Europäisches Patentamt
European Patent Office
Office européen des brevets

Environmental Report 2018

In accordance with Regulation (EC) No 1221/2009 of the European Parliament and the Council and Commission Regulation (EU) 2017/1505

Environmental Report

Foreword

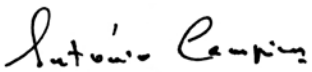
At the EPO, our environmental activities are governed by the Eco-Management and Audit Scheme (EMAS[1]), with the goal of reducing the consumption of heat, electrical energy, water and paper, and cutting both waste and CO_2 emissions. This report presents the environmental impact of the EPO's operation at all its sites in 2018 and compares the results with those achieved in 2017.

2018 saw some significant events and changes to the EPO's environmental framework, which stand to have a positive impact on our organisation's sustainability performance:

- The new Main building, incorporating a range of environment sustainability innovations, was opened and all staff gradually moved into its new and modern working environment. Following a period of parallel operation, the old Main building was closed and the leases on the Le Croisé and Rijsvoort sites terminated at the end of the year.
- For the first time, the EPO has identified the environmental impact of internal and external stakeholders on the Office's environmental performance, providing a more holistic view, and helping to identify new opportunities for improvement.
- Environmental KPIs were added to the Balanced Scorecard to heighten management awareness of EMAS and to support the policy of continuously improving the EPO's environmental performance.

The EPO will continue to pursue its environmental programme enthusiastically in the future and this report therefore also sets out future plans in this field. Within this report the reader will see an established a programme of action for 2019/20 that have the potential to elicit energy savings and achieve ambitious CO_2- saving goals over the coming years.

António Campinos



President of the European Patent Office
Environmental Report

[1] In accordance with Regulation (EC) No 1221/2009 of the European Parliament, the Council and Commission Regulation (EU) 2017/1505 and the EU Commission Regulation (EU)2018/2026

Ten years of EMAS at the EPO

In 2018 the EPO ...

... had
6 653 employees

... operated buildings with a total gross floor area of
723 499 m^2

... had a carbon footprint[2] of
8 768 t CO_2e

In ten years of EMAS at the EPO, we have reduced our yearly ...

... electricity consumption by
13% and 6.3 m kWh

... water consumption by
9% and almost 12 000 m^3

... residual waste generation by
24% and 180 t

... heat energy consumption by
20% and 10 m kWh

... paper consumption by
3.9% and 4.9 m sheets of paper

... CO_2-emissions from energy consumption by
68% and 13 500 t

[2] The EPO's carbon footprint is calculated from emissions caused by business travel (air and rail), heating energy, electricity and refills for escapedcooling agents in air-conditioning units

1. Environmental policy

In 2009, the President approved the EPO's environmental policy. Our environmental policy provides a strategic framework for all activities at the EPO and emphasises the importance of environmental protection at the Office. The policy is binding upon all departments. Senior managers are committed to ensuring that this policy is well understood and applied in all departments.

Our environmental policy is formulated as follows:
The European Patent Office consumes energy for heating and electrical power, as well as large volumes of water and paper, and generates both waste and CO_2 emissions. It has addressed these environmental issues by introducing an environmental management system that meets the requirements of the eco-management and audit scheme EMAS.

With a view to improving its environmental performance, the EPO continuously assesses the environmental impact of its operations. It sets objectives and long-term targets and reviews them on a regular basis.

The following principles and objectives govern the EPO's actions:
- Promote responsible environmental awareness within the EPO and communicate and implement this policy at all levels of the Office
- Minimise the consumption of energy, water, paper and other resources
- Minimise waste and environmental pollution
- Comply with relevant environmental legislation, administrative regulations and other requirements
- Provide suitable resources to fulfil the Office's environmental policy obligations
- Promote local environment protection initiatives and schemes and encourage active involvement in them
- Communicate this policy to stakeholders

Since the EPO considers it the responsibility of every staff member to help meet the objective of achieving optimum environmental protection, it provides its staff with appropriate training, advice and information and encourages them to develop new ideas on how to implement the Office's environmental policy effectively.

In 2015 the President approved a supplementary document on environmental policy, enshrining this policy in the budget planning cycle and ensuring the involvement of senior management. The key elements of this new structure are:
- a framework for all environmental activities
- the integration of EMAS projects into the normal yearly budget cycle
- the clear commitment of the EPO's senior management to environmental topics
- an enlarged Environmental Report, part of which is the EMAS Environmental Statement
- the appointment of additional environmental representatives for all relevant EPO units.

2. The European Patent Office

The European Patent Office (EPO), with nearly 7 000 staff, is the second largest international organisation in Europe. It has its headquarters in Munich and offices in The Hague, Berlin, Vienna and Brussels. Since 2009 it has been certified as complying with the eco-management and audit scheme EMAS at all its sites apart from Brussels (due to its small size).

Total energy consumption in 2012: 87 758 MWh

Total energy consumption in 2018: 76 578 MWh

Saving: **13%**

The EPO's EMAS-certified sites are:

- European Patent Office Munich I (Isar building), Germany
  Bob-van-Benthem-Platz 1, 80469 Munich
- European Patent Office Munich II (PschorrHöfe 1–8), Germany
  Bayerstr. 34, 80335 Munich
- European Patent Office Berlin, Germany
  Gitschiner Str. 103, 10969 Berlin
- European Patent Office The Hague I (Main, Shell and Hinge), Netherlands
  Patentlaan 2, 2288 EE Rijswijk
- European Patent Office The Hague II (Le Croisé), Netherlands
  Verrijn Stuartlaan 2a, 2288 EL Rijswijk
- European Patent Office The Hague III (Rijsvoort), Netherlands
  Visseringlaan 19-23, 2288 ER Rijswijk
- European Patent Office Vienna, Austria
  Rennweg 12, 1030 Vienna

Another EMAS-certified site in Munich (European Patent Office Munich III (Capitellum), Germany, Landsberger Str. 30, 80339 Munich) was rented by the EPO until 31 March 2015, when it was vacated and the staff working there moved to other sites. This Environmental Report continues to show the consumption data for the Capitellum up to and including 2015, to ensure the consumption figures' comparability.

In accordance with EMAS Regulation (EC) No 1221/2009 and Commission Regulation (EU) 2017/1505, the EPO issues an (updated) Environmental Report every year, setting out its environmental data and reporting on its progress in environmental performance. The present report is an updated version and can be downloaded from the EPO website (www.epo.org).

EMAS has helped the EPO to reduce its energy consumption: in 2012 the total energy consumption amounted to 87 758 MWh, in 2018 it was 76 578 MWh. A number of campaigns by the central environmental team and the voluntary environmental group have increased awareness of EMAS and environmentally-friendly behaviour.

2.1 EPO Munich

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

The Isar building and PschorrHöfe 1-8 have an oil and/or grease trap and a kitchen/canteen and dish-washing area. All the 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.

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

Electricity consumption in 2012: 23 334 MWh

Electricity consumption in 2018: 19 122 MWh

Saving:
18%

Heat consumption in 2012: 22 839 MWh

Heat consumption in 2018: 17 244 MWh

Saving:
24.5%

Site/building	Gross floor area	Net building area[1]	Workplaces	Status
Isar building	91 400 m²	67 847 m²	4 420	Proprietor
PschorrHöfe 1-8	276 300 m²	178 320 m²		Proprietor

[1] In a change from previous Environmental Reports, the net building area is shown instead of the gross floor area excluding the basement.

