

Environmental Report 2022

Annex to the Annual Review



11

Executive summary

The EPO is committed to becoming a net zero organisation by 2030. We are translating our ambition into meaningful and measurable actions, in recognition of the urgency of the climate crisis. Our aim is to contribute to the world's transition to a lower-carbon future and the global achievement of the UN Sustainable Development Goals (UN SDGs).

In 2022, we have been working towards achieving this goal. With the aim of progressively addressing all our emissions (direct and indirect) along the value chain, we have extended the scope of the emissions reported according to the Greenhouse Gas (GHG) Protocol Corporate standard to three additional scope 3 categories.

The EPO's gross reported GHG emissions (scopes 1, 2 and part of 3) show good progress towards our 2030 goal reduction. We closed 2022 with a historical low level of emissions below 4 000 t CO₂e, achieving an overall reduction of 46% compared to 2020, a 54% reduction in scope 1 and 2 emissions, and a 36% reduction in scope 3 emissions. Reductions were primarily the result of the implementation of the Action Plan 2022 combined with the energy savings from the temperature adjustment in all EPO buildings, in response to the emergency plan calling for 15% voluntary energy savings by the EU Commission. These measures counterbalanced the emissions increase recorded with the reopening of our premises when COVID-19 restrictions eased, and the extension in scope of reported GHG emissions.

Progress in digital transformation contributed to a significant reduction in paper consumption, which decreased by 89% compared to 2019, and the launch of the New Ways of Working scheme, which offers EPO staff broad flexibility on where they choose to work. In this new reality, it is our environmental responsibility to adapt our buildings and organise workspaces in a more sustainable manner, reducing energy needs and related emissions, while keeping our buildings vibrant and strengthening our sense of belonging.

In 2022, we also launched the "Vienna Green Hub" project, our flagship initiative to achieve carbon neutrality by 2030.

Innovation in sustainable technologies has a crucial role to play in tackling the climate crisis. The EPO promotes innovation as a force for good, supporting innovators in their efforts to solve global challenges and contribute to the UN SDGs for a more sustainable world. Global success depends on giving access to the right know-how and to trends in emerging sustainable technologies. The EPO offers these through espacenet databases and platforms, economic studies and insight reports.

Each year the EPO focuses on specific UN SDGs and publishes economic studies and espacenet platforms related to those SDGs. In 2022, we focused on clean energy (UN SDG7). In 2023, we will extend our focus to health (UN SDG3) and responsible production and consumption (UN SDG12).

In 2023, we will continue our work to become a net zero organisation by 2030 with an action plan of measures for positive changes. We will further extend the scope of the emissions reported according to GHG Protocol Corporate standard to additional scope 3 categories including goods and services we purchase We

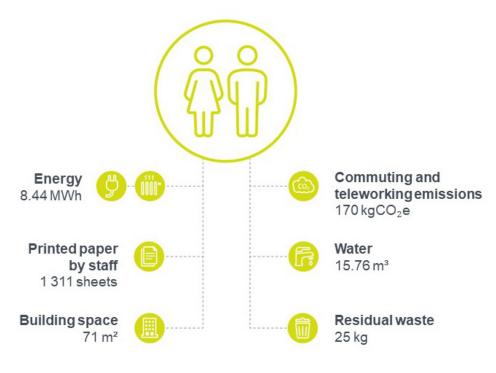
will also build on the positive experience made with the management of our e-waste, and we will strengthen our green procurement, in line with our commitment to a healthy circular ecosystem supporting UN SDG12.

Figure 1 – Key environmental data*



Source: EPO

*Employee number in EMAS certified sites namely Munich Isar, Munich PschorrHöfe (PH), The Hague, Berlin, and Vienna.



Source: EPO

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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 PschorrHöfe (PH), The Hague, Berlin and Vienna (presented in more detail in Annex 3). The Vienna site is being renovated (see box below) and is therefore closed. Meanwhile, EPO staff working from Vienna can use a rented office space, which is not included in the EMAS scope. However, the related consumption figures are reported to ensure comparability with previous reports.

In 2022 the EPO has extended its environmental reporting beyond the EMAS requirements and has adopted the Greenhouse Gas Protocol as the standard for reporting on its carbon footprint (see 5.1 Greenhouse gas emissions).

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).

The Vienna Green Hub

Our office building in Vienna is part of our heritage. Having reached the end of its operational life, the complete redevelopment of the existing site started in November 2022 under the project "Vienna Green Hub".

As suggested by the name, environmental sustainability is at the heart of EPO's vision for the new building: to deliver a carbon neutral building over its life cycle according to the requirements of the Austrian Sustainable Building Council (Österreichische Gesellschaft für Nachhaltige Immobilienwirtschaft, ÖGNI) Sanierung 2020 standard, which includes emissions from raw materials, construction, use, and end-of-life.

The building will first be stripped down to its concrete skeleton and then rebuilt completely. The upcycling of the original structure (i.e., keep-repair-reuse) saves about half of the carbon dioxide in comparison to demolishing and rebuilding from scratch.

State-of-the-art technologies will reduce the energy demand for the building's basic functions (e.g., heating, cooling, ventilation, lighting, and hot water). For example, heat pumps and 19 underground probes drilled 200 m deep underneath the foundations will extract heat from the ground in winter to warm the building, up to three times more efficiently than with traditional gas boilers; in summer, the flow will be inverted to cool the building and store the excess heat in the ground for the following winter.

Furthermore, a photovoltaic power plant installed on the roof and on the facades will generate in operation about 50% more electricity than the building consumes. The surplus will be shared via the local grid, contributing to the reduction of carbon emissions from electricity generation in Austria. Thus, the building will progressively compensate the emissions generated during the construction phase and, with a planned life of 50 years, it is expected to become carbon neutral after 30 years of operation.



Source: ATP Wien Planungs GmbH

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:

- 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.



Source: EPO

3. Strategic Plan 2023 – environmental goals

In the Strategic Plan 2023 (SP2023), Goal 5: Long-term sustainability, our approach to sustainability covers four aspects: environmental sustainability, social sustainability, governance, and financial sustainability. 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).

Our overarching objective of carbon neutrality is complemented by six environmental key performance indicators (KPIs) and corresponding targets which were set out at the start of the Strategic Plan 2023. Our main direct impact on the environment is caused by the operation of our buildings and four of the KPIs relate to their operations.

The 2022 progress versus the SP2023 targets is reported in Figure 4. The year 2018 is used as a reference to measure achievement of the targets, except for paper consumption (2019). All indicators continued to improve versus the targets originally set in SP2023, even as COVID-19 restrictions started to ease and staff started returning to our premises. In the future, we intend to leverage the opportunities offered by our New Ways of Working (NWOW) to further improve the environmental performance of our facilities.

Figure 4 – Progress versus SP2023 environmental targets

paper consumption	CO_2 emissions caused by travel and energy consumption	energy consumption
-89% Compared with 2019	-67%* Compared with 2018	-34% Compared with 2018
recycling ratio	proportion of renewable energy	water consumption
+7% Compared with 2018	+13% Compared with 2018	-20% Compared with 2018
^(*) without biogenic CO ₂	from biomethane -80%	

Source: EPO

4. Assessment of environmental aspects

All EPO activities have an environmental impact, directly or indirectly. 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. To help assess their relevance and the need for action (significance), 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 (control) is indicated by the following ratings:

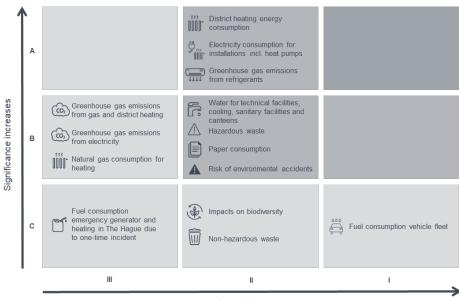
I = short-term control possible

II = mid to long-term control possible

III = control not possible or possible only in the long term or subject to third-party decisions.

As Figure 5 shows, our most relevant direct environmental aspects are those related to the buildings.

Figure 5 – Direct environmental aspects of EPO activities

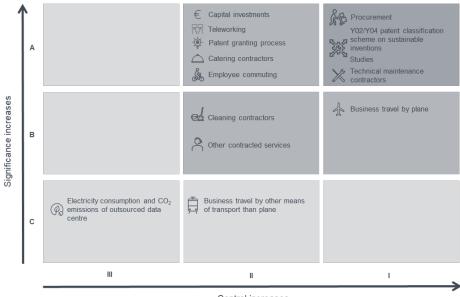


Control increases

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.





Control increases

Source: EPO

5. Environmental performance

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

5.1 Greenhouse gas emissions



In 2021, the EPO decided to align the accounting and reporting of EPO emissions to the Greenhouse Gas (GHG) Protocol standard with its well-known scopes. Scope 1 includes direct GHG emissions from facilities owned or controlled by the reporting organisation, such

as natural gas burnt at 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 heating¹. Scope 3 includes all other indirect GHG emissions originating in the value chain. Biogenic CO₂ emissions, for example from the combustion of gas obtained from biomass, are reported separately. GHG emissions are indicated in CO₂ equivalents (CO₂e), which includes carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃).

In line with our environmental policy, we progressively include all significant emission sources to obtain a complete picture of the climate impact of our activities (e.g., "Purchased goods and services"). In 2022, we expanded the perimeter to include three scope 3 categories: "Transportation and distribution (upstream activities)", "Waste generated in operations" and "Capital goods" (Figure 7). For the latter, emissions will be first reported after the closing of the Vienna Green Hub project (see box below).

