/l (scope 1) 0.714 kg CO_2e/l (scope 3)	Umweltbundesamt Deutschland, 71/2021, Emissionsbilanz erneuerbarer Energieträger 2020
Diesel (The Hague)		2 670 kg CO_2e/l (scope 1) 0.570 kg CO_2e/l (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO_2emissiefactoren 2021
Diesel (Vienna)		2 495 kg CO_2e/l (scope 1) 0.642 kg CO_2e/l (scope 3)	Umweltbundesamt Österreich, 2019
Petrol (The Hague)		2 377 kg CO_2e/l (scope 1) 0.655 kg CO_2e/l (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO_2emissiefactoren 2021
District heating (Munich)	Invoices, meter readings (if	0.066 kg CO_2e /kWh (scope 2+3)	Certificate from energy provider

[18] Data and calculations based on higher heating value.

Emission source	Source of activity data	Emission factor 2021	Source of emission factor
District heating (Vienna)	invoices are not available)	0.022 kg CO_2e /kWh (scope 2+3)	Certificate from energy provider
Electricity (100% renewable) Munich	Invoices, meter readings (if invoices are not available)	0 kg CO_2e/kWh (scope 2 market-based)	Electricity provider
		0.054 kg CO_2e/kWh (scope 3)	Umweltbundesamt Deutschland 45/2021, Entwicklung der spezifischen Kohlendioxid-Emissionen des deutschen Strommix in den Jahren 1990 - 2020
Electricity (100% renewable) The Hague	Invoices, meter readings (if invoices are not available)	0 kg CO_2e/kWh (scope 2 market-based)	Electricity provider
		0.004 kg CO_2e/kWh (scope 3 market-based)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO_2emissiefactoren 2021
Electricity (100% renewable) Vienna	Invoices, meter readings (if invoices are not available)	0 kg CO_2e/kWh (scope 2 market-based)	Electricity provider
		0.014 kg CO_2e/kWh (scope 3 market-based)	Umweltbundesamt Österreich, 2019
Electricity (100% renewable) Berlin	Invoices	0 kg CO_2e/kWh (direct emissions for electricity generation, reported in scope 3 – leased assets)	Electricity provider
		0.054 kg CO_2e/kWh (upstream emissions of electricity, reported in scope 3 – leased assets)	Umweltbundesamt Deutschland 45/2021, Entwicklung der spezifischen Kohlendioxid-Emissionen des deutschen Strommix in den Jahren 1990 - 2020
Cooling agents			
R134a	Maintenance protocols	1 430 kg CO_2e/kg	Umweltbundesamt Deutschland, 2019, GWP_{100} according to IPCC AR4
R401a		1 182 kg CO_2e/kg	
R404a		3 922 kg CO_2e/kg	
R407c		1 774 kg CO_2e/kg	
R410a		2 088 kg CO_2e/kg	
R449a		1 397 kg CO_2e/kg	
R452a		2 140 kg CO_2e/kg	
Business travel			
Flight	Travel agency	0.084 kg CO_2e/passenger-km (long haul)	American Express Global Business Travel

Emission source	Source of activity data	Emission factor 2021	Source of emission factor
		0.139 kg CO_2e/passenger km (short haul)	
Rail	Duty travel requests	0.028 kg CO_2e/passenger - km	European Energy Agency, 2015, specific CO_2 emissions per passenger-km rail travel in Europe
Taxi	Duty travel requests	3.8 kg CO_2e/trip	Calculated by EPO using emission factor for cars and assuming average distance of 32 km per taxi ride
Public transport	Duty travel requests	0.900 kg CO_2e/trip	Calculated by EPO using emission factor for rail and assuming average distance of 32 km per trip
Private cars	Duty travel requests (flight is taken as mean of transport when distance is more than 500 km)	0.120 kg CO_2e/km	European Energy Agency, 2019, average CO_2 emissions from new passenger cars registered in the EU in 2018
Employee commuting			
Car	Estimates on km travelled per mode of transport based on: ▪ Average commuting distance per site ▪ Data on building occupancy and number of employee cars entering our parking spaces ▪ Expert estimates on commuting patterns per site (e.g. means of transport)	0.120 kg CO_2e/km	European Energy Agency, 2019, average CO_2 emissions from new passenger cars registered in the EU in 2018
Public transport		0.028 kg CO_2e/passenger-km	European Energy Agency, 2015, specific CO_2 emissions per passenger-km rail travel in Europe
Bike or walking		0 kg CO_2e/trip	
Teleworking			
Electricity (Germany)	Average estimated electricity consumption per employee based on:	0.436 kg CO_2e/kWh (0.382 kg CO_2e/kWh + 0.054 kg CO_2e/kWh)	IINAS 2021, Der nichterneuerbare kumulierte Energieverbrauch und THG-Emissionen des deutschen Strommix im Jahr 2020 sowie Ausblicke auf 2030 und 2050 + Umweltbundesamt Deutschland 45/2021, Entwicklung der spezifischen Kohlendioxid-