Figure 1

EPO Munich, Isar building

Figure 2

EPO Munich, Isar building

Figure 3

EPO Munich, Pschorrhöfe complex

Figure 4

EPO Munich, Pschorrhöfe complex

2.2 EPO The Hague

The Hague is the EPO's second largest duty station after Munich. For much of 2018, it still comprised three building complexes in Rijswijk, one (by far the largest) owned by the EPO and two rented. During 2018, the EPO took possession of two new buildings – New Main and New Hinge – on the largest of those sites. All staff were moved to this main site and the leases on the rented buildings Rijsvoort and Le Croisé were terminated at the end of the year. This situation led to the operation of several buildings, e.g. both New and Old Main, in parallel for some of the year.

The new Main building is partly heated and cooled by ground water heat pumps. Otherwise, all buildings are heated by natural gas. There is no information to suggest any land contamination at the sites in The Hague. Under Dutch law the duty station is subject to an "activity decree", a simplified environmental permit.

Construction work on the new Main and new Hinge buildings in The Hague began in 2013 and was completed by summer 2018. The old buildings they replaced are now in the process of being demolished. In several respects the new buildings have been constructed on sustainable principles, e.g. minimisation of environmental impact in the construction phase, greatly reduced energy consumption once in use, optimum and particularly user-friendly air-conditioning. The EPO has voluntarily decided to comply with the certification criteria of multiple standards for sustainable buildings (Bouwbesluit 2012, BREEAM, BNB) and to aim for an energy efficiency rating 20% above the requirements in the 2012 Dutch building regulations. 15% of the energy required for building operation is likely to be generated on-site, e.g. from groundwater heat and solar power. The overall effect of New Main on total energy consumption cannot be quantified at present, as it has not yet been operational for a full year and even its operation over the second half of 2018 was still only in a start-up phase.

Electricity consumption in 2012: 21 602 MWh

Electricity consumption in 2018: 20 823 MWh

Saving:
4%

Water consumption in 2012: 49 336 m^3

Water consumption in 2018: 49 647 m^3

Development:
+0.6%

Most relevant areas of environmental law	Relevant facilities/activities
Rules on general environmental management	Environmental permit, annual environmental report to the municipality of Rijswijk
Pollution regulations governing combustion units of type B	Heating system (natural gas), checked to comply with emissions thresholds
Water regulations	Water discharge into sewage system
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 (approx. 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)
Regulations on climate protection and refrigerants	Cooling installations with at least 5 kg GWP, performance of density checks
Waste regulations	Recycling/separation/disposal of various types of waste, handling of hazardous waste (spent batteries, old fluorescent tubes and waste oil)
Building regulations	Building activities: criteria for renovation/alteration and new buildings
Health and safety	Appropriate risk assessment, fire prevention, restrictions on certain chemical agents, availability of safety information sheets and operating instructions

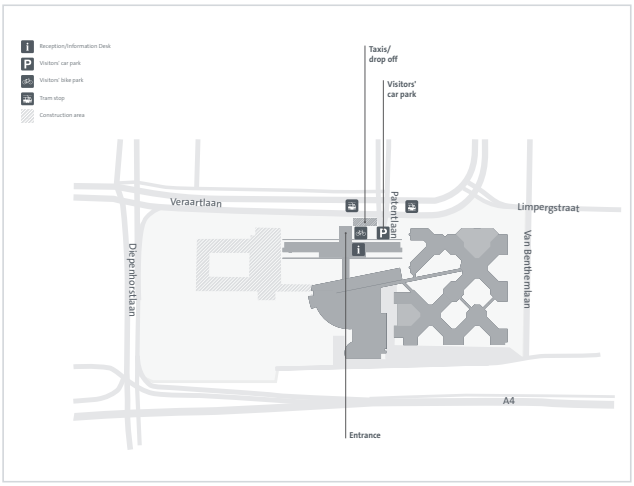
Site/building	Gross floor area	Net building area	Workplaces	Status
Main, Shell, Hinge	237 356 m²	169 584 m²		Proprietor
Le Croisé	28 049 m²	22 376 m²	4050	Rented
Rijsvoort	11 735 m²	10 702 m²		Rented

Figure 5

EPO The Hague, new Main building

Figure 6

EPO The Hague, new Main building



2.3 EPO Berlin

The Berlin sub-office is housed in a building that was constructed in the early 20th century and thus has a historic structure; the age of the building also entails certain deficiencies in its insulation and energy efficiency. The proprietor regularly undertakes structural improvements, some of them extensive, with a view to enhancing the building's energy efficiency.
Major renovation work on the building started in 2017, including measures intended to enhance energy efficiency (e.g. in lighting systems and air conditioning). The cost of this work will primarily be borne by the proprietor, the *Bundesanstalt für Immobilienaufgaben*, with the EPO contributing to individual aspects. Much of the work will be devoted to energy-saving items such as cooled ceilings, thermal insulation and lighting control/modification.
The work is likely to continue until 2023.

Electricity consumption in 2012: 558 MWh

Electricity consumption in 2018: 462 MWh

Saving:
17%

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

Residual waste in 2012: 33 t

Residual waste in 2018: 40 t

Development:
+21%

Most relevant areas of environmental law	Relevant facilities/activities
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)
Building energy efficiency regulations	Building insulation, energy-efficient technologies
Regulations on health and safety and on hazardous materials	Risk assessment, fire prevention, restrictions on certain chemical agents

Site/building	Gross floor area	Net building area	Workplaces	Status
EPO Berlin	18 100 m^2	18 093 m^2	340	Rented

Figure 7

EPO Berlin

2.4 EPO Vienna

Vienna is the smallest of all the EMAS-certified sites, in terms of both gross floor area and staff numbers. The Vienna office uses district heating. Facilities with 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.

Electricity consumption in 2012: 703 MWh

Electricity consumption in 2018: 563 MWh

Saving:
20%

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

Site/building	Gross floor area	Net building area	Workplaces	Status
EPO Vienna	11 420 m²	10 600 m²	120	Proprietor