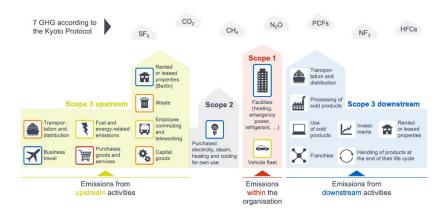


Figure 7 – Scope 1, 2 and 3 categories, according to the Greenhouse Gas Protocol

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

Source: EPO

Total GHG emissions 2022: 3 926 t CO₂e

-15.8% compared with 2021

[🖸] Environmental Report 2020 📋 Environmental Report 2021 📋 Environmental Report 2022 🔲 Next steps

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

GHG Protocol Scope 3 "Capital goods"



Capital Goods are assets that organisations use to manufacture products and services (e.g., equipment, machinery, buildings, facilities, and vehicles). At EPO, we shall report in this category all emissions relating to the acquisition or refurbishment of owned starting with the Vienne Organ Live

buildings², starting with the Vienna Green Hub.

Our goal is a carbon negative building with a carbon neutral lifecycle, which includes the use of the building, the materials, the construction and the end of life. Having compared the requirements from ÖGNI and those of the GHG Protocol, which foresees cradle-to-gate emissions as the minimum boundary for accounting for carbon emissions in this category, the EPO aims at providing an accurate assessment based on primary data from our suppliers complemented by secondary data when unavoidable.

The emissions related to the refurbishment of the building are estimated to a total of 1 089 t CO_2e (including materials extraction, transport and production), a 55% reduction compared to the complete reconstruction of the building. During the construction phase, we plan a monthly assessment of the emissions generated. The information will be compiled and included in the EPO carbon footprint once EPO staff returns to the building.

Our GHG inventory includes emissions in scopes 1 and 2 for the owned sites Munich Isar and Munich PH, The Hague and Vienna (until October 2022). GHG emissions in scope 3 include the categories of fuel and energy-related activities (if not already included in scopes 1 and 2), transportation and distribution (upstream activities), waste, business travel, employee commuting and teleworking and upstream leased assets (Berlin and the rented space in Vienna as of November 2022).

Table 1 summarises our GHG inventory for the years 2020, 2021 and 2022. Details of the methodology and emission factors used as well as site-specific scope 1 and 2 emissions are included in Annex 1 and Annex 3 respectively. The EPO's total carbon footprint in 2022 was 3 926 t CO₂e in scopes 1, 2 and 3, resulting in a 15.8% reduction compared with 2021³, albeit trends per scope differentiate substantially.

The EPO achieved an overall reduction of 46% compared to 2020, a 54% reduction in scope 1 and 2 emissions, and 36% reduction in scope 3.

² Emissions relating to all other purchased products will be reported in future under the category "Purchased goods and services".

³ Since we have expanded the perimeter of the GHG inventory, the reported 2020 and 2021 scope 3 emissions and corresponding total carbon footprints are higher than in last year's report.

Table 1 – Total GHG emissions (t CO₂e per year)

	2020	2021	2022	Change 2021-22 in %
Scope 1	1 625	147	776	+426.0
Facilities	1 222	21	194	+802.1
Vehicle fleet	12	11	9	-12.1
Cooling agents' losses	391	115	572	+396.9
Scope 2	2 400	1 358	1 072	-21.1
Purchased electricity ⁴	0	0	0	0.0
District heating	2 400	1 358	1 072	-21.1
Scope 3	3 228	3 158	2 079	-34.2
Upstream emissions from energy⁵ (not included in scope 1 or 2)	1 075	1 444	445	-69.2
Upstream transportation and distribution	172	128	100	-22.0
Waste generated in operations	70	69	69	+0.6
Business travel	115	3	79	+2 538.3
Employee commuting and teleworking	1 358	1 032	1 027	-0.5
Upstream leased assets (Berlin, Vienna as of November 2022)	438 ⁶	4847	359 ⁸	-25.8
Total scope 1, 2, 3	7 253	4 664	3 926	-15.8
		4 957	4.040	00.7
Biogenic CO ₂	-	1 357	1 049	-22.7

⁴ 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. Using the location-based approach, emissions amount to 13 521 t CO_2e (2020), 11 404 t CO_2e (2021) and 10 093 t CO_2e (2022), respectively.

⁵ This emission source refers to the category "Fuel and energy-related activities" according to the GHG Protocol.

⁶ This figure has been updated compared with last year's report due to updated consumption figures from the landlord in Berlin.

⁷ This figure has been updated compared with last year's report due to updated consumption figures from the landlord in Berlin.

⁸ Emissions for Berlin are based on preliminary meter readings by the landlord.

While scope 1 emissions reduced overall compared 2020, there was a considerable increase in 2022 versus 2021, primarily due to leakage of cooling agents, which was almost four times as high as in the previous year and accounted for over 14% of the EPO carbon footprint in 2022. Leakages occur sporadically due to defects in cooling facilities and maintenance is performed at regular intervals to minimise the risk of losses. To keep these emissions as low as possible, we will increase the frequency of leakage testing for higher risk installations and switch to cooling agents with lower global warming potential where possible. Other contributions to emissions were due to the use of a diesel boiler for heating, and later, the use of the diesel driven emergency power generator for running the data centre in The Hague following a technical failure in the electrical installation of the data centre Shell.

Scope 2 emissions decreased by over 20% in 2022 compared to the previous year, mainly because of the energy saving measures introduced by the EPO in response to the emergency plan calling for 15% voluntary energy savings in all EU member states published by the EU Commission. District heating consumption (in Munich and Vienna) represented the biggest source of GHG emissions in 2022 (27.3%), therefore keeping a strong focus on reducing our energy consumption is essential. In addition, we will progressively benefit from the ongoing efforts made by our suppliers to decarbonise their products. As the EPO purchases green electricity since 2019, emissions from electricity consumption are set to zero according to the market-based calculation approach.

Scope 3 emissions represent over half of the reported total. In comparison to the previous year, they decreased by 34.2%. Here, combined estimated emissions from employee commuting and teleworking are the largest contributor, accounting for around a quarter of the EPO's total emissions in 2022 (see 5.9 Employee commuting and teleworking).

Looking forward, we intend to expand the perimeter of our reported emissions to include the goods and services we purchase. Accordingly, we are working to embed more prominently sustainability criteria in our procurement processes towards a greener procurement in line with our commitment to a more circular economy.

Upstream emissions from the supply chain of the electricity, biomethane and fuel consumed at our own sites⁹ decreased by almost 1 000 t CO_2e in comparison to 2021. This positive result is mainly due the above-mentioned energy saving measures and the lower 2022 emission factors for the purchased electricity and biomethane.

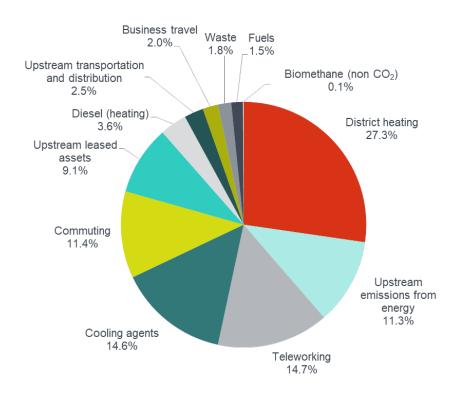
Building-related emissions (electricity, natural gas, district heating, cooling agents) at our rented sites in Berlin and Vienna represent 9.1% of the EPO's reported carbon footprint. We do not have full operational control of these buildings. Nevertheless, we cooperate with the landlords to implement energy efficiency measures when possible: in 2022, this led to a significant reduction of

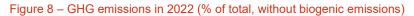
⁹ According to the GHG Protocol, the category includes: emissions for the extraction, production and transportation of fuels consumed by the EPO; emissions for the extraction, production and transportation of fuels consumed in the generation of electricity, steam, heating and cooling that is consumed by the EPO; and transmission and distribution losses.

natural gas consumption in Berlin and, consequently, the estimated emissions decreased by 26.0%.

Emissions from the remaining scope 3 categories, namely "Business travel" and the newly added categories "Upstream transportation and distribution" and "Waste generated in operation", together represent about 6% of the EPO total. While business travel increased compared with 2021 following the abolition of the travel restrictions introduced during the pandemic, the increase was marginal due to the adoption of a new eco-friendly travelling guidance encouraging conscious and eco-friendly travelling. For all three categories we can see the positive impact of the digitalisation of our processes (more detail is provided under 5.5 Paper consumption, 5.7 Business travel, and 5.4 Waste).

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, The Hague and the rented space in Vienna, and diesel and petrol used for our emergency generators, boilers and cars. Since these emissions are of minor relevance, they are presented with the core indicators in Annex 3.





Source: EPO

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., data centres, workstations and printers).

Heating energy at the different sites is generated from various sources: district heating in Munich and Vienna (including the rented office space), heat pumps and biomethane in The Hague¹⁰ (respectively in the Main and in the Shell buildings), natural gas in Berlin. In The Hague and Munich, an energy monitoring and control system is connected to software for weather-dependent regulation of our systems to maximise its efficiency.

In 2022, overall energy consumption decreased by over 15% (Table 2), mainly due to the emergency measures introduced to save energy (e.g., change of thresholds for heating and cooling and the automatic off-switch of the lighting in the buildings at 17:00), the implementation of planned improvements (e.g., LED lights in Munich Isar and PH, escalator controls with start/stop automation in Isar) and the low occupancy rates in the first half of the year.

Moreover, during the pandemic the run times of air conditioning and ventilation units, in combination with using only fresh air, were significantly extended for health and safety reasons. In the last months of 2022, the ventilation system was eventually switched back to a normal operating mode. Overall, weather-adjusted heat energy consumption decreased by 7.9% (Table 3).