Emission source	Source of activity data	Emission factor 2021	Source of emission factor
	▪ working days per year ▪ hours worked per day ▪ percentage of teleworking per year ▪ IT equipment power[19] ▪ light power		Emissionen des deutschen Strommix in den Jahren 1990 - 2020
Electricity (Netherlands)		0.475 kg CO_2e/kWh	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO_2emissiefactoren 2021
Electricity (Austria)		0.218 kg CO_2e/kWh	Umweltbundesamt Österreich, 2019
Data transmission	Average emissions per working hour	0.004 kg CO_2e/h	Umweltbundesamt Deutschland, 2020, Energie- und Ressourceneffizienz digitaler Infrastrukturen Ergebnisse des Forschungsprojektes „Green Cloud-Computing“
Heating energy mix (Germany)	Average heating energy consumption per employee based on: ▪ average heating energy consumption per m^2 in Germany[20] ▪ estimated size of working area ▪ estimated additional heating energy consumption due to teleworking (%)	0.234 kg CO_2e/kWh	GEMIS 5.0, Wärme-mix-DE-HH/KV-2020/en
Heating energy mix (Netherlands)		0.263 kg CO_2e/kWh	GEMIS 5.0, Wärme-Heizen-mix-NL-HH/KV-2020
Heating energy mix (Austria)		0.230 kg CO_2e/kWh	GEMIS 5.0, Wärme-Heizen-mix-AT-HH/KV-2020

Key environmental data has been presented with real-life examples to facilitate the understanding of our impact. The conversion factors are presented below.

[19] IT equipment refers to screen 38", PC, iPad, webcam, headset, wireless keyboard, network, router.
[20] Germany heating consumption per m^2 applied to all sites.

Table 11 – Conversion factors for real-life examples

Comparative base	Real-life comparative	Conversion factor	Source of conversion factor
Carbon footprint	Average electricity usage per household in the Netherlands	6 400 kWh/year	https://www.enerdata.net/estore/energy-market/netherlands/
	Electricity emission factor – Netherlands	0.475 kg CO_2e/kWh	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO_2emissiefactoren 2021
Energy consumption	Average energy usage per household in Germany	17 678 kWh/year	https://www.destatis.de/EN/Themes/Society-Environment/Environment/Environmental-Economic-Accounting/private-households/_node.html
Water	Volume of water in an Olympic swimming pool	2 500 m^3 = 2 500 000 litres	https://en.wikipedia.org/wiki/Olympic-size_swimming_pool
Residual waste	Average municipal waste per capita in the EU (2020)	505 kg	https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Municipal_waste_statistics
Paper (printed and procured)	Paper sheet A4 (80gr/m^2)	5 gr/paper sheet	
	Average paper weight obtained from a eucalyptus	1 484.36 kg/tree	https://www.regenwald-schuetzen.org/fileadmin/user_upload/pdf/Projekt/Weil-wir/Papier/weil-wir-es-wert-sind-wie-viel-in-baeumen.pdf

Annex 2 Evaluation of environmental aspects

To help assess their relevance and the need for action, the different direct and indirect environmental aspects have been rated as follows:
A = very significant environmental aspect with above-average need for action
B = significant environmental aspect with average need for action
C = less significant environmental aspect with low need for action

In addition, the extent to which they can be influenced is indicated by the following ratings:
I = short-term control possible
II = mid- to long-term control possible
III = control not possible or possible only in the long term or subject to third-party decisions

With regard to the assessment of indirect aspects, there is no differentiation between the sites (Figure 6). All direct environmental aspects under the EMAS III Regulation were assessed on the basis of their relevance to the EPO and only those found to be relevant are included below, differentiated by site.