Figure 8

EPO Vienna

3. Environmental management system

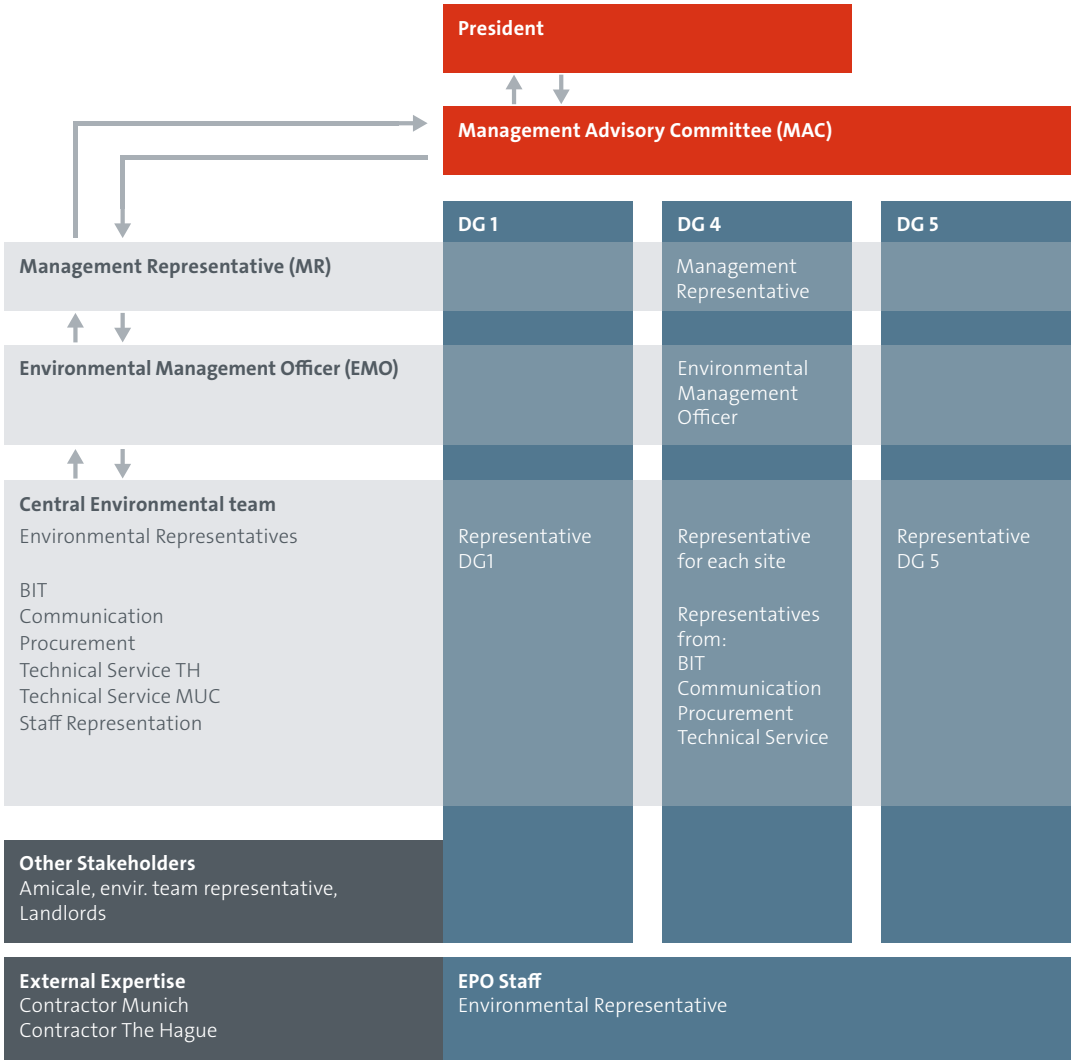
After adopting its environmental policy ten years ago, the EPO implemented an environmental management system under EMAS and took on a leading environmental role as an administrative institution. The management system integrates environmental aspects into all the EPO's operational processes, which are regularly assessed with a view to identifying potential improvements in environmental protection. The EPO regularly evaluates its environmental context to identify relevant stakeholders and their expectations with regard to the environmental management system. All staff are regularly issued with recommendations and information encouraging them to adopt environmentally-friendly behaviour.
The structure of the environmental management system is defined in our environmental management handbook, which applies to all sites.

Environmental management is organised and co-ordinated by the Environmental Management Officer. In addition, there are site-specific procedures and documents. These include environmental data and the environmental programme with suggestions for improvements at each site. The central Environmental Management Officer is in charge of implementing and further developing the environmental management system within the EPO. In addition, there are local environmental representatives from Directorate-General (DG) 4 at each site. They are in charge of planning, co ordinating and monitoring local environmental activities and ensuring that environmental aspects are integrated into everyday operations at the sites. DGs 1 and 5 also each have an environmental representative, who is in charge of integrating environmental aspects into the DG's specialist processes and environment-related activities. Appointing a representative from each DG that falls under the environmental management system strengthens the organisation-wide implementation of EMAS.

The Environmental Management Officer and environmental representatives, together with representatives from Procurement, Information Management, Communication and Technical Services, form the EPO's central environmental team, which meets at least twice a year. A voluntary environmental group initiated by staff in Munich and The Hague supports the team's work and adds its own proposals to the environmental programme. The EPO's environmental management system is also regularly assessed in internal audits, thus ensuring a continuous improvement process. All relevant information is communicated to our staff members via the intranet and info-screens and is made available to the public in this Environmental Report.

Figure 9

EMAS governance structure



4. Compliance with binding obligations

EMAS and the applicable environmental law for the different duty stations constitute external requirements to be met by the EPO and its environmental management system. We have identified the legal requirements and other binding obligations which are relevant for each duty station. They are documented in the legal register for each country in which the EPO is situated. 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 in yearly internal audits. Minor non-compliances detected during the audits have been corrected.

5. Direct environmental aspects[3]

Our activities have an environmental impact. In accordance with our environmental policy we aspire to reduce this impact by applying our environmental management system and continually improving our environmental performance.

To establish a basis for the development of environmental objectives and measures, we identified and evaluated our environmental aspects according to the following criteria:
- potential harm or benefit to the environment
- the condition of the environment
- size, amount, frequency and reversibility of the aspect or impact
- existence and requirements of relevant environmental legislation
- views of interested parties, including our employees.

All significant environmental aspects are recorded and assessed on an annual basis. Based on this assessment new environmental objectives and measures for further improvement are developed. Environmental aspects are subdivided into direct and indirect aspects. The indirect aspects are described in section 6. The main direct environmental aspects at the EPO include energy consumption for electricity and heating, CO_2 emissions from heating energy consumption and business travel, water and paper consumption and residual waste generation.

The environmental data has been compared across all sites in order to assess the relevance of the environmental aspects. The electricity and heating energy data has also been compared with external benchmarks.

Not all these aspects apply at all sites. In Vienna and Berlin, for example, the nature of the meter infrastructure means that the recording of electricity consumption is not as detailed as in Munich and The Hague. In these cases the aspect in question is either assessed at a higher level or not assessed at all.

The environmental aspects have been assigned to the following categories to help assess their relevance and the need for action:
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 the various aspects can be controlled is classified in the following categories:
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

[3] The EMAS core indicators are shown in section 8. Not all environmental data is reported on in section 5 and 8 as some data was not considered as significant in the envtironmental aspects evaluation.

All direct environmental aspects under the EMAS III Regulation have been assessed for relevance to the EPO. Only the aspects that were found to be relevant are included below.