Heating and cooling the Main building in The Hague

Buried 30 metres into the ground below the Main building, four wells – two hot, two cold – substantially reduce energy consumption and operating costs. With this aquifer thermal energy storage system (ATES), water is transferred to and from the wells via plate heat exchangers installed in the basement of the building. By utilising modern heat pump technology and integrating the ATES heat exchangers into the Main Building's heating and cooling distribution network, heat from the building that would normally be ejected to the surrounding ambient during summer is transferred by the heat exchanger to the two wells for long-term storage. In winter, when heating is required, the process is reversed. The design injection and extraction temperatures for the cold wells are 5.3C and 15.6C and for the warm wells 7.8C and 14.2 C. To ensure the building can cope with extreme winter conditions, two natural gas boilers are installed as back up. In 2022, the heat pumps generated respectively over 2 700 MWh of heating and 1 456 MWh of cooling energy compared to a consumption of 636 MWh of electricity for their operation. Total energy consumption in 2022: 50 984 MWh

-15.5% compared with 2021

Total weatheradjusted heat energy consumption in 2022: 27 035 MWh

-7.9% compared with 2021

¹⁰ In 2022 a small amount of heating energy was generated by burning fuel.

		2020	2021	2022	Change 2021-22 in %
Electricity from	Berlin ¹¹	429	419	351	-16.1
the grid	MUC Isar	7 763	5 943	5 471	-7.9
	MUC PH	9 403	8 021	7 862	-2.0
	The Hague	16 998	14 808	12 438	-16.0 ¹²
	Vienna	457	419	311	-25.7
	Vienna – rented space	0	0	10 ¹²	+100.0
Electricity from solar panels	The Hague	0	0	2	+100.0
Diesel	MUC Isar	6	6	8	+44.8
(emergency power)	MUC PH	32	32	30	-5.0
	The Hague	29	29	153	+429.5
District heating energy	MUC Isar	8 746	9 814	8 470	-13.7
	MUC PH	9 951	10 525	7 638	-27.4
	Vienna	622	714	389	-45.6
	Vienna – rented space	0	0	16 ¹³	+100.0
Natural gas	Berlin	1 900 ¹⁴	2 110 ¹⁵	1 530 ¹⁶	-27.5
	The Hague	6 592	0	0	0
Biomethane	The Hague	0	7 446	5 746	-22.8
Diesel (heating)	The Hague	0	0	524	+100.0
Diesel (vehicles)	MUC Isar	21	20	3	-85.7
	The Hague	16	11	12	+9.0
Petrol (vehicles)	MUC Isar	0	0	6	+100.0
	The Hague	8	9	14	+54.4
All inputs	EPO total	62 973	60 324	50 984	-15.5

¹¹ 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.

¹² The decrease is partially due to the migration of the data centre in The Hague to Luxembourg

¹³ No data from landlord available. Figure estimated based on average mean annual heat energy per square meter in office buildings in Austria.

¹⁴ Figure has been updated compared with last year's report due to updated consumption figures from the landlord in Berlin.

¹⁵ Figure has been updated compared with last year's report due to updated consumption figures from the landlord in Berlin.

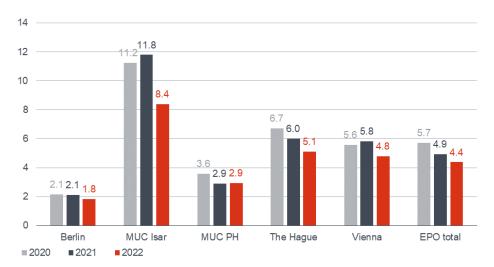
¹⁶ Consumption based on preliminary meter readings from the landlord, not on invoices as in the years before.

Table 3 – Weather-adjusted total heat energy consumption (MWh per year)

	2020	2021	2022	Change 2021-22 in %
Berlin	2 107 ¹⁷	1 963 ¹⁷	1 806 ¹⁸	-8.0
MUC Isar	9 324	9 338	9 376	+0.4
MUC PH	10 586	10 086	8 353	-17.2
The Hague ¹⁹	7 176	7 305	7 037	-3.7
Vienna	637	676	445	-34.1
Vienna – rented space	0	0	19 ²⁰	+100.0
Total	29 829	29 367	27 035	-7.9

The positive trend is reflected in our performance indicators "Total electricity consumption per employee" and "Weather-adjusted heat energy consumption (input) per heated floor space" which dropped respectively from 4.9 to 4.4 MWh per employee (Figure 9) and 68 to 63 kWh per square meter (Figure 10).





Source: EPO

¹⁷ Figure has been updated compared with last year's report due to updated consumption figures from the landlord in Berlin.

¹⁸ Consumption based on preliminary meter readings from the landlord, not on invoices as in the years before.

¹⁹ The Hague data does not include the electricity required to operate the heat pumps.

²⁰ No data from landlord available. Figure estimated based on average mean annual heat energy per square meter in office buildings in Austria.

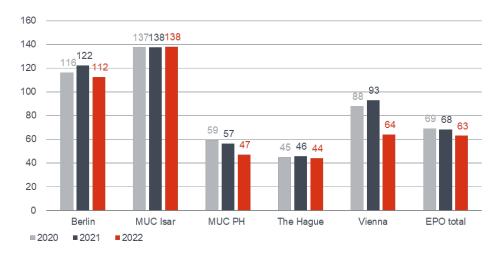


Figure 10 – Weather-adjusted heat energy consumption (input) per heated floor space $(kWh/m^2)^{21}$

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.

Water consumption rose by 11.6 % in comparison to 2021 (Table 4 and Figure 11 for the related consumption per employee), primarily due to higher occupancy rates in our buildings, and a larger increase in The Hague due to the filling of the pond around the Main building, which took place twice for technical reasons. In the future it is planned to stop filling the ponds, with a positive effect on water consumption.

Total water consumption in 2022: 95 231 m3

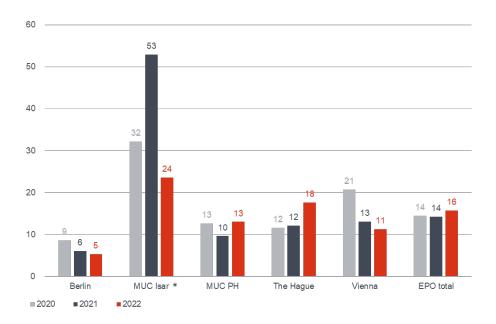
+11.6% compared with 2021

²¹ Electricity used for heat pumps in The Hague is not included.

Table 4 – Water consumption (m3 per year)

	2020	2021	2022	Change 2021-22 in %
Berlin	1 725	1 201 ²²	1 021	-15
MUC Isar	22 246	26 682	15 422	-42.2
MUC PH	33 363	26 484	35 031	+32.3
The Hague	29 469	29 988	43 023	+43.5
Vienna	1 700	943	648	-31.2
Vienna – rented space	0	0	86 ²³	+100
Total	88 503	85 298	95 231	+11.6

Figure 11 – Freshwater consumption per employee (m³/empl)



*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. Source: EPO

²² In last year's report, data for 2021 was not available and 2020 consumption was used. This is now corrected on the basis of the information provided by the landlord.

²³ No data from landlord available. Figure estimated based on mean annual water consumption per employee from 2019 to 2021 at the owned site in Vienna.

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.

Total paper waste decreased, the main driver remaining the digitalisation of the patent grant process and the consequent reduction in paper consumption (see 5.5 Paper consumption). The increases in the Munich PH and Vienna are a consequence of clean-up actions and the disposal of old archives of paper files.

Plastic waste remains low, with minor changes in Munich Isar and in The Hague respectively because of the renovation work and packaging waste. The amounts of food waste and grease separator waste also increased in Munich and The Hague due to the reopening of the canteens. In Vienna and in Berlin the canteen remained closed. As of November staff in Berlin can order lunch via an online service (no separate food waste reported in view of the minimal quantities).

Renovation works contributed to the increase in hazardous waste (e.g., fluorescent tubes, batteries, insulation and electrical material) and in construction waste, including plasterboards, prefabricated plaster, mixed metals and aluminium (e.g., Isar Daylight Project). However, they also raised the opportunity for organising donations to staff of old furniture and equipment in Berlin, Munich and Vienna, promoting a circular economy and reduction of waste by re-using and re-cycling.

GHG Protocol Scope 3 "Waste generated in operations"

As of 2022, we have included in our GHG Protocol inventory emissions from third-party disposal and treatment of waste produced in our operations. This category includes emissions from disposal of both solid waste and wastewater. Here, we apply the waste-type-specific method which involves using specific emission factors per type of waste and method of treatment (e.g., recycling, incineration, or landfill). In absence of primary data and comprehensive sources specific to our hosting countries, we use the emission conversion factors from the UK Department for Environment, Food & Rural Affairs, which are highly regarded in the literature.

The method allows us to better understand our environmental impact and take steps to reduce it, such as improving waste separation or avoiding unnecessary packaging. In 2022, the emissions reported in this category amounted to $69 \text{ t } \text{CO}_2\text{e}$ (1.8% of the EPO total).

Total paper waste in 2022: 365 t

-3.7% compared with 2021

Table 5 – Total waste generation (t per year)

	2020	2021	2022	Change 2021-22 in %
Residual waste				
Berlin ²⁴	40	40	40	0
MUC Isar	34	21	23	+10.8
MUC PH	59	30	32	+4.0
The Hague	89	44	43	-3.7
Vienna	15	15	13	-16.7
Vienna – rented space	0	0	1	+100.0
Total	238	151	151	+0.1
Paper waste			1	
Berlin	18	19	11	-39.8
MUC Isar	137	167	121	-27.9
MUC PH	96	64	105	+64.6
The Hague	157	105	58	-45.2
Vienna	24	24	70	+191.7
Vienna – rented space	0	0	0	0
Total	432	379	365	-3.7
Plastics			1	
Berlin	4.7	4.7	4.7	0
MUC Isar	0.80	0.72	2.25	+212.5
MUC PH	2.0	0.24	0.39	+62.5
The Hague	0.66	0.36	2.3	+538.9
Vienna ²⁵	0	0	0	0
Total	8	6	10	+59.9
Food waste				
Berlin	7.2	0.86	0	-100.0
MUC Isar	13	0.72	7.2	+900.0
MUC PH	30	0.63	11.62	+1 744.4
The Hague	24	11	14	+25.4
Vienna ²⁶	0	0	0	0
Total	74	13	33	+144.3
Grease separator waste				
Berlin	11	0	0	0
MUC Isar	132	22	67	+204.3
MUC PH	102	23	8	-66.7
The Hague	53	23	30	+31.2
Vienna	0	0	0	0
Total	297	67	104	+54.3

²⁴ In Berlin, residual waste and plastics/packaging waste are calculated based on the containers' volume and the number of collections by the disposal companies.