Environmental aspect and impact		Berlin	MUC Isar	MUC PH	The Hague	Vienna
Electricity: resource consumption	General power	A II	A II	A II	A II	A II
	Data centre	–	B II	B II	C III	A II
	Garages	–	B I	A I	B II	A I
	HVAC	–	B II	A III	A II	A II
	Canteen	–	A III	AIII	AIII	–
Electricity: GHG emissions		B III	B III	B III	B III	B III
Heating energy: resource consumption	Space heating	–	A I	A I	AII	BII
	Hot water	–	B III	B II	A II	B II
	Humidification	–	B II	–	BIII	–
Heating energy: GHG and other emissions	Natural gas / biomethane	B III	–	–	B III	–
	District heating	–	B III	B III	–	B III
Fuel consumption: resource consumption	Vehicle fleet	–	C I	–	C I	–
	Emergency generator	–	C III	C III	C III	–

Environmental aspect and impact		Berlin	MUC Isar	MUC PH	The Hague	Vienna
Fuel consumption: GHG and other emissions	Vehicle fleet	–	C I	–	C I	–
	Emergency generator	–	C III	C III	C III	–
Freshwater for sanitary/canteen use: resource consumption		B II	B II	A II	B II	B II
Freshwater for technical/cooling use: resource consumption		–	B II	B II	A II	–
Wastewater: energy and resource consumption for water treatment, risk of water pollution		B II	B II	B II	B II	B II
Waste – non-hazardous: resource and energy consumption for waste treatment		C II	C II	C II	C II	C II
Waste – hazardous: resource and energy consumption for waste treatment; emissions from waste combustion, risk of environmental pollution		C III	B II	B II	B II	C II
Paper: resource and energy consumption for paper production		B II	B II	B II	B II	B II
Risk of environmental accidents: pollution of ground water		C II	B II	B II	B II	C II
Impacts on biodiversity: sealing of soils for construction purposes		C III	C II	C II	C II	C II

Annex 3 Overview per site

The following chapters contain a detailed overview of our EMAS-certified sites. For each site, we present environmentally relevant facilities and legal aspects, and the core indicators for environmental performance. In the process of aligning the environmental reporting with the GHG Protocol, we thoroughly reviewed our databases and updated some of the reference data used for calculating the core indicators. Some of the data presented in the tables below might therefore differ from last year's report.

1. Munich

Munich is the largest of our sites in terms of gross floor area and staff numbers. The condition of the buildings varies, with some being relatively old, such as the Isar building (opened in 1980) and others newer, namely PschorrHöfe 7 (2005) and 8 (2008). The Isar building and the PschorrHöfe have district heating. Other facilities of environmental relevance are primarily situated in the Isar building. They include a repair shop and carpenter's workshop, a water treatment installation and tanks for acid and lye solutions for water treatment.

The Isar building and PschorrHöfe 1-8 have an oil and/or grease trap and a kitchen/canteen and dishwashing area. All Munich buildings have (small) storage areas for cleaning agents and chemicals. There is no information to suggest any land contamination at the Munich sites. Hazardous waste consists mainly of spent batteries and fluorescent tubes.

GHG emissions in 2021:
2 157 t CO_2e

-36.1%
compared with 2020

Total energy consumption in 2021:
34 302 MWh

-4.4%
compared with 2020

Figure 15 – EPO Munich, Isar building

Source: EPO

Figure 16 – EPO Munich, PschorrHöfe complex

Source: EPO

Table 12 − Environmental law and relevant facilities, EPO Munich

Most relevant areas of environmental law	Relevant facilities/activities
Building energy efficiency regulations	Energy certification, building insulation, energy-efficient technologies
Water regulations	Storage of diesel, acids and lyes, operation of grease traps, cooling and wastewater discharge into sewage system
Waste regulations	Recycling/separation/disposal of various types of waste
Pollution regulations governing small and medium-sized heating systems	Heating system
Regulations on climate protection and refrigerants	Cooling installations with at least 5 kg global warming potential (GWP)
Regulations on health and safety and hazardous materials	Risk assessment, fire prevention, requirements for use of hazardous substances (e.g. acids and lyes)