Relevant direct environmental aspects		Berlin	M Isar	M PschorrHöfe	M Capitellum	TH Hinge	TH Shell	TH Main	TH Le Croisé	TH Rijsvoort	Vienna
Resource consumption: electricity	General power	A II	A II	A II	A II	A II	A II	A II	A II	A II	A II
	Data centre	-	A II	A II	-	-	A III	C II	-	-	A II
	Garages	-	B I	A I	-	B II	B II	-	-	-	A I
	HVAC	-	A II	A III	-	A II	A II	A II	-	-	A II
	Canteen	-	A III	AIII	-	AIII	-	C III	-	-	-
Emissions from electricity production		C II	C II	C II	-	C II	C II	C II	C III	C III	C II
Resource consumption: heating energy	General resource consumption	A II	-	-	-	-	-	B II	B II	B II	B II
	Space heating		A I	A I	-	AII	AII	B II	-	-	-
	Hot water	-	B III	B II	-	A II	B II	-	-	-	-
	Humidification	-	B II	-	-	BIII	A II	C II	-	-	-
Emissions from community heating		-	B III	B III	-	-	-	-	-	-	B III
Emissions from gas		B III	-	-	A III	A III	A III	B II	A III	A III	-
Emissions from business travel by plane		A II	A II	A II	A II	A II	A II	A II	A II	A II	A II
Emissions from business travel by other means of transport		C II	C II	C II	C II	C II	C II	C II	C II	C II	C II
Resource consumption: water for sanitary/canteen use		B II	B II	A II	B II	A II	A II	B II	B II	B II	B II
Containment input waste water		-	B II	B II	-	B II	B II	A II	-	-	-
Hazardous substances in waste water		B II	B II	B II	B II	B II	B II	BII	B II	B II	B II
Waste – non-hazardous		B II	B II	B II	B II	C II	C II	C II	C II	B II	B II
Waste – hazardous		C III	B II	B II	B II	B II	B II	B II	C II	C II	C II
Resource consumption: paper		B II	A II	A II	A II	A II	A II	A II	A II	A II	B II
Risk of environmental accidents		C II	B II	B II	C II	B II	B II	B II	B II	C II	C II

Some aspects have received an updated rating compared with the 2017 report in order to reflect changes in 2018. These changes were largely attributable to the move from the old to the new Main building in the Hague: unlike the old Main building, the new Main building has a small data centre and a cafeteria, which are both rated as of comparably low importance. Moreover, the new Main building's cooling and heating system influences several environmental aspects and its cooling machines, humidification and gas boilers now have to be taken into account for their environmental impact. Resource consumption for heating and cooling will decrease in importance owing to the use of heat pumps drawing on water stored at cold and warm temperatures in large underground reservoirs for cooling and heating. At the same time, however, the use of the water reservoirs means that technical water use will become more important and so this aspect has been rated up for the new Main building.

5.1 Overview of all sites

The consumption data for each site and the resulting index figures are an important instrument for assessing current environmental performance, planning and monitoring environmental activities and regularly reviewing the continuous improvement process.

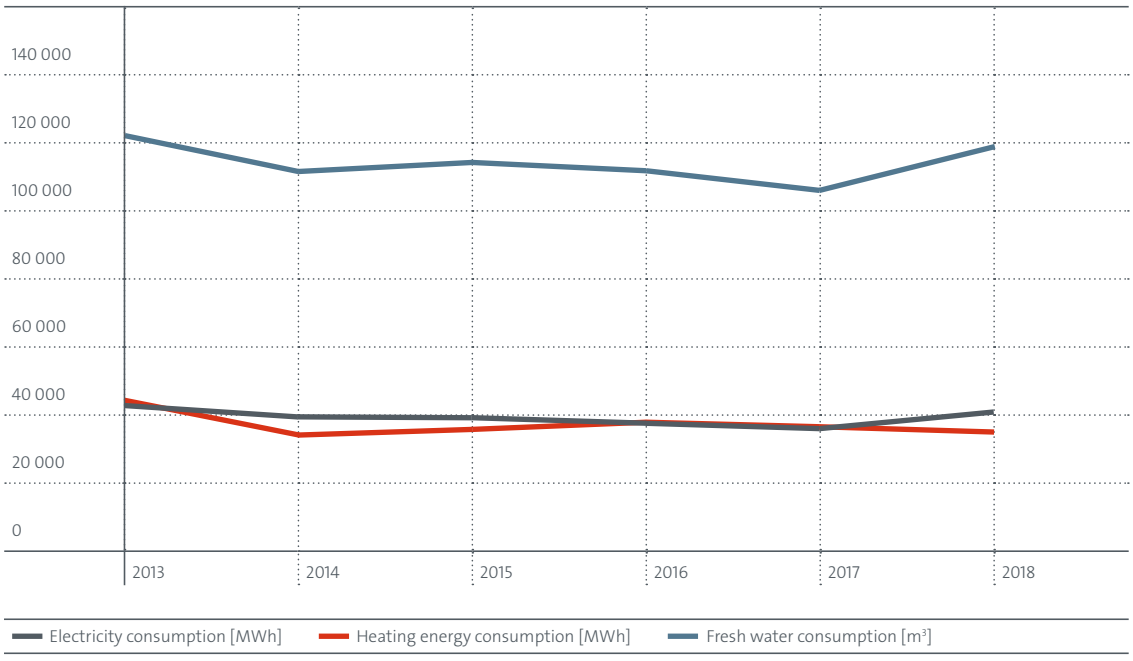
The following tables summarise the chief environmental data for all buildings.

Input	Unit	2013	2014	2015	2016	2017	2018
Electricity consumption	MWh	42 958	39 491	39 225	37 495	36 331	40 971[4]
Heating energy consumption (all factors)	MWh	44 985	33 973	35 739	37 775	36 504	35 607
Fresh water consumption	m^3	122 555	111 515	114 806	112 416	106 156	119 519

[4] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

Figure 10

Input (all buildings)



Output	Unit	2013	2014	2015	2016	2017	2018
Residual waste generation	t	509	560	428[5]	443	422	557
Waste water generation	m^3	119 472	108 537	110 480	106 142	96 067	108 332
CO_2 emissions from electricity and heating energy	t CO_2e	7 792	5 800	6 613	6 848	6 586	6 478[6]

[5] Data for 2015 and 2016 corrected compared to previous reports, due to an improved data base

[6] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

Figure 11

Output (all buildings) – waste water generation and CO_2-emissions from electricity and heating energy