²⁵ Plastic waste is not collected separately and is therefore included in the figures of residual waste.

²⁶ 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). The former is relevant for assessing the carbon footprint of the goods

we purchased, the latter better reflects the impact of the ongoing digitalisation of our core business. An important instrument to monitor our progress is the paper consumption dashboard. This has been improved to include details on trends at departmental level, including the consumption of employees who have since retired and were formerly missing in the reported figures²⁷.

In 2022, printing reached a record low of 17.5 million sheets of paper, over 30% less than in 2021. For comparison, while reducing our stocks, we only procured 13 million sheets, 58.6% less than in 2021 (Table 6) and about 110 million sheets less than in 2019 when the Strategic Plan was launched (-89%). Accordingly, paper consumption per product (procured sheets) decreased to a new all-time low since the introduction of EMAS (Figure 12).

Looking forward, the increasing adoption of MyPortfolio, our web-based online service for parties to proceedings before the EPO, and the extension of its functionalities are expected to positively impact the number of documents we print and mail to externals.

GHG Protocol Scope 3 "Upstream transportation and distribution"

As of 2022, we have included in our GHG Protocol inventory emissions arising from letters, parcels and other logistical deliveries, which are mainly sent from our sites in Munich and The

Hague. We report emissions according to primary data from our service providers or, when not available, our estimates based on the number of items sent and emissions factors provided by the service providers or the International Post Corporation.

Almost all mailings relate to the Patent Grant Process. As for EPO internal printing, the digitalisation of our processes has affected the number of documents sent and of the corresponding amounts of printed paper. Accordingly, in 2022 emissions from transportation and distribution totalled 100 t CO_2e (2.5% of EPO total), down from 172 t CO_2e in 2020 and 128 t CO_2e in 2021.

Total paper consumption in 2022 (procured): 13 million sheets

-58.6% compared with 2021

Total paper consumption in 2021 (printed): 17.5 million sheets

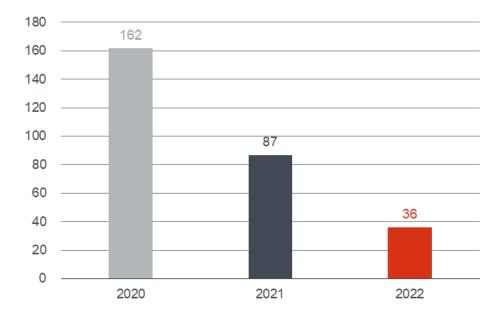
-30.7% compared with 2021

 $^{^{\}rm 27}$ The number of printed sheets in 2021 has accordingly been reviewed upwards from 24.3 to 25.2 million sheets.

Table 6 – Total procured paper (paper sheets per year)

	2020	2021	2022	Change 2021-22 in %
Berlin	1 403 000	410 000	96 500	-76.5
Munich	29 600 000	14 140 000	5 020 000	-64.5
The Hague	33 840 000	16 900 000	7 920 000	-53.1
Vienna	108 400	75 100	0	-100
Total	64 951 400	31 525 100	13 036 500	-58.6

Figure 12 – Paper consumption (procured sheets) per product



Source: EPO

5.6 ICT sustainability



Some 4% of global greenhouse gas emissions come from the IT sector, and this figure is rising in the coming years. As a knowledgeintensive organisation, the EPO is highly dependent on Information and Communication Technology (ICT) for its core business and will

become even more so as it continues to digitise all its processes. ICT sustainability is therefore an essential aspect of the EPO's environmental performance. With increasing demands on ICT systems and end-to-end digital workflows, it is essential to choose environmentally friendly options and find sustainable and efficient ways to operate them.

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.

Since 2020, an ICT Energy Consumption dashboard is available to monitor the consumption of the ICT infrastructure components of the main data centres (DC) in Munich, The Hague and Luxembourg, as well as all central and decentralised printers at the EPO. In 2022, we decommissioned our mainframe, re-platformed our ICT infrastructure and completed the move of our infrastructure from the DC in The Hague to a new state-of-the-art DC in Luxembourg. As a result, the total electricity consumption of the ICT infrastructure in The Hague and Luxembourg DCs decreased by 355 MWh in 2022 compared to 2021 (from 3 041 MWh in 2021 to 2 686 MWh in 2022), a saving equivalent to the average annual electricity consumption of 95 households in Europe.

The EPO adopted a strategy to make increasing use of cloud computing solutions, therefore it is key to also monitor that footprint. Moving to the cloud has indeed more impact on lowering carbon emissions than optimising data centres on EPO premises. Improving a data centre's power usage effectiveness (PUE) is very expensive and results in limited carbon reduction. Accordingly, by the end of 2022, we launched a carbon footprint dashboard covering Google cloud services used by the EPO. This will be progressively extended to other main cloud services, e.g. Microsoft Azure and Office 365 to name a few, once the data becomes accessible.

The EPO has adopted ecodesign best practices in the development of digital services. We started with the new intranet and the new EPO.org services. They are built from a technical point of view, with the aim of improving the performance of the service and reducing the impact of digital services on servers, the network, and users' devices. To be effective, we have selected 20 best practices among about 115 published practices for digital sobriety. These 20 best practices have been applied during the development of the new intranet and have been subject to regular assessment through external audits. The final audit of the new intranet version in production resulted in a good score of 70% for ecodesign compliance.

Overall electricity consumption in the data centres in The Hague and Luxembourg in 2022: 2 686 MWh

-12% compared with 2021

The launch of two self-developed e-learning courses on digital responsibility and eWaste sobriety and the DigiDetox survey, combined with the organisation of employee events such as Cyber Clean-up Day and International E-Waste Day, helped to further raise employee awareness of more sustainable ICT.

According to the Cap Gemini Research Institute's Sustainable IT Survey, December 2020-January 2021, 89% of organisations recycle less than 10% of their total hardware. At the EPO in 2022, our eWaste service provider repaired and reused about 50% of our 4 200 decommissioned digital devices and recycled 100% of the rest in a secure way. During the ISO 27001 information security certification in 2022, the auditor concluded that our asset return is well managed. This service is also offered to staff for the disposal of their private devices. By limiting the number of devices and extending the life of our equipment at the EPO and beyond, we limit the EPO's carbon footprint, as around 75% of product emissions come from the manufacture, upstream transport and disposal of digital devices.

5.7 Business travel



Up to 2019, business travel was a significant contributor to the EPO's carbon footprint with 1300 tCO2e reported emissions. Duty travel restrictions were introduced at the beginning of the pandemic in March 2020 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. With the progressive lifting of the COVID-19 travel restrictions, emissions from business travel totalled 79 t CO₂e, 2% of the EPO's total GHG emissions reported. While this appears as a steep increase compared with previous year, 2021 was an exceptional year with business travel emissions approaching zero (3 t CO₂e) due to travel bans. In 2022 the business travel emissions remained low (Table 7) and 94% below the pre-pandemic year 2019.

Business travel by flight is responsible for 94.9% of total emissions in this category, mostly relating to trips to EPO contracting states (50.9%) and between EPO sites (24.4%).

Leveraging the benefits of the digital videoconferencing tools, a wide range of activities, including training and outreach, have successfully migrated to online formats, drastically reducing duty travel as well as travel by our stakeholders to attend our events and meetings. The EPO has also adopted ten key principles of eco-friendly duty travel, encouraging the use of trains where feasible or avoiding stopovers for long-haul air travel.

GHG emissions from air travel in 2022: 79 t CO₂e

-94% compared with 2019

Table 7 – GHG emissions from business travel (kg CO₂e)

	2020	2021	2022	Change 2021-22 in %
Flights	108 706	2 712	75 298	+2 677
Rail	399	0	367	-
Public transport	1 371	14	365	+540
Taxi	2 698	57	866	+6 086
Private cars	1 903	223	2 412	+982
Total	115 077	3 006	79 308	+ 2 538

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 a direct environmental impact are catering, cleaning, and technical facility management.

These services have been significantly affected by the pandemic and by the new ways of working. We have adjusted the cleaning cycle for our offices in line with the actual occupancy of the buildings and flexible use of office space (i.e., workplaces on demand), 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. Building on the results of the previous year, we continued to convert our office supplies to green versions. We also foster biodiversity and ensure a better, healthier environment by leveraging the large green spaces around our buildings in Munich, The Hague and Vienna. There, we plant native tree and plant species to help insects and birds throughout the year, apply certified organic fertilisers, bioherbicides and bioinsecticides, and use electrical equipment to maintain the green areas to reduce noise pollution and gas emissions.

Looking forward, we intend to expand the perimeter of our reported emissions to include the goods and services we purchase. Accordingly, we are reviewing our procurement processes towards a more systematic consideration of sustainability criteria (e.g., green procurement), whereby the requirements will be different according to the types of goods procured, in line with our commitment to a more circular economy.

5.9 Employee commuting and teleworking



Early in 2021, we internally launched the staff commuting dashboard to raise awareness of emissions caused by employees travelling to and from work. As employees were asked to work from home during the pandemic, commuting emissions decreased significantly. At the

same time, we acknowledged the shift in emissions away from our premises due to teleworking (i.e., employees working remotely). In 2022, estimated emissions from commuting and teleworking totalled 1 027 t CO₂e, slightly lower than the previous year (Figure 13).