EPO Munich – Isar building

Address	Bob-van-Benthem-Platz 1, 80469 Munich, Germany			
Status	Owned by EPO			
Reference values	**Unit**	**2019**	**2020**	**2021**
Gross floor area	m^2	91 346	91 346	91 346
Heated floor area	m^2	67 847	67 847	67 847
Built surface area (sealed)	m^2	18 113	18 113	18 113
Nature-oriented area on-site	m^2	10 579	10 579	10 579
Number of employees	empl	720	691	504
Emissions				
GHG emissions (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO_2e/empl	2.44	2.30	1.97
SO_2 (fuels)	kg/empl	0.00	0.00	0.00
NO_x (fuels)	kg/empl	0.01	0.01	0.02
Particulates (fuels)	kg/empl	0.00	0.00	0.00
Energy, water and paper consumption				
Electricity consumption	kWh/empl	11 183	11 235	11 791
Heat energy consumption (district heating)	kWh/m^2	121	129	145
Adjusted heat energy consumption (district heating)	kWh/m^2	136	137	138
Renewable energy as a percentage of total consumption (electricity and heat)	%	53.19	51.26	45.81
Diesel consumption	l	2 890	2 662	2 573
Water consumption	m^3/empl	37.06	32.19	52.94
Paper consumption (procured)	sheet/empl	17 112	8 908	4 340
Waste generation				
Residual waste	kg/empl	81.92	49.61	41.61
Paper/cardboard	kg/empl	217.01	198.15	331.81
Plastics	kg/empl	1.19	1.16	1.43
Food waste	kg/empl	50.81	18.96	1.43
Food waste per meal served	kg/meal	0.29	0.39	0.00
Grease trap residues	kg/empl	208.47	191.10	43.35
Hazardous waste	kg/empl	3.52	2.95	32.60

EPO Munich – Pschorr Höfe 1-8

Address	Bayerstr. 34, 80335 Munich, Germany			
Status	Owned by EPO			
Reference values	**Unit**	**2019**	**2020**	**2021**
Gross floor area	m²	276 180	276 180	276 180
Heated floor area	m²	178 320	178 320	178 320
Built surface area (sealed)	m^2	42 641	42 641	42 641
Total nature-oriented area on site	m^2	18 422	18 422	18 422
Number of employees	empl	2 712	2 632	2 754
Emissions				
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO_2e/empl	0.84	0.68	0.42
SO_2 (fuels)	kg/empl	0.00	0.00	0.00
NO_x (fuels)	kg/empl	0.00	0.00	0.00
Particulates (fuels)	kg/empl	0.00	0.00	0.00
Energy, water and paper consumption				
Electricity consumption	kWh/empl	4 006	3 572	2 913
Total heat energy consumption (district heating)	kWh/m^2	55	56	59
Adjusted heat energy consumption (district heating)	kWh/m²	62	59	57
Renewable energy as a percentage of total energy consumption	%	55.95	52.70	50.63
Diesel consumption	l	3 180	3 180	3 180
Water consumption	m^3/empl	16.58	12.68	9.62
Paper consumption (procured)	sheet/empl	17 112	8 908	4 340
Waste generation				
Residual waste	kg/empl	44.85	22.49	11.01
Paper/cardboard	kg/empl	54.52	36.34	23.26
Plastics	kg/empl	1.26	0.74	0.09
Food waste	kg/empl	29.92	11.30	0.23
Food waste per meal served	kg/meal	0.22	0.29	0.00
Grease trap residues	kg/empl	43.56	38.62	8.28
Hazardous waste	kg/empl	2.18	2.85	4.76

2. The Hague

The Hague is our second-largest site after Munich. The New Main building is partly heated and cooled by groundwater heat pumps and additionally heated by natural gas. There is no information to suggest any land contamination at the site in The Hague. Under Dutch law, the site in The Hague is subject to an "activity decree", a simplified environmental permit.

GHG emissions in 2021:
770 t CO_2e

-54.8%
compared with 2020

Construction work on the New Main and new Hinge buildings in The Hague was completed in the summer of 2018 and the old buildings have since been demolished. The new buildings were constructed according to high sustainability standards, such as minimising the environmental impact in the construction phase, significantly reduced energy consumption, optimum and particularly user-friendly air conditioning. The EPO has chosen to comply with the certification criteria of multiple standards for sustainable buildings (Dutch Bouwbesluit Building Decree 2012, BREEAM[21]) and to aim for an energy efficiency rating of 20% above the requirements laid down in the 2012 Dutch building regulations. In the long term, 15% of the energy required for building operation is expected to be generated on-site, from groundwater heat and solar power, for example.