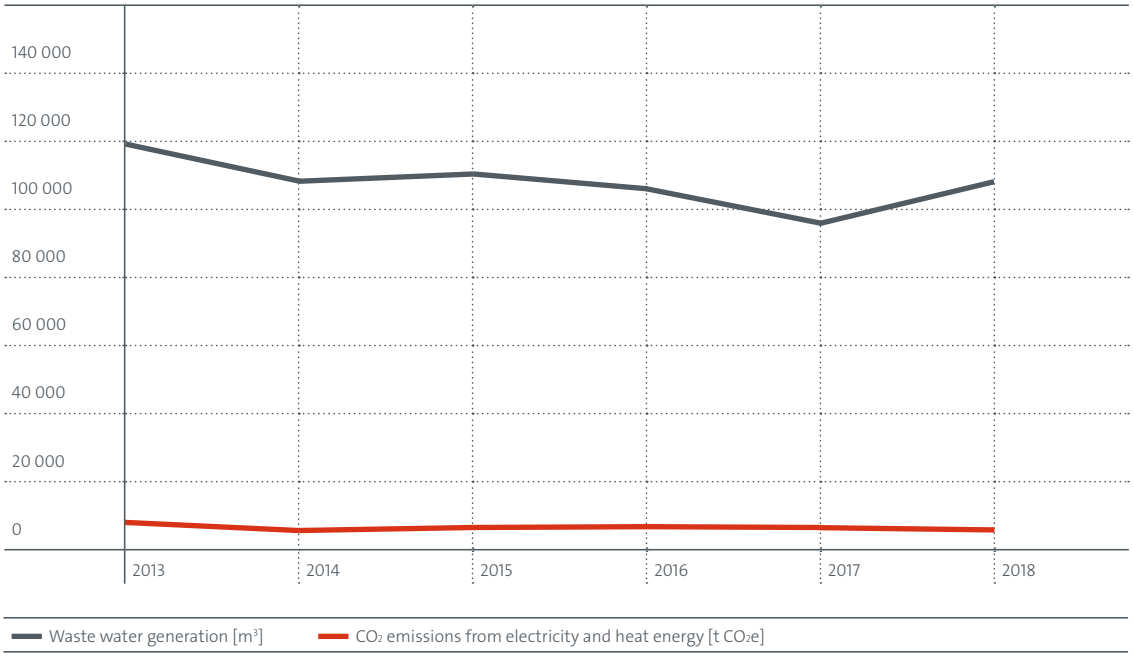
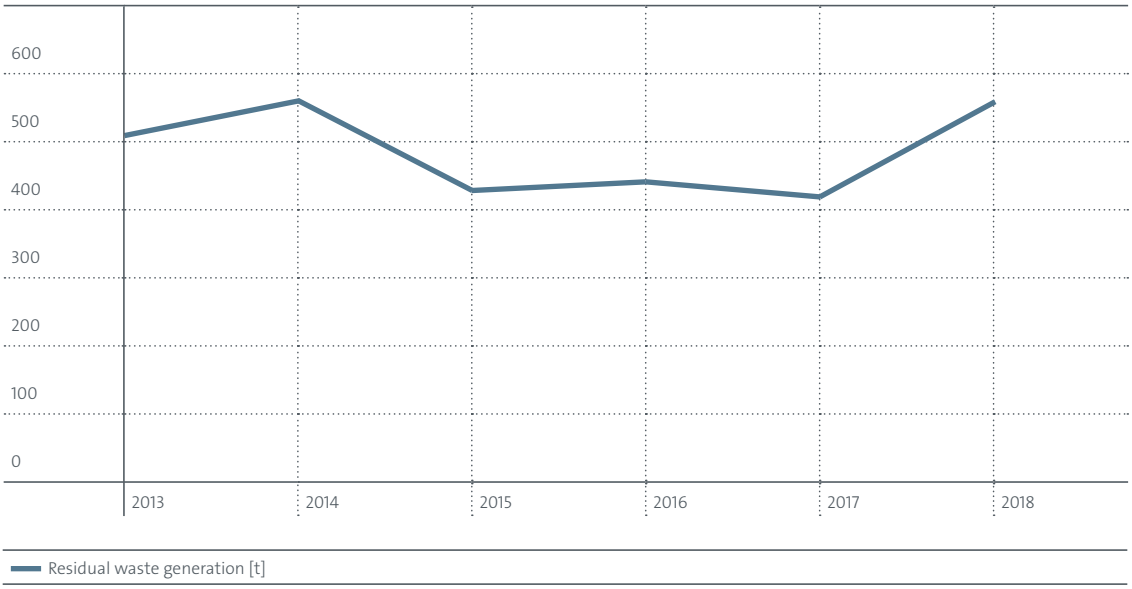


Figure 12

Output (all buildings) – residual waste generation



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 is essentially made up of:
– cooling/ventilation and air-conditioning
– IT
– PCs and printers
– lighting in offices and public areas.

Total energy consumption 2018: 76 578 MWh

+5%
compared to 2017

Heating energy at the different sites is generated from various sources. While Munich Isar, Munich PschorrHöfe and Vienna use district heating, Berlin, Munich Capitellum and all the buildings in The Hague use natural gas.

In The Hague, Munich and Vienna, the energy monitoring and control system provides valuable information on load points (installations, production areas, etc.) where there might be energy saving potential. This information can be used to optimise installations such as HVAC systems (heating, ventilation and air-conditioning), thereby helping to reduce electricity consumption.

The charts below offer a comparison of the total electricity and heating energy consumption at each site. They show both the absolute figures and index figures relative to the size of the sites (shown as consumption per square metre of floor area). Overall energy consumption rose compared to 2017, due to the operation of more buildings in parallel at the Hague site for a certain time frame and the start-up phase of the new Main building.

In 2018, electricity consumption decreased in Munich and Vienna. In Vienna, this was achieved by changes in employee behaviour and past energy-efficiency projects. In Munich, the energy savings at the Isar building were achieved by optimising the air conditioning systems, while those at the PschorrHöfe were mainly down to weather-dependent heating control, ventilation and air conditioning and the fact that Phase 8 was partly vacant during 2018.

The EPO's overall demand for heating energy went down in 2018. However, the weather-adjusted figures[7] show an increase for some of the sites. In other words, heating demand attributable to the weather was much lower in 2018 than in 2017. This can be explained by the fact that 2018 was a comparatively warm year.

[7] Weather-adjusted figures show what would have been consumed if the weather had conformed to what is normal or the long-time average, i.e. they factor out the influence of any unusual weather conditions, e.g. particularly cold winter or hot summer months.

Table 1

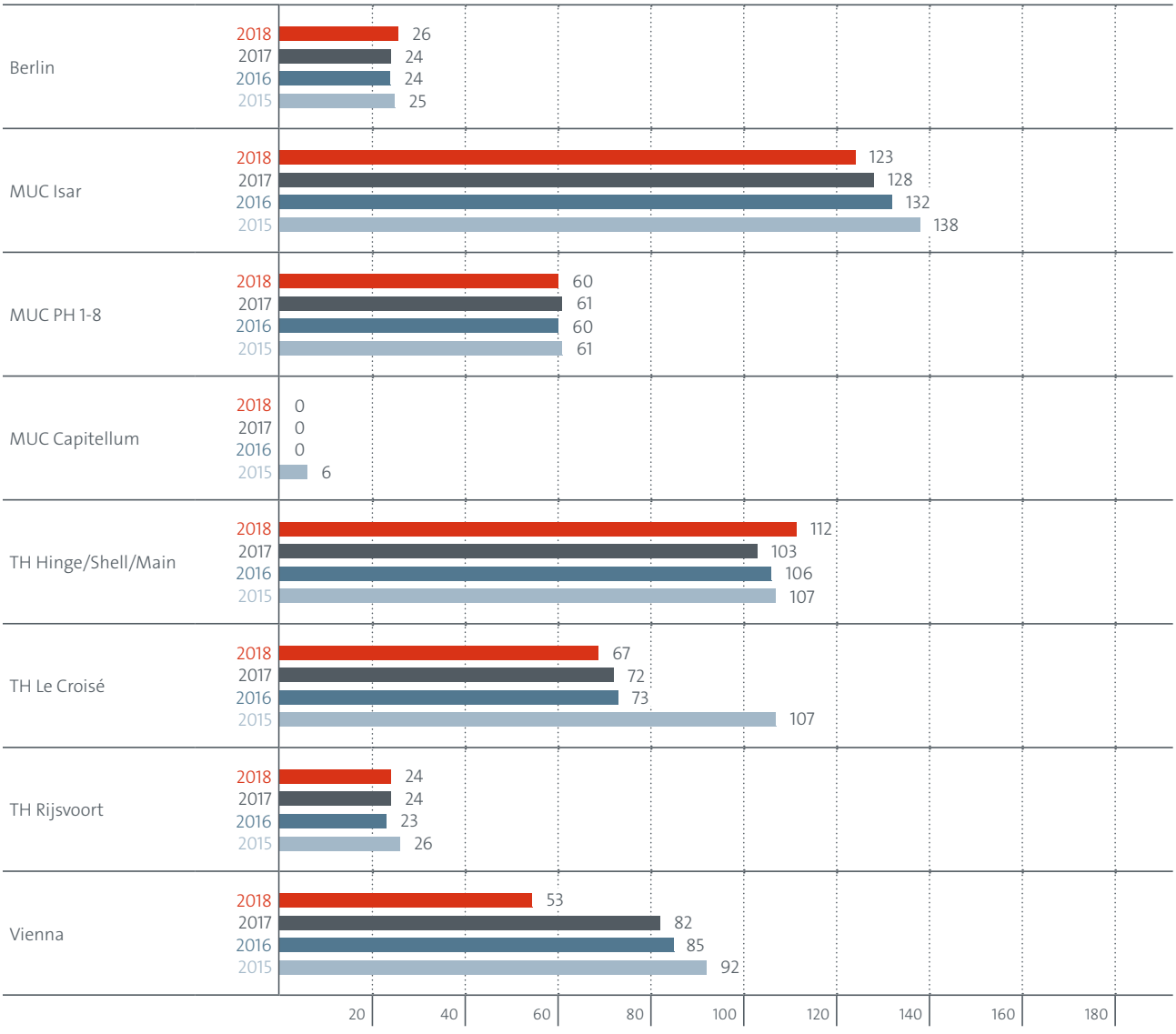
Absolute electricity consumption for all sites 2015-2018 (MWh per year)