The EPO pro-actively promotes sustainable mobility. During the European Mobility Week, we published a mobility guide to illustrate available options at all EPO sites. More than 2 100 bike racks and dedicated repair stations are available on our premises. Additionally, charging stations and lockers for e-bike batteries are available in The Hague and Munich, while Berlin and Vienna will follow.

To support colleagues who still need to drive to work in transitioning to more sustainable solutions, in 2022 we have equipped 8% of our parking spaces with EV chargers, which are available free of charge. The capacity will be further extended by the end of 2023 to 20% of the total parking spaces. Accordingly, we now take into consideration the impact of Electric Vehicles (EV) in estimating emissions in this category (see Methodology).

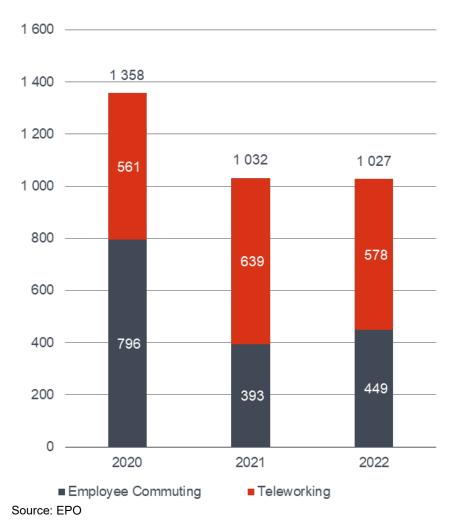


Figure 13 – GHG emissions from employee commuting and teleworking (t CO2e)

5.10 Communication and staff engagement



Communications during 2022 aimed to raise awareness both internally and externally to the EPO of our holistic approach to sustainability, including environmental sustainability and how we support the UN SDGs, working closely with the newly appointed Chief

Sustainability Office. Further aims were to convey that the EPO promotes innovation as a force for good, supporting innovators in their efforts to solve global challenges and contributing to the UN SDGs for a more sustainable world, with initiatives such as the launch of the Clean Energy platform and Green Tech web pages.

In March, we launched EcoChat, an informal channel for colleagues to exchange ideas, best practices and tips on environmental matters. At the same time, the Environmental Hub regrouped under the motto "Measure, Act, Engage" all relevant content already available on our Intranet, including the dashboards on paper consumption, ICT energy consumption, employee commuting, and business travel. The information was then moved to the newly created area dedicated to sustainability in September as part of the new intranet, raising the internal visibility of the topics even further.

External events were promoted via targeted internal communication. Examples are "Earth hour 2022", "Cyber world clean-up day", "European mobility week" and "International e-waste day", which coincided with the launch of the e-waste service (see 5.6 ICT sustainability). Moreover, several internal events focused on environmental sustainability (see Action Plan), a highlight being the live lecture on liquid metal battery from Donald Sadoway, MIT Professor of Materials Chemistry and 2022 European Inventor Award winner.

All initiatives were the result of cross-departmental collaboration, demonstrating the strong personal engagement of our staff in terms of raising awareness and sharing information for a more sustainable future. The high level of participation and the lively contributions indicate how close the topic is to the hearts of our staff.

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, the EPO promotes the potential of the patent system in addressing climate change. These partnerships are 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 2022, focusing its initiatives on the UN SDG 7 "Affordable and clean energy", the EPO published several Patent insights reports: in May on "Electrolysers", and in October on "Innovation trends in electrolysers for hydrogen production" (in co-operation with the International Renewable Energy Agency). In November the Espacenet clean energy platform was launched, which facilitates scientists and engineers in accessing patent information containing some of the most advanced technical knowledge on clean energy.

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.

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 administration²⁸ and uses them as inspiration in developing improvement measures.

The tables below present the main actions implemented in 2022 and those planned for 2023 and 2024. 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 8 – Status icon



Completed

In progress

(X) (V) Cancelled Planned

²⁸ Commission Decision (EU) 2019/61 of 19 December 2018.

Total number of improvement measures completed in 2022: 36

6.1 Action Plan: initiatives completed in 2022

Action	Site	Benefits	Status	Impact
Extend carbon footprint calculation to further material scope 3 categories	All sites	Reduce carbon footprint	\bigcirc	<u>(@)</u>
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	\bigotimes	<u>م</u>
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	\odot	<u>کی</u> ۲۹۹۹ کی
Donate old EPO furniture to staff and local charities to extend its life cycle	Berlin, Munich and Vienna	Reduce waste	\bigcirc	
Collection and donation of clothes and toys	Munich	Promote reuse and reduce waste	\bigcirc	8*8 🕲 🗑
Thermal insulation of district heating admission and heat exchanger in Isar and PH	Munich	63 MWh per year	\bigcirc	
Exchange of escalator controls (start/stop automation)	Munich Isar	110 MWh per year	\oslash	(
Develop concept on LED lighting in Isar	Munich Isar	Reduce direct electricity consumption	\bigcirc	()
Install LED lighting in corridors of PH 8	Munich PH	33 MWh per year	\bigcirc	© (%)
Assess feasibility of installing beehives on the roof of PH 7	Munich PH	Increase local biodiversity	\bigcirc	B
Increase the flowering plants on the roof of the PH 7 building to help save bees	Munich PH	Increase local biodiversity	\bigcirc	Ð
Install LED lighting in auditorium and in bridge from Shell to Hinge building	The Hague	6 MWh per year	\bigcirc	(b)
Participation in local green mobility initiative Zuid-Holland Bereikbaar	The Hague	Raise awareness and reduce emissions from employee commuting	\odot	<u>کی</u> ۲۹۹ (۲۹۹)

Action	Site	Benefits	Status	Impact
EU mobility week	Munich, Berlin and Vienna	Raise awareness and reduce emissions from employee commuting	\odot	(b) AfA (b)
Availability in our premises of a weekly bike check and repair service	Munich, The Hague	Promote sustainable mobility and reduce emissions from employee commuting	\odot	
Replace light bulbs in desktop lights with LED lights	Berlin	135 kWh per year	\bigcirc	<u>ک</u>
Assess the feasibility of adding chargers for e-cars for up to 20% of parking spaces	Munich, The Hague	Reduce emissions from employee commuting	\bigcirc	<u>کی</u> ۲۳۹ (۲۰۰۵)
Integrate sustainability criteria into the following contracts (start date in 2022):		Reduce environmental impact relating to the procurement of goods and services		
Canteen	Berlin		\bigcirc	87% () () () () () () () () () () () () () (
 Construction company in charge of (partial) demolition and renovation of new office building 	Vienna		\bigcirc	A
 Handling of e-waste 	All sites		\bigcirc	🦚 <u>ଲ</u> 🎓
 Patent insight reports on the following topics: Innovation trends for electrolysers in hydrogen production, May 2022 Space-borne sensing and green applications, October 2022 	n/a	Easier access to patent information on climate change mitigation or adaptation technologies	\oslash	X

Action	Site	Benefits	Status	Impact
 External events: Tech day 2022 technologies of transformation Trilateral Symposium on IP and the environment Capacity Building on green technologies for patent examiners IP5 offices and IP5 Industry 10-year anniversary Search matters 2022 – "Clean and green IP" 	n/a	Promote cooperation and awareness about environmental sustainability	\bigotimes	
Launch of the "Clean energy platform" and "Green Tech" pages	n/a	Easier access to patent information on renewable energy, carbon intensive industries and energy storage	\oslash	
Launch of Environmental Hub (now under Environmental Sustainability)	All sites	Promote awareness and promote internal knowledge	\bigcirc	Ark.
Eco Chat – informal channel on environmental topics	All sites	Promote internal awareness and share knowledge	\bigcirc	ଳିନ୍ଦି
ICT cloud carbon footprint dashboard	All sites	Raise awareness, reduce emissions from ICT	\bigcirc	<mark>ନିନ୍</mark> ଧ
Internal iLearning modules:E-waste sobrietyDigital responsibility	All sites	Promote internal awareness	\bigcirc	878 (
Live lecture with award-winning MIT professor – Donald Sadoway – on liquid metal battery	All sites	Increase internal knowledge in a new technology	\bigcirc	Are
Sustainable mobility guide	All sites	Promote awareness and provide options	\oslash	Brand Brand

Action	Site	Benefits	Status	Impact
 Sustainability beats: Sustainability is in our DNA Preventing catastrophic oil spill in the Red Sea Towards a sustainable EPO – Donation of furniture Towards a sustainable EPO – E-waste Towards a sustainable EPO – Donation of toys and clothes Bee happy 	All sites	Promote awareness and promote internal knowledge	\odot	A
DG4 All togetherPanel on environmental sustainabilityRoadmap to sustainability	All sites	Promote awareness and promote internal knowledge	\oslash	<mark>&&</mark>
 CIN meetings: Sustainability is in our DNA European energy crisis Awareness session on ICT sustainability ICT sustainability drop-in session Environmental programme – A big step forward 	All sites	Promote awareness and promote internal knowledge	\bigotimes	878
iLearn day – Sustainability	All sites	Promote awareness and promote internal knowledge	\oslash	<mark>.878.</mark>
 Campaigns: Earth hour 2022 Cyber world clean-up day European mobility week International e-waste day campaign publication of e-waste service 	All sites	Promote awareness and promote internal knowledge	\bigotimes	Ar A
Intranet certification – Eco index	n/a	Promote a responsible development of our digital communication	\bigotimes	8:8 🕲 🐢
"MyEPO Portfolio" into in force – patent application box	n/a	Simplify patent application through process digitalisation	\oslash	x E m 癌
Launch of the Vienna Green Hub project – refurbishment meeting the criteria to a carbon positive building, considering LCA	Vienna	Refurbishment considering best environmental practices	\oslash	