Total energy consumption in 2021:
22 254 MWh

-5.7%
compared with 2020

Figure 17– EPO The Hague, New Main building

Source: EPO

[21] BREEAM (Building Research Establishment Environmental Assessment Method) is a leading method for master planning projects, infrastructure and buildings. It recognises and reflects the value in higher performing assets across the built environment lifecycle, from new construction to in-use refurbishment.

Table 13 – Environmental law and relevant facilities, EPO The Hague

Most relevant areas of environmental law	Relevant facilities/activities
Rules on general environmental management	Environmental permit, annual environmental report to the municipality of Rijswijk
Building regulations	Building activities: criteria for renovation/rebuilding and new buildings
Water regulations	Water discharge into sewage system
Waste regulations	Recycling/separation/disposal of various types of waste, handling of hazardous waste (spent batteries, old fluorescent tubes and waste oil)
Pollution regulations governing combustion units of type B	Heating system (natural gas), checked to comply with emission thresholds
Regulations on climate protection and refrigerants	Cooling installations with at least 5 kg GWP, performance of density checks
Hazardous materials regulations	Handling/storage/transport of hazardous substances, e.g. glycol (400 l on site), asbestos; transmission of hazardous waste (potential); grease traps, cleaning agents (approximately 400 l on site)
Regulations on underground storage of hazardous substances	Underground storage area for diesel fuel (three tanks with a capacity of 5 000 litres each and one with a capacity of 4 000 litres for emergency generators)
Health and safety	Appropriate risk assessment, fire prevention, restrictions on certain chemical agents, availability of safety information sheets and operating instructions

EPO The Hague

Address	Patentlaan 2, 2288 EE Rijswijk, Netherlands			
Status	Owned by EPO			
Reference values	**Unit**	**2019**	**2020**	**2021**
Gross floor area	m²	218 966	218 966	217 465
Heated floor area	m²	159 884	159 884	159 884
Built surface area (sealed)	m^2	51 196	51 196	51 196
Total nature-oriented area on site	m^2	43 018	43 018	43 018
Number of employees	empl	2 624	2 536	2 474
Emissions				
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO_2e/empl	0.78	0.67	0.31
SO_2 (fuels, natural gas, biomethane)	kg/empl	0.00	0.00	0.00
NO_x (fuels, natural gas, biomethane)	kg/empl	0.19	0.15	0.17
Particulates (fuels, natural gas, biomethane)	kg/empl	0.00	0.00	0.00
Energy, water and paper consumption				
Electricity consumption	kWh/empl	7 356	6 703	5 986
Heat energy consumption (2019/2020: natural gas, 2021: biomethane)	kWh/m^2	50	41	47
Adjusted heat energy consumption (2019/2020: natural gas, 2021: biomethane)	kWh/m²	54	45	46
Renewable energy as a percentage of total energy consumption	%	70.83	72.06	100
Diesel consumption	l	4 998	4 532	4 004
Petrol consumption	l	807	940	1 041
Water consumption	m^3/empl	13.51	11.62	12.12
Paper consumption (procured)	sheet/empl	23 754	13 344	6 831
Waste generation				
Residual waste	kg/empl	60.59	35.16	17.94
Paper/cardboard	kg/empl	91.23	61.94	42.50
Plastics	kg/empl	0.42	0.26	0.15
Food waste	kg/empl	27.23	9.53	4.56
Food waste per meal served	kg/meal	0.30	0.28	0.21
Grease trap residues	kg/empl	43.59	20.72	9.09
Hazardous waste	kg/empl	0.50	1.02	2.20

3. Berlin

The Berlin sub-office is housed in a building that was constructed in the early 20th century. Due to the age of the building, there are certain deficiencies in its insulation and energy efficiency. The landlord – the Bundesanstalt für Immobilienaufgaben – regularly makes structural improvements. Major renovation began in 2017, including measures intended to improve energy efficiency (e.g. in lighting systems and air conditioning). The cost of this work will primarily be borne by the landlord, with the EPO contributing to individual aspects. Much of the work will be devoted to energy-saving items such as thermal insulation and lighting control/modification. In 2021, some EPO staff moved to the new Z wing, which is equipped with new windows, LED lights and solar panels on the roof.