	2015	2016	2017	2018	Change 2017-18 in %
Berlin	447	436	432	462	6.9
MUC Isar	9 368	8 937	8 659	8 379	-3.2
MUC PH 1-8	10 923	10 787	10 908	10 743	-1.5
MUC Capitellum	150	0	0	0	0
TH Hinge/Shell/Main	15 016	14 860	13 869	19 065	37.5
TH Le Croisé	2 392	1 629	1 621	1 503	-7.3
TH Rijsvoort[8]	274	241	255	255	0
Vienna	655	606	587	564	-3.9

[8] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

Figure 13

Specific electricity consumption (kWh per m² floor area)[9]



[9] The 2015 figures may differ from those previously published as a better data basis for calculating the square metre floor area has since become available.

New technologies in the new Main building

The new Main building in The Hague is an innovative building that was constructed in a way that goes beyond the building standards of the EU and the Netherlands. Two special features of the building will lead to CO_2-savings. Firstly, solar panels installed on the roof will produce some of the electricity consumed in the building. Even though the EPO purchases electricity from renewable energies, producing it on site is even better as it prevents losses in the grid. Secondly, a system of heat pumps will help to cool the building in summer and heat it in winter. These heat pumps use water that is stored in two large reservoirs under the building, one containing cold and the other warm water. To heat the building, water from the warm reservoir is pumped up through a heat exchanger, where it gives off its heat energy to the water inside the heating system. The water drawn from the warm reservoir cools down as a result and is then transported back to the cold reservoir. It is stored there until the summer, when the whole process works in reverse. The now cold water from underground is pumped up through the heat exchanger and cools down the warmer water in the cooling cycle.
This system will reduce the need to heat with gas boilers in winter and so lead to savings of natural gas, while in summer it will support the cooling machines and save electricity. Cooling with water stored underground also means no need for cooling agents, which emit very potent green house gases if they leak.

Table 2

Absolute heat energy consumption (MWh per year)

	2015	2016	2017	2018	Change 2017-18 in %
Berlin	2 003	2 083	2 070	1 849	-10.7
MUC Isar[10]	6 801	8 138	8 102	7 577	-6.5
MUC PH 1-8	10 101	10 429	10 647	9 667	-9.2
MUC Capitellum	395	0	0	0	0
TH Hinge/Shell/Main	12 456	13 355	11 916	12 814	7.5
TH Le Croisé	1 409	1 444	1 456	1 477	1.4
TH Rijsvoort[11]	1 836	1 543	1 545	1 545	0
Vienna	739	784	768	678	-11.7

[10] District heating in Munich Isar is provided as steam. The conversion factor from steam to kWh is provided by the energy provider and is the same for the whole district heating system of Munich.

[11] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

Table 3

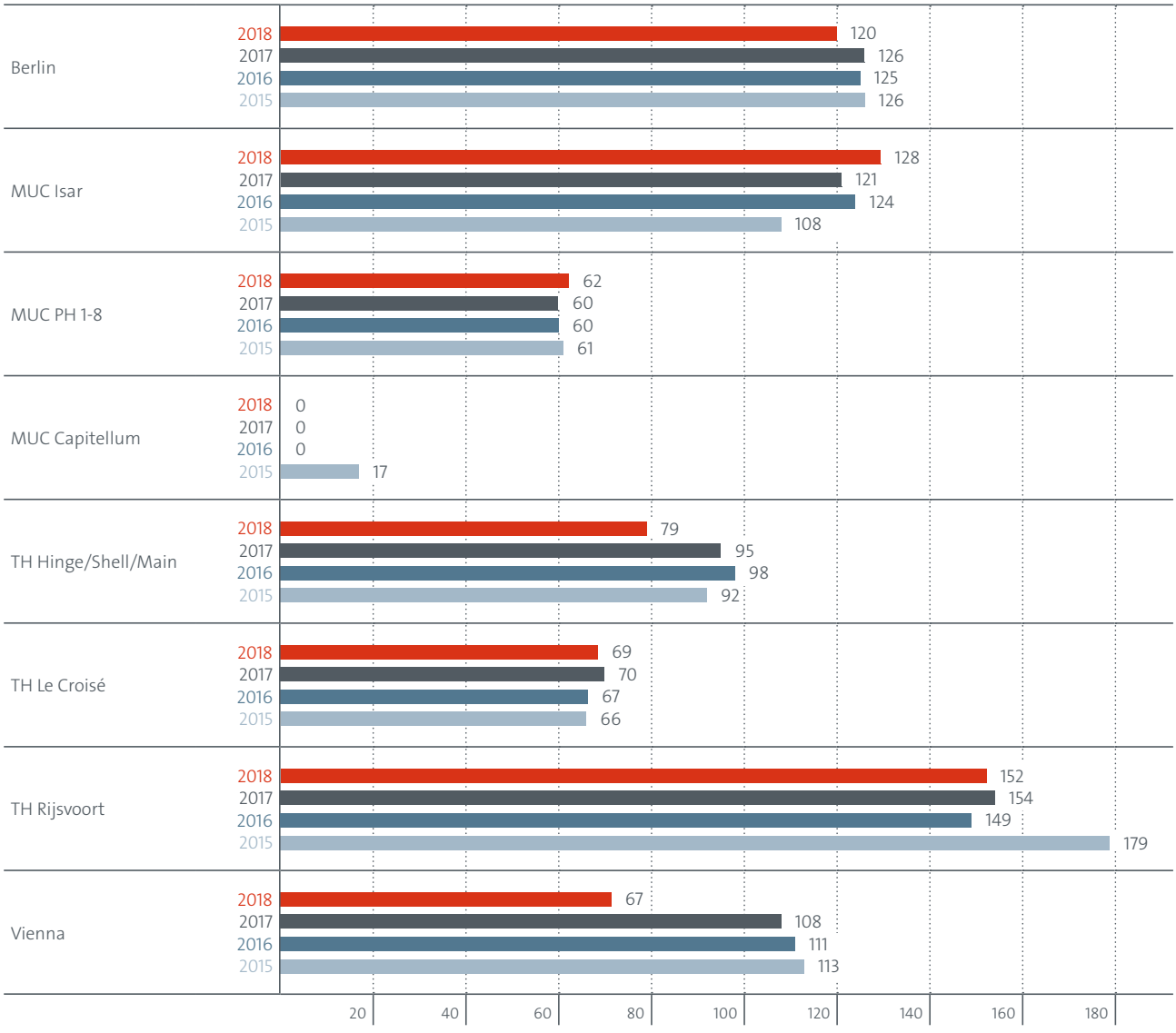
Weather-adjusted heat energy consumption (MWh per year)