Action	Site	Benefits	Status	Impact
Integrate sustainability criteria into: Framework contract for New Normal Furniture Concept	All sites	Reduce environmental impact relating to the procurement of goods and services	\bigotimes	Criteria included, however tender not awarded
Planting trees initiative	Munich	Raise awareness	\bigotimes	Initiative cancelled due to COVID restrictions
Pilot on energy storage	Munich PH	Reduce upstream emissions from electricity consumption	\bigotimes	No viable solution identified in feasibility study

6.2 Action Plan: initiatives planned for 2023-2024

Action	Site	Benefits	Status	Impact
Implementation of software for weather- dependent regulation of heating and cooling	Munich Isar	ch Isar 1 917 thermal and 223 electrical MWh per year		
Implementation of software for weather- dependent regulation of heating and cooling	The Hague	1 582 thermal and 490 electrical MWh per year	\bigcirc	
EPO-IEA study on "Hydrogen patents for a clean energy future"	n/a	Easier access to patent information on climate change mitigation or adaptation technologies	\odot	
Update of the ICT iLearning modules	All sites	Promote ICT sustainability	\oslash	868 (
IPO green webinar	n/a		\bigcirc	<mark>ere</mark>
New event management policy	All sites	Raise awareness and contribute to carbon neutrality	\bigcirc	<u>(</u>

Action	Site	Benefits	Status	Impact
Codefest on Green Plastics to develop an Al model (23/02/2023)	n/a	Use AI to identify patents in green plastics	\bigcirc	Ar A
VICO by default to oral proceedings in opposition	n/a	Reduce business travel need and emissions	\bigcirc	
Come and clean the green!	All sites	Engage staff in the promotion of a local clean up initiative	\odot	
Collection of office supplies not in use and promotion of "Second-hand shop"	Munich, The Hague	Promote reuse and reduce waste	\bigcirc	
Emission and conversion factors table	n/a	Engage staff, inclusive and standardised communication	\bigcirc	<mark>A.W</mark>
Development of a dashboard on energy consumption of owned buildings	All sites	Raise awareness, reduce emissions from energy	\bigcirc	<mark>ନିଂଲି</mark> 🙆
Development of a carbon footprint dashboard	All sites	Raise awareness, reduce the EPO carbon footprint	\oslash	Af A .
Include emissions from teleworking in the environmental dashboard	All sites	Raise awareness, reduce emissions from teleworking	\oslash	() () () () () () () () () () () () () (
Launch of platform on firefighting technologies	n/a	Easier access to patent information on firefighting technologies		X
EPO-EIB study on the commercialisation of inventions contributing to the EU Green Deal	n/a	Easier access to patent information on climate change mitigation or adaptation technologies		X
Include emissions from teleworking in the environmental dashboard	All sites	Raise awareness, reduce emissions from teleworking		<u>کی ج</u>
Develop a high-level plan for carbon neutral buildings by 2030	All sites	Reduce energy consumption and related emissions		@

Action	Site	Benefits	Status	Impact
Install e-bike chargers	All sites	Reduce emissions from employee commuting		<u>کی</u> ۲۹۹ (۲۰۰
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		(
Install e-charging stations in 20% of parking lots	Munich, The Hague	Reduce emissions from employee commuting		<u>کی</u> کی ا
Participation in local green mobility initiatives. For example: Zuid-Holland Bereikbaar and EU mobility week	All sites	Reduce emissions from employee commuting and awareness		<u>کی جب</u> م ا
Reduce the number of LAN printers	Munich, The Hague	Reduce carbon footprint		© (%) <u> </u>
Participate in local initiative Klimapakt3	Munich	Reduce carbon footprint	(<u>کی ۲</u>
Creation of environmental sustainability tips to publish in the CKT page	All sites	Raise awareness	(ക്ക
Extend carbon footprint calculation to further material scope 3 categories (purchased goods and services)	All sites	Assess and reduce carbon footprint	()	<u>کی ایک</u>
Encourage staff to reduce paper consumption by printing less and shifting to follow-me printing mode, which saves on green cover sheets	All sites	Up to 5 million paper sheets per year	()	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Lunchtime talks and events on different topics (e.g., pollution of the oceans, transfer of green technology, home cooling systems, home battery and solar panels, plastics/packaging) organised by the environmental groups	All sites	Raise awareness	(<mark>Af A</mark>
E-mobility fair organised by the local environmental group	The Hague	Raise awareness	(8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Collection and donation of clothes and toys	Munich	Promote reuse and reduce waste	()	8#8 @ <u>@</u>
Increase the flowering plants on the roof of the PH 7 building to help save bees	Munich PH	Increase local biodiversity	(L)	

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		
 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 insight reports on Offshore wind plants	n/a	Easier access to patent information on climate change mitigation or adaptation technologies	()	X
Expand the inclusion of cloud services emissions in the ICT dashboard		Raise awareness, reduce the ICT emissions	()	8:8 (@)
New EPO.org developed eco-design and Eco Index	n/a	Promote a responsible development of our digital communication	()	8:8 ()
Campaigns: Cyber world clean-up day World water day Earth hour Earth day World environment day European mobility week International e-waste day	All sites	Promote awareness and promote internal knowledge	()	<mark>A.W</mark>

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 9 – Conversion factors for GHG emission sources

Emission source	Source of activity data	Emission factor 2022	Source of emission factor
Energy			
Natural gas ²⁹ (The Hague)	Invoices, meter readings (if invoices are not available)	0.183 kg CO ₂ e/kWh (scope 1) 0.030 kg CO ₂ e/kWh (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO₂emissiefactoren 2022
Natural gas ¹⁷ (Berlin)	Data provided by landlord	0.221 kg CO ₂ e/kWh (scope 3 – leased assets)	Umweltbundesamt Deutschland, 55/2022, Emissionsbilanz erneuerbarer Energieträger, Bestimmung der vermiedenen Emissionen im Jahr 2021
Biomethane ¹⁷ (The Hague)	Invoices, meter readings (if invoices are not available)	0.183 kg CO ₂ /kWh (biogenic) 0.000489 kg CO ₂ e/kWh (scope 1)	Factor for natural gas (The Hague) due to comparable chemical composition; CO ₂ reported under biogenic, CH ₄ and N ₂ O reported in scope 1
		0.05 kg CO ₂ e/kWh (scope 3)	Certificate from energy provider
Heating oil (The Hague)	Invoices for the refill of the tank	2.657 kg CO ₂ e/l (scope 1) 0.816 kg CO ₂ e/l (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO2emissiefactoren 2022
Diesel (Munich)	Fuelling records of cars, runtimes and refuelled quantities	2.700 kg CO ₂ e/l (scope 1) 0.714 kg CO ₂ e/l (scope 3)	Umweltbundesamt Deutschland, 55/2022, Emissionsbilanz erneuerbarer Energieträger, Bestimmung der vermiedenen Emissionen im Jahr 2021
Diesel (The Hague)	of emergency generators	2.657 kg CO ₂ e/l (scope 1) 0.816 kg CO ₂ e/l (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO₂emissiefactoren 2022
Diesel (Vienna)		2.493 kg CO ₂ e/l (scope 1) 0.642 kg CO ₂ e/l (scope 3)	Umweltbundesamt Österreich, 2022
Petrol (The Hague)		2.377 kg CO ₂ e/l (scope 1) 0.655 kg CO ₂ e/l (scope 3)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO₂emissiefactoren 2022

²⁹ Data and calculations based on higher heating value.

Emission source	Source of activity data	Emission factor 2022	Source of emission factor
District heating (Munich)	Invoices, meter readings (if invoices	0.066 kg CO ₂ e /kWh (scope 2+3)	Certificate from energy provider
District heating (Vienna)	are not available)	0.022 kg CO ₂ e /kWh (scope 2+3)	Certificate from energy provider
Electricity (100% renewable) Munich	Invoices, meter readings (if invoices are not available)	0 kg CO ₂ e/kWh (scope 2 market- based)	Electricity provider
		0.057 kg CO ₂ e/kWh (scope 3)	Umweltbundesamt Deutschland 15/2022, Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 – 2021
Electricity (100% renewable) The Hague	Invoices, meter readings (if invoices are not available)	0 kg CO ₂ e/kWh (scope 2 market- based)	Electricity provider
		0.004 kg CO ₂ e/kWh (scope 3 market- based)	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO₂emissiefactoren 2022
Electricity (100% renewable) Vienna	Invoices, meter readings (if invoices are not available)	0 kg CO ₂ e/kWh (scope 2 market- based)	Electricity provider
		0.003 kg CO₂e/kWh (scope 3 market- based)	Study "The inventory and life cycle data for Norwegian hydroelectricity" (2020), M. Silva & I. Saur Modahl, Ostfold Research
Electricity (100% renewable) Berlin	Invoices	0 kg CO ₂ e/kWh (direct emissions for electricity generation, reported in scope 3 – leased assets)	Electricity provider
		0.057 kg CO ₂ e/kWh (upstream emissions of electricity, reported in scope 3 – leased assets)	Umweltbundesamt Deutschland 15/2022, Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 – 2021
Cooling agents			·
R134a	Maintenance	1 430 kg CO ₂ e/kg	Umweltbundesamt Deutschland, 2019, GWP ₁₀₀
R401a	protocols	1 182 kg CO ₂ e/kg	according to IPCC AR4
R404a		3 922 kg CO ₂ e/kg	
R407c		1 774 kg CO ₂ e/kg	
R410a		2 088 kg CO ₂ e/kg	
R448a		1 387 kg CO ₂ e/kg	
R449a		1 397 kg CO ₂ e/kg	
R452a		2 140 kg CO ₂ e/kg	