Facilities of environmental relevance include a gas-powered heating system, several cooling installations, a small storage area for cleaning agents, an X-ray machine in the post room and a kitchen/canteen operated by an external service provider. Responsibility for operating the building's heating systems and the canteen's refrigeration units lies with the landlord, while responsibility for operating the air conditioning systems in individual meeting rooms lies with the EPO. According to the landlord, there is no land contamination at the Berlin site.

GHG emissions in 2021:
471 t CO_2e

0%
compared with 2020

Paper consumption in 2021:
410 000 sheets

-70.8%
compared with 2020

Figure 18 – EPO Berlin

Source: EPO

Table 14 – Environmental law and relevant facilities, EPO Berlin

Most relevant areas of environmental law	Relevant facilities/activities
Building energy efficiency regulations	Building insulation, energy-efficient technologies
Water regulations	Water discharge into sewage system
Waste regulations	Recycling/separation/disposal of various types of waste, handling of hazardous waste (spent batteries and fluorescent tubes)
Regulations on health and safety and on hazardous materials	Risk assessment, fire prevention, restrictions on certain chemical agents

EPO Berlin

Address	Gitschiner Str. 103, 10969 Berlin, Germany			
Status	Rented by EPO			
Reference values	**Unit**	**2019**	**2020**	**2021**
Gross floor area	m²	18 100	18 100	20 000
Heated floor area	m²	18 093	18 093	16 064
Built surface area (sealed)[22]	m^2	11 250	11 250	11 250
Total nature-oriented area on site[22]	m^2	12 339	12 339	12 339
Number of employees	empl	219	201	198
Emissions				
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO_2e/empl	2.16	2.34	2.38
SO_2 (natural gas)	kg/empl	0.01	0.01	0.01
NO_x (natural gas)	kg/empl	0.57	0.56	0.57
Particulates (natural gas)	kg/empl	0.01	0.01	0.01
Energy, water and paper consumption				
Electricity consumption[23]	kWh/empl	2 193	2 134	2 166[24]
Heat energy consumption (natural gas)	kWh/m^2	113	113[25]	128[25]
Adjusted heat energy consumption (natural gas)	kWh/m²	134	126[25]	119[25]
Renewable energy as a percentage of total energy consumption	%	18.97	17.30	17.30
Water consumption	m^3/empl	12.13	8.58	8.71[24]
Paper consumption (procured)	sheet/empl	10 171	6 980	2 071
Waste generation				
Residual waste	kg/empl	182.65	199.00	202.02
Paper/card	kg/empl	86.76	89.55	95.00
Plastic	kg/empl	21.55	23.48	23.83
Food waste	kg/empl	32.88[26]	35.82	4.36
Food waste per meal served	kg/meal	0.36	0.70	0.00
Grease trap residues	kg/empl	54.79	53.73	0.00
Hazardous waste	kg/empl	0.00	0.00	0.00

[22] Area rented by the EPO (50% of the total building area).

[23] The figures for electricity consumption at the EPO's Berlin site are estimates, based on the landlord's division of overall electricity consumption among the tenants according to the size of the area rented.

[24] The Berlin data for 2021 was not available at the time of compiling this report. To ensure comparability, the 2019 data was used as an estimate to calculate the figure shown here.

[25] The Berlin data for 2020 and 2021 was not available at the time of compiling this report. To ensure comparability, the 2019 data was used as an estimate to calculate the figure shown here.

[26] Value updated compared with previous reports due to update of conversion factor (t/m^3).

4. Vienna

Vienna is the smallest of all EMAS-certified sites, in terms of both gross floor area and staff numbers. The Vienna office uses district heating. Facilities of environmental relevance are limited to a small storage area for cleaning agents. There is no information to suggest any land contamination at the Vienna site. The only forms of hazardous waste are spent batteries and fluorescent tubes. The building in Vienna will be completely renovated by 2024, leaving only the skeleton of the building intact and converting it into a climate-neutral building ("Green Hub Vienna"). During construction work, employees will move into rented office space.