	2015	2016	2017	2018	Change 2017-18 in %
Berlin	2 275	2 263	2 280	2 164	-5.1
MUC Isar	7 297	8 388	8 209	8 661	5.5
MUC PH 1-8	10 838	10 749	10 788	11 051	2.4
MUC Capitellum	429	0	0	0	0
TH Hinge/Shell/Main	12 965	13 767	12 734	13 477	5.8
TH Le Croisé	1 466	1 489	1 556	1 553	-0.2
TH Rijsvoort[12]	1 911	1 591	1 651	1 625	-1.57
Vienna	807	795	770	710	-7.8

[12] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

Figure 14

Specific weather-adjusted heat energy consumption (kWh per m² floor area)[13]



[13] The 2015 figures may differ from those previously published as a better data basis for calculating the square-metre floor area has since become available. The 2016 figure for Hinge/Shell/Main has been corrected compared with the previous Environmental Reports.

5.3 Water/waste water

At all sites we receive our fresh water from the municipal provider. Most of it is deployed in sanitary facilities and kitchens and (in individual cases) for washing vehicles. Moreover, at the Isar and PschorrHöfe buildings in Munich and the Main, Shell and Hinge buildings in The Hague, fresh water is used for the air-conditioning system and for watering plants and green spaces on-site. Waste water contamination consists mainly of organic substances. Where needed, oil and grease traps are installed in specific locations to remove contaminants from waste water.

Total water consumption 2018: 119 519 m^3

+13%
compared to 2017

The EPO's water consumption increased in 2018. For Berlin, this can be explained by renovation works, and for The Hague by the move to and the start-up of the new building. In addition, the very hot summer in 2018 led to an increased water demand for cooling and irrigation purposes at all sites.

Table 4

Fresh water consumption (m^3 per year)

	2015	2016	2017	2018	Change 2017-18 in %
Berlin	2 608	2 642	2 808	3 000	6.84
MUC Isar	20 453	20 030	22 799	23 102	1.33
MUC PH 1-8	46 338	45 934	42 911	43 770	2.00
MUC Capitellum	356	0	0	0	0
TH Hinge/Shell/Main	36 236	35 779	30 090	42 554	41.42
TH Le Croisé	3 632	3 958	4 107	3 213	-21.77
TH Rijsvoort[14]	3 378	3 088	1 998	1 998	0
Vienna	1 805	958	1 433	1 882	31.33

[14] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

5.4 Waste

To guarantee that waste is collected and disposed of separately, the EPO has established a waste separation system with clearly identifiable and distinguishable waste containers in all rooms and work areas at all our sites. Our staff are briefed on waste avoidance, recycling and correct disposal. Day-to-day residual waste and waste paper constitute the main categories of waste at all sites.

Residual waste generation 2018: 557 t

+28%
compared to 2017

Residual waste generation for the whole EPO rose significantly. This was mainly due to the waste generated at the Hague sites by decluttering before the move to the new Main building. The same applies for the increase in paper waste at all The Hague sites. Before the move staff was asked to sort out the offices and only take what they needed to the new offices. In Munich, residual waste generation was reduced by improved waste segregation, achieved with the help of a new labelling system for the bins.

Table 5

Total residual waste generation (t per year)

	2015	2016	2017	2018	Change 2017-18 in %
Residual waste					
Berlin[15]	40	40	40	40	0
MUC Isar	90	92	95	59	-37.9
MUC PH 1-8	133	131	132	131	-0.7
MUC Capitellum	3 562	0	0	0	0
TH Hinge/Shell/Main	118	132	122	239	95,9
TH Le Croisé	20	21	16	39	143.8
TH Rijsvoort	10	12	16	34	112.5
Vienna	14	15	15	15	0
Paper waste					
Berlin	18	18	29	17	-41.38
MUC Isar	116	218	181	125	-30.94
MUC PH 1-8	236	237	204	197	-3.43
MUC Capitellum	10	0	0	0	0
TH Hinge/Shell/Main	180	186	169	351	107.69
TH Le Croisé	19	14	17	35	105.88
TH Rijsvoort	4	4	4	17	325
Vienna	23	38	24	24	0
Food waste					
Berlin	12	13	12	11	-8.33
MUC Isar	54	45	35	38	8.57
MUC PH 1-8	110	114	102	76	-25.49
MUC Capitellum	1	0	0	0	0
TH Hinge/Shell/Main	87	81	63	59	-6.35
TH Le Croisé	8	8	7	5	-28.57
TH Rijsvoort	9	9	8	5	-37.50
Vienna	0	0	0	0	0
Grease separator waste					
Berlin	10	10	10	10	0
MUC Isar	132	132	109	132	21.10
MUC PH 1-8	221	228	214	182	-14.95
MUC Capitellum	0	0	0	0	0
TH Hinge/Shell/Main	0	0	105	100	-4.76
TH Le Croisé	0	0	0	0	0
TH Rijsvoort	0	0	0	0	0
Vienna	0	0	0	0	0

[15] The values for 2015-2018 have been corrected on the basis of an improved data source.

5.5 Mobility

Business trips between the EPO sites constitute the main component of travel at the EPO. To a lesser extent, employees travel to meet customers and other partners or attend conferences and other events.