Emission source	Source of activity data	Emission factor 2022	Source of emission factor
Upstream transportation and distribution			
National transport of a letter Deutsche Post	Internally registered amount	0.35 kg CO ₂ /letter	Deutsche Post (2022)
International transport of a letter Deutsche Post	Internally registered amount	0.300 kg CO ₂ /letter	Deutsche Post (2022)
Transport of a letter The Hague	Internally registered amount	2020: 0.0409 kg CO ₂ /letter 2021, 2022: 0.0378 kg CO ₂ /letter	International Post Corporation
Transport of a parcel The Hague/Munich	Internally registered amount	2020: 0.5138 kg CO ₂ /parcel 2021, 2022: 0.4805 kg CO ₂ /parcel	International Post Corporation
Waste		1	
Residual waste	Invoices from Recycling, energy	DEFRA Conversion factors 2022: full set (for	
Paper waste	disposal companies	recovery (combustion), landfill	advances users), https://www.gov.uk/government/publications/green
Plastic waste			house-gas-reporting-conversion-factors-2022
Food waste		Energy recovery (combustion & anaerobic digestion), composting	
Grease separator waste		Recycling, energy recovery (combustion & anaerobic digestion), composting	
Construction waste		Recycling, energy recovery (combustion), landfill	
Electronic waste		Reuse, recycling,	
ICT electronic waste		energy recovery (combustion), landfill	
Other		Recycling, energy recovery (combustion), landfill	

Emission source	Source of activity data	Emission factor 2022	Source of emission factor
Business travel			
Flight	Travel agency	0.084 kg CO ₂ e/passenger- km (long haul) 0.139 kg CO ₂ e/passenger km (short haul)	American Express Global Business Travel
Rail	Duty travel requests	0.028 kg CO ₂ e/passenger - km	European Energy Agency, 2015, specific CO ₂ emissions per passenger-km rail travel in Europe
Taxi	Duty travel requests	3.8 kg CO₂e/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 ₂ e/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 means of transport when distance is more than 500 km)	0.120 kg CO₂e/km	European Energy Agency, 2019, average CO ₂ emissions from new passenger cars registered in the EU in 2018
Employee commuting		I	
Car	Estimates on km travelled per mode of transport based on: • Average	Fuel (0.120 kg CO ₂ e/km) EV (0 kg CO ₂ e/km) if EV in our premises > 1,9%	European Energy Agency, 2019, average CO ₂ emissions from new passenger cars registered in the EU in 2018
Public transport	commuting distance per site	0.028 kg CO₂e/passenger-km	European Energy Agency, 2015, specific CO ₂ emissions per passenger-km rail travel in Europe
Bike or walking	 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 kg CO ₂ e/trip	

Emission source	Source of activity data	Emission factor 2022	Source of emission factor
Teleworking			
Electricity (Germany)	electricity consumption per employee based on: • working days per year • hours worked per day • percentage of	0.466 kg CO ₂ e/kWh (0.409 kg CO ₂ e/kWh + 0.057 kg CO ₂ e/kWh)	IINAS 2022, Der nichterneuerbare kumulierte Energieverbrauch und THG-Emissionen des deutschen Strommix im Jahr 2021 sowie Ausblicke auf 2030 und 2050 + Umweltbundesamt Deutschland 15/2022, Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 – 2021
Electricity (Netherlands)		0.427 kg CO ₂ e/kWh	Milieu Centraal, Stimular, SKAO, Connekt, Rijksoverheid, CO₂emissiefactoren 2022
Electricity (Austria)	 IT equipment power³⁰ light power 	0.202 kg CO₂e/kWh	Umweltbundesamt Österreich, 2022
Data transmission	Average emissions per working hour	0.004 kg CO₂e/h	Umweltbundesamt Deutschland, 2020, Energie- und Ressourceneffizienz digitaler Infrastrukturen Ergebnisse des Forschungsprojektes "Green Cloud-Computing"
Heating energy mix (Germany)	Average heating energy consumption	0.234 kg CO ₂ e/kWh	GEMIS 5.0, Wärme-mix-DE-HH/KV-2020/en
Heating energy mix (Netherlands)	per employee based on: • average	0.263 kg CO ₂ e/kWh	GEMIS 5.0, Wärme-Heizen-mix-NL-HH/KV-2020
Heating energy mix (Austria)	 heating energy consumption per m² in Germany³¹ estimated size of working area estimated additional heating energy consumption due to teleworking (%) 	0.230 kg CO₂e/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.

³⁰ IT equipment refers to screen 38", PC, iPad, webcam, headset, wireless keyboard, network, router.

³¹ Germany heating consumption per m² applied to all sites.

Table 10 – 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	3 127 kWh/year	https://www.odyssee- mure.eu/publications/efficiency-by- sector/households/electricity-consumption- dwelling.html#:~:text=Very%20unequal%20level% 20of%20electricity,even%2017%2C000%20kWh %20in%20Norway
	Electricity emission factor – Netherlands	0.369 kg CO₂e/kWh	https://www.co2emissiefactoren.nl/wp- content/uploads/2022/08/CO2emissiefactoren 2022-2015-dd-14-7-2022.pdf, p. 3
Energy consumption	Average energy usage per person in Germany	5 574 kWh/year	https://ec.europa.eu/eurostat/databrowser/view/N RG_IND_ESCcustom_3998409/default/table?la ng=en
	Average people per household in Germany	2.0 people	https://ec.europa.eu/eurostat/statistics- explained/index.php?title=Household_composition _statistics#Increasing_number_of_households_co mposed_of_adults_living_alone
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
Printed paper	Paper sheet A4 (80gr/m²)	0.065 mm thick	https://www.zxprinter.com/support/paper- thickness.html
	The Main	107 m	https://www.epo.org/news- events/news/2019/20190411.html

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	AII	A II	AII	A II	AII
	Data centre	-	BII	BII	C III	AII
	Garages	-	BI	AI	BII	AI
	HVAC	-	BI	AI	AII	AII
	Canteen	-	A III	A III	A III	-
Electricity: GHG emissions		B III	B III	B III	B III	B III
Heating energy: resource consumption	District heating	-	AII	AII	-	B III
	Natural gas / Biomethane	B III	-	_	BII	
	Diesel / Fuel				C III	
	Electricity consumption of heat pumps	_	-	-	AII	-

Environmental aspect and impact		Berlin	MUC Isar	MUC PH	The Hague	Vienna
Heating energy: GHG and other emissions	Natural gas / biomethane	B III	-	-	BIII	-
	District heating	-	B III	B III	-	B III
	Diesel / Fuel				C III	
Fuel consumption: resource consumption	Vehicle fleet	-	CI	-	СІ	-
	Emergency generator	-	C III	C III	C III	-
Fuel consumption: GHG and other emissions	Vehicle fleet	-	CI	-	CI	-
	Emergency generator	-	C III	C III	C III	-
Direct emissions from refrigerants: GHG emissions contributing to global warming		AII	AII	AII	AII	AII
Freshwater for sanitary/canteen use: resource consumption		CII	BII	AII	BII	BII
Freshwater for technical/cooling use: resource consumption		-	BII	BII	BII	-
Wastewater: energy and resource consumption for water treatment, risk of water pollution		CII	BII	BII	BII	BII
Waste – non-hazardous: resource and energy consumption for waste treatment		CII	CII	CII	CII	CII
Waste – hazardous: resource and energy consumption for waste treatment; emissions from waste combustion, risk of environmental pollution		C III	BII	BII	BII	СІІ
Paper: resource and energy consumption for paper production		BII	BII	BII	BII	BII
Risk of environmental accidents: pollution of ground water		CII	BII	BII	BII	CII
Impacts on biodiversity: sealing of soils for construction purposes		C III	CII	CII	CII	CII

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 Iye 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 from energy and cooling agents' losses in 2022: 1 453 t CO₂e

-32.7% compared with 2021

Building-related energy consumption in 2022: 29 479 MWh

Figure 14 – EPO Munich, Isar building



Source: EPO

-14.2% compared with 2021

Figure 15 – EPO Munich, PschorrHöfe complex



Source: EPO

Table 11 - 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	2020	2021	2022	
Gross floor area	m²	91 346	91 346	91 346	
Heated floor area	m²	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	691	504	653	
Emissions					
GHG emissions (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO ₂ e/empl	2.30	1.97	1.20	
SO ₂ (fuels)	kg/empl	0.00	0.00	0.00	
NO _x (fuels)	kg/empl	0.01	0.02	0.01	
Particulates (fuels)	kg/empl	0.00	0.00	0.00	
Energy, water and paper consumption		I			
Electricity consumption	kWh/empl	11 235	11 791	8 378	
Heat energy consumption (district heating)	kWh/m ²	129	145	125	
Adjusted heat energy consumption (district heating)	kWh/m ²	137	138	138	
Renewable energy as a percentage of total consumption (electricity and heat)	%	51.26	45.81	48.48	
Diesel consumption	I	2 662	2 573	1 126	
Petrol consumption	l			700	
Water consumption	m ³ /empl	32.19	52.94	23.62	
Paper consumption (procured)	sheet/empl	8 908	4 340	1 500	
Waste generation		I			
Residual waste	kg/empl	49.61	41.61	35.57	
Paper/cardboard	kg/empl	198.15	331.81	184.61	
Plastics	kg/empl	1.16	1.43	3.45	
Food waste	kg/empl	18.96	1.43	11.03	
Food waste per meal served	kg/meal	0.39	0.00	0.40	
Grease trap residues	kg/empl	191.10	43.35	101.84	
Hazardous waste	kg/empl	5.33 ³²	32.60	61.23	

³² Figure has been updated compared with last year's report due to an update in the hazardous waste database.