GHG emissions in 2021:
22 t CO_2e

+14.2%
compared with 2020

Water consumption in 2021:
943 m^3

-44.5%
compared with 2020

Figure 19 – EPO Vienna

Source: EPO

Table 15 – Environmental law and relevant facilities, EPO Vienna

Most relevant areas of environmental law	Relevant facilities/activities
Building energy efficiency regulations	Energy certification, building insulation, energy-efficient technologies
Water regulations	Water discharge into sewage system
Waste regulations	Recycling/separation/disposal of various types of waste

EPO Vienna

Address	Rennweg 12, 1030 Vienna, Austria			
Status	Owned by EPO			
Reference values	**Unit**	**2019**	**2020**	**2021**
Gross floor area	m²	11 420	11 420	11 420
Heated floor area	m²	7 260	7 260	7 260
Built surface area (sealed)	m^2	2 547	2 547	2 547
Total nature-oriented area on site	m^2	1 966	1 966	1 966
Number of employees	empl	87	82	72
Emissions				
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO_2e/empl	0.25	0.23	0.30
SO_2 (fuels)	kg/empl	0.00	0.00	0.00
NO_x (fuels)	kg/empl	0.00	0.00	0.00
Particulates (fuels)	kg/empl	0.00	0.00	0.00
Energy, water and paper consumption				
Electricity consumption	kWh/empl	6 106	5 571	5 813
Heat energy consumption (district heating)	kWh/m^2	94	86	98
Adjusted heat energy consumption (district heating)	kWh/m²	106	88	93
Renewable energy as a percentage of total energy consumption	%	54.29	55.60	51.45
Diesel consumption	l	78	16	0
Water consumption	m^3/empl	22.76	20.73	13.10
Paper consumption (procured)	sheet/empl	3 753	1 322	1 043
Waste generation				
Residual waste	kg/empl	172.41	182.93	208.33
Paper/card	kg/empl	275.86	292.68	333.33
Plastics[27]	kg/empl	N/A	N/A	N/A
Food waste[28]	kg/empl	N/A	N/A	N/A
Hazardous waste	kg/empl	0.34	0.24	2.50

[27] Plastic waste is not collected separately in Vienna and is therefore included in the figures of residual waste.

[28] Disposal handled by canteen service provider.

Annex 4 Environmental management system

Following the adoption of an initial environmental policy more than ten years ago, we implemented an environmental management system under EMAS and took on a leading environmental role as an administrative institution. The system integrates environmental aspects into all operational processes, which are regularly assessed with a view to identifying potential improvements in environmental protection.

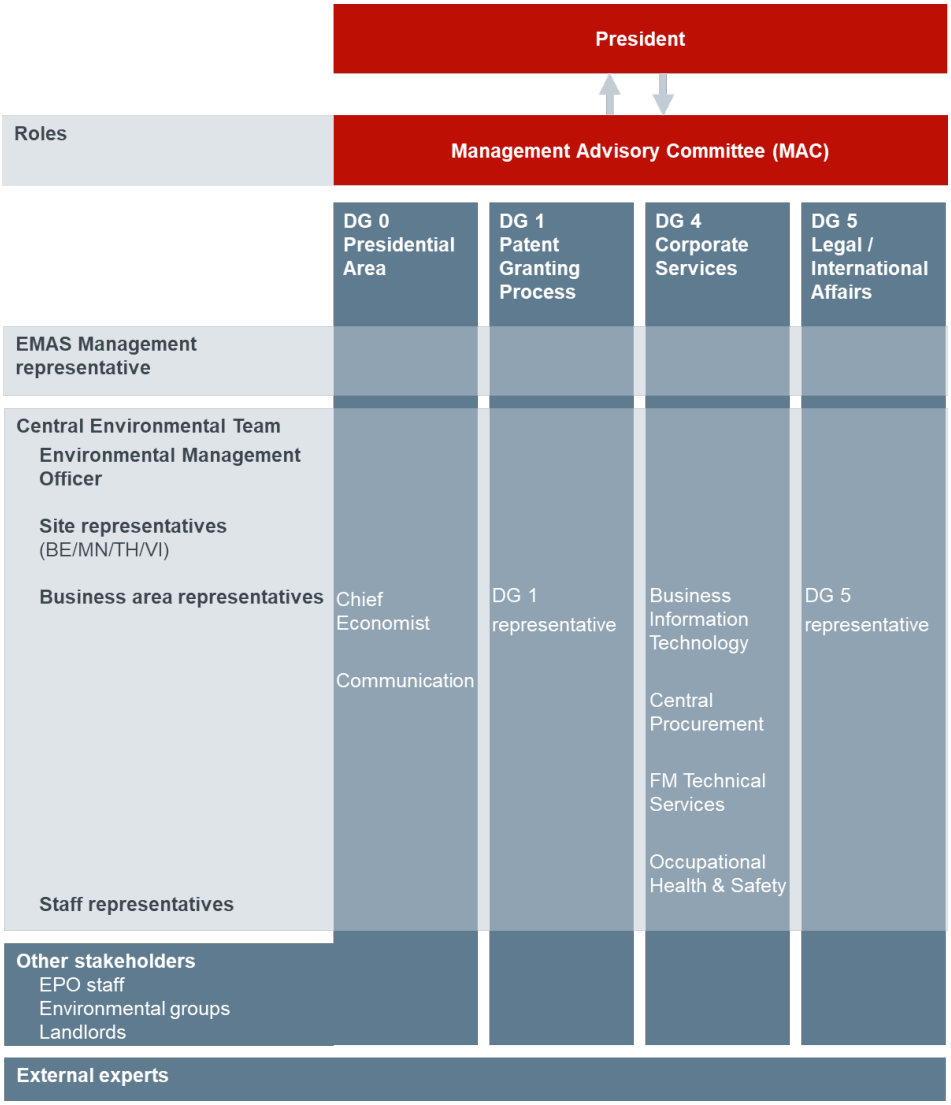
1. Structure and responsibilities

The structure of our environmental management system is set out in our environmental management handbook, which applies to all sites. We regularly evaluate our environmental context to identify relevant stakeholders and their expectations regarding the environmental management system. The system is also regularly assessed in internal audits, thus ensuring a continuous improvement process. Staff are encouraged to adopt environmentally friendly behaviour. Relevant information is communicated to staff via info screens in the office buildings and the intranet, and is made available to the public in the Environmental Report.

Environmental management is organised and co-ordinated by the Environmental Management Officer, who is responsible for implementing and further developing the environmental management system in the EPO. In addition, local environmental representatives at each site are in charge of planning, co-ordinating and monitoring local environmental activities and ensuring that environmental aspects are integrated into everyday operations at the sites.

Together with business area representatives from each directorate-general (DG), the Environmental Management Officer and environmental representatives form the EPO's central environmental team, which meets at least twice a year. The business area representatives are tasked with integrating environmental aspects into the DG's specialised processes and environment-related activities in their respective area, thereby strengthening the organisation-wide implementation of EMAS. Voluntary environmental groups initiated by staff in Munich and The Hague support the team's work by submitting their own proposals to the environmental programme.

Figure 20 – EMAS governance structure



Source: EPO

2. Compliance with binding obligations

EMAS and the environmental laws applying to the different EPO sites constitute external requirements to be met by the EPO and its environmental management system. The legal requirements and other binding obligations relevant for each place of employment have been identified. The most relevant environmental regulations for each place of employment are set out in the previous section. All binding obligations are documented in the legal register for each country in which the EPO is located. By continuously reviewing and updating the legal register, we identify changes to environmental law and implement new requirements. Moreover, all periodic obligations at the different sites are documented in local registers of periodic duties. Compliance with legal requirements is verified by annual internal audits. Minor non-compliances detected during the audits are corrected.

ENVIRONMENTAL VERIFIER'S DECLARATION

Dr. Hans-Peter Wruk, with EMAS environmental verifier registration number DE-V-0051, accredited for the scope 841 (NACE-Code) "administration of the state" declares to have verified whether the whole organization

European Patent Office
Bob-van-Bentheim-Platz 1
D-80469 Munich

as indicated in the environmental statement with registration number DE 155-00278 meets all requirements of

Regulation (EC) 1221/2009

in the version of 19th of December 2018 of the European Parliament and of the Council on the voluntary participation by organizations in a Community eco -management and audit scheme (EMAS).

By signing this declaration, I declare that:

- the verification and validation has been carried out in full compliance with the requirements of Regulations (EC) No 1221/2009 in the version of 19th of December 2018
- 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 organization reflect a reliable, credible and correct image of all the organizations activities, within the scope mentioned in the environmental statement.

Done at Pinneberg on 27th of Mai 2022

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Dr.-Ing. Hans-Peter Wruk
Environmental Verifier

accredited by:
DAU - Deutsche Akkreditierungs- und Zulassungsgesellschaft für Umweltgutachter mbH
Accreditation-No. DE-V-0051

Dr. Hans-Peter Wruk
Environmental Verifier