EPO Munich – PschorrHöfe 1-8

Address	Bayerstr. 34, 80335 Munich, Germany				
Status	Owned by EPC	C			
Reference values	Unit	2020	2021	2022	
Gross floor area	m²	276 180	276 180	276 180	
Heated floor area	m²	178 320	178 320	178 320	
Built surface area (sealed)	m²	42 641	42 641	42 641	
Total nature-oriented area on site	m ²	18 422	18 422	18 422	
Number of employees	empl	2 632	2 754	2 693	
Emissions					
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO ₂ e/empl	0.68	0.42	0.25	
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	3 572	2 913	2 919	
Total heat energy consumption (district heating)	kWh/m ²	56	59	43	
Adjusted heat energy consumption (district heating)	kWh/m²	59	57	47	
Renewable energy as a percentage of total energy consumption	%	52.70	50.63	58.21	
Diesel consumption	1	3 180	3 180	3 020	
Water consumption	m ³ /empl	12.68	9.62	13.01	
Paper consumption (procured)	sheet/empl	8 908	4 340	1 500	
Waste generation					
Residual waste	kg/empl	22.49	11.01	11.70	
Paper/cardboard	kg/empl	36.34	23.26	39.15	
Plastics	kg/empl	0.74	0.09	0.14	
Food waste	kg/empl	11.30	0.23	4.31	
Food waste per meal served	kg/meal	0.29	0.00	0.21	
Grease trap residues	kg/empl	38.62	8.28	2.82	
Hazardous waste	kg/empl	2.85	4.76	1.96	

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.

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, optimal 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, BREEAM³³) 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.

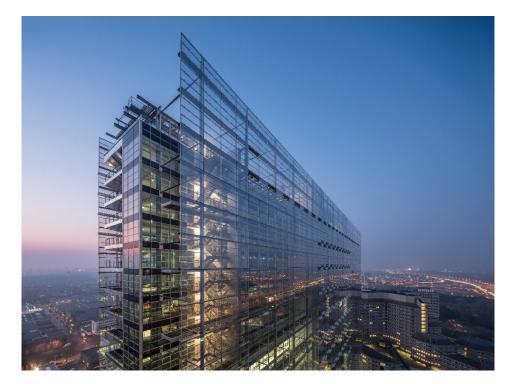
GHG emissions from energy and cooling agents' losses in 2022: 830 t CO₂e

+7.8% compared with 2021

Building-related energy consumption in 2022: 18 863 MWh

-15.4% compared with 2021

Figure 16 – EPO The Hague, New Main building



Source: EPO

³³ BREEAM (Building Research Establishment Environmental Assessment Method) is a leading method for master planning projects, infrastructure and buildings. It recognises and reflects the value of higher-performing assets across the built environment lifecycle, from new construction to in-use refurbishment.

Table 12 – 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 EPC)			
Reference values	Unit	2020	2021	2022	
Gross floor area	m²	218 966	217 465	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	2 536	2 474	2 438	
Emissions					
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO2e/empl	0.67	0.31	0.34	
SO ₂ (fuels, natural gas, biomethane)	kg/empl	0.00	0.00	0.01	
NO _x (fuels, natural gas, biomethane)	kg/empl	0.15	0.17	0.22	
Particulates (fuels, natural gas, biomethane)	kg/empl	0.00	0.00	0.00	
Energy, water and paper consumption			I		
Electricity consumption	kWh/empl	6 703	5 986	5 102	
Heat energy consumption (2020: natural gas, 2021: biomethane, 2022: biomethane and diesel)	kWh/m ²	41	47	39	
Adjusted heat energy consumption (2020: natural gas, 2021: biomethane, 2022: biomethane and diesel)	kWh/m²	45	46	44	
Renewable energy as a percentage of total energy consumption	%	72.06	100	97	
Diesel consumption	Ι	4 532	4 004	16 559	
Petrol consumption	I	940	1 041	1 607	
Water consumption	m ³ /empl	11.62	12.12	17.65	
Paper consumption (procured)	sheet/empl	13 344	6 831	3 249	
Waste generation			I		
Residual waste	kg/empl	35.16	17.94	17.53	
Paper/cardboard	kg/empl	61.94	42.50	23.61	
Plastics	kg/empl	0.26	0.15	0.94	
Food waste	kg/empl	9.53	4.56	5.80	
Food waste per meal served	kg/meal	0.28	0.21	0.17	
Grease trap residues	kg/empl	20.72	9.09	12.11	
Hazardous waste	kg/empl	1.02	2.20	5.07	

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., lighting systems and cooling ceilings in specific areas). 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, and an X-ray machine in the post room. 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 from energy and cooling agents' losses in 2022: 358 t CO₂e

-26.0% compared with 2021

Paper consumption in 2022: 96 500 sheets

-76.5% compared with 2021

Figure 17 – EPO Berlin



Source: EPO

Table 13 - Environmental law and relevant facilities, EPO Berlin

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

Most relevant areas of environmental law Relevant facilities/activities

EPO Berlin

Address	Gitschiner Str. 103, 10969 Berlin, Germany			
Status	Rented by EPO			
Reference values	Unit	2020	2021	2022
Gross floor area	m²	18 100	20 000	20 000
Heated floor area	m²	18 093	16 064	16 064
Built surface area (sealed) ³⁴	m ²	11 250	11 250	11 250
Total nature-oriented area on site ²¹	m ²	12 339	12 339	12 339
Number of employees	empl	201	198	192
Emissions				
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO ₂ e/empl	2.18 ³⁵	2.44 ³³	1.86
SO ₂ (natural gas)	kg/empl	0.01	0.0233	0.00
NO _x (natural gas)	kg/empl	0.5233	0.59 ³³	0.00
Particulates (natural gas)	kg/empl	0.01	0.01	0.00
Energy, water and paper consumption			I	
Electricity consumption ³⁶	kWh/empl	2 134	2 114 ³³	1 829
Heat energy consumption (natural gas)	kWh/m ²	105 ³³	131 ³³	95
Adjusted heat energy consumption (natural gas)	kWh/m²	116 ³³	122 ³³	112
Renewable energy as a percentage of total energy consumption	%	18.42 ³³	16.56 ³³	18.67
Water consumption	m ³ /empl	8.58	6.06 ³³	5.32
Paper consumption (procured)	sheet/empl	6 980	2 071	503
Waste generation		I		
Residual waste	kg/empl	199.00	202.02	208.33
Paper/card	kg/empl	89.55	95.00	58.96
Plastic	kg/empl	23.48	23.83	24.58
Food waste	kg/empl	35.82	4.36	0.00
Food waste per meal served	kg/meal	0.70	0.00	0.00
Grease trap residues	kg/empl	53.73	0.00	0.00
Hazardous waste	kg/empl	0.00	0.00	0.00

³⁴ Area rented by the EPO (50% of the total building area).

³⁵ Figure has been updated compared with last year's report due to updated consumption figures from the landlord in Berlin.

³⁶ 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.

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 carbon neutral building ("Vienna Green Hub", see 1. The European Patent Office). The building has been emptied in October 2022. As of November 2022, the staff is working in a rented office space in Vienna. To ensure comparability with previous report, energy and water consumption and waste generation in the rented space is reported in chapter 5.

However, the figures are only estimates because the metering system does not allow an exact assessment of the EPO's consumption by the landlord. Since the rented space is not part of the EMAS scope, the core indicators reported below cover only the owned site until October 2022. They will be reported again when the renovated building is in operation. GHG emissions from energy consumption for construction works will be reported in the scope 3 category "Capital goods" when the building is completed. GHG emissions from energy and cooling agents' losses in 2022: 10 t CO₂e

-55.6% compared with 2021

Water consumption in 2022: 648 m³

-31.2% compared with 2021

Figure 18 – EPO Vienna



Source: EPO

Table 14 - 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 ³⁷	Unit	2020	2021	2022	
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	82	72	65	
Emissions			I		
Greenhouse gases (electricity, heating and fuels incl. upstream emissions, cooling agents)	t CO ₂ e/empl	0.23	0.30	0.15	
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	5 571	5 813	4 783	
Heat energy consumption (district heating)	kWh/m ²	86	98	54	
Adjusted heat energy consumption (district heating)	kWh/m²	88	93	61	
Renewable energy as a percentage of total energy consumption	%	55.60	51.45	57.54	
Diesel consumption	I	16	0	0	
Water consumption	m ³ /empl	20.73	13.10	9.97	
Paper consumption (procured)	sheet/empl	1 322	1 043	0	
Waste generation					
Residual waste	kg/empl	182.93	208.33	192.31	
Paper/card	kg/empl	292.68	333.33	1 076.92	
Plastics ³⁸	kg/empl	N/A	N/A	N/A	
Food waste ³⁹	kg/empl	N/A	N/A	N/A	
Hazardous waste	kg/empl	0.24	2.50	19.40	

³⁷ The reference values are indicated for the owned office in Vienna. Please note that we do not calculate KPIs for the Vienna rented space.

³⁸ Plastic waste is not collected separately in Vienna and is therefore included in the figures of residual waste.

³⁹ 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.

The Chief Sustainability Officer acts as EMAS Management Representative and is responsible for implementing and further developing the environmental management system in the EPO with the support of the Environmental Management Officer. In addition, site representatives plan, co-ordinate and monitor local environmental activities and ensure that environmental aspects are integrated into everyday operations at each site.

Together with business area representatives from each directorate-general (DG), the Environmental Management Officer and the site 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 in their respective departments, 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 19 – EMAS governance structure

		Pres	ident	
Roles		<u> </u>		
	Mai	nagement Adviso	ory Committee (M	AC)
	DG 0 Presidential Area	DG 1 Patent Granting Process	DG 4 Corporate Services	DG 5 Legal / International Affairs
EMAS Management representative				
Central Environmental Team Environmental Management Officer Site representatives (BE/MN/TH/VI)				
Business area representatives	Chief Economist Communication	DG 1 representative	Business Information Technology Central Procurement FM Technical Services Occupational Health & Safety	DG 5 representative
Other stakeholders EPO staff Environmental groups Landlords				
External experts				

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 29th of Mai 2023

Dr.-Ing. Hans-Peter Wruk Environmental Verifier

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

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Dr. Hans-Peter Wruk Environmental Verifier