CO_2-emissions from air and rail travel 2018: 1 921 t CO_2e

-20%
compared to 2017

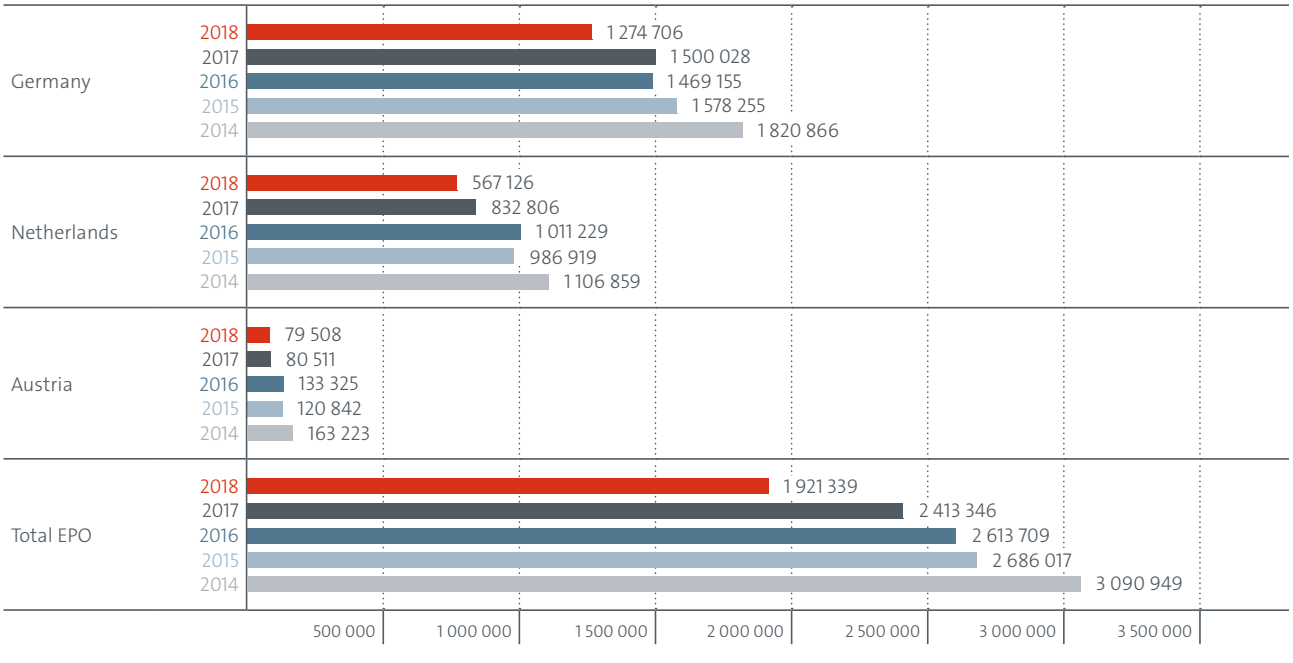
As part of the EPO's efforts to reduce its carbon footprint, employees at all sites are informed of the CO_2 emissions associated with business travel in the Balanced Scorecard and in internal communications and are encouraged to use the videoconference rooms.

Fig. 15 shows a decrease in emissions from air travel for all sites. As staff are encouraged to avoid flights, the decrease probably comes from changes in staff behaviour.
Another contributory factor was the installation of Skype for Business, which enables staff to conduct videoconferences from their own PCs, without using the videoconference rooms.

Fig. 16 shows CO_2 emissions from train travel. Having already fallen in the preceding years, these emissions have now been set at zero as the railway companies in the Netherlands, Germany and Austria use renewable energy either across the board or at least for business customers.

Figure 15

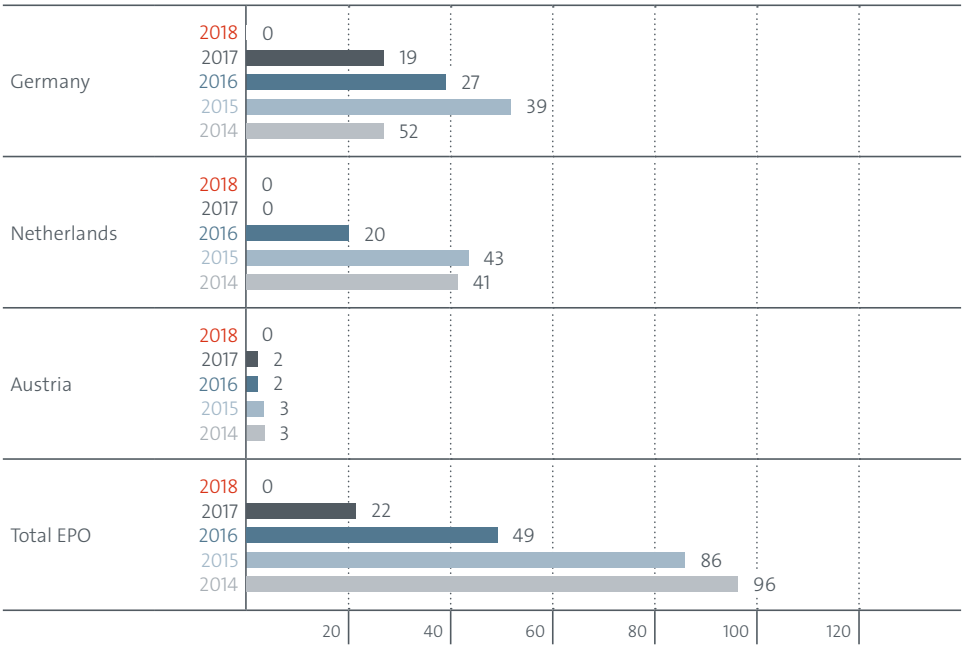
CO_2 emissions from air travel (in kg CO_2e)



Source: American Express Global Business Travel.
Note: Emissions allocated to place of departure. Since 2017, emissions have been displayed by country, not by individual location, due to the data structure of the new service provider.

Figure 16

CO_2 emissions from train travel (in kg CO_2e)



Source: American Express Global Business Travel for April until December 2017. Since no data for the first quarter of 2017 could be provided, the CO_2 emissions from train travel for 2017 suffer from a lack of comparability.
Note: Emissions allocated to place of departure.

5.6 Other emissions

Electricity and heating energy consumption gives rise primarily to CO_2 emissions. Our primary objective in minimising emissions is therefore the reduction of energy consumption. We also regularly inspect and maintain our heating systems. In addition, we aim to use district heating and "green" electricity.

CO_2-emissions from energy consumption and cooling agent losses 2018: 6 846 t CO_2e

+1.18%
compared to 2017

All EPO sites apart from Le Croisé and Rijsvoort in The Hague have been using green electricity for several years. As the leases on Le Croisé and Rijsvoort were terminated at the end of 2018, all electricity used by the EPO from 2019 on will come from renewable sources.

CO_2 emissions from heat energy rose in 2018, particularly due to an increase in The Hague. This can be attributed mainly to a higher heating energy consumption.

In addition, we take CO_2-equivalent emissions from losses of cooling agents at cooling facilities into account. These occur sporadically due to defects and/or repairs leading to leakage. Maintenance of cooling facilities is performed very frequently to minimise the risk of cooling agent losses. In 2018, there was a leakage in Vienna, which is why there was a high increase in CO_2-equivalent emissions at this site.

SO_2 (sulphur dioxide), NO_X (nitrogen oxide) and particulates are considered only if they arise directly at the building in question. The factors for converting electricity and heating energy into individual emission types (kg/kWh) are based on the GEMIS database (Global Emissions Model for Integrated Systems) and the information supplied by the energy providers at each site.

Table 6

Total CO_2-equivalent emissions from electricity, heating and cooling agent losses (t per year)

	2015	2016	2017	2018	Change 2017-18 in %
Berlin	404	420	417	374	-10.3
MUC Isar[16]	1 061	1 269	1 324	1 206	-8.9
MUC PH 1-8[16]	1 576	1 659	1 781	1 732	-2.8
MUC Capitellum	80	0	0	0	0
TH Hinge/Shell/Main	2 516	2 698	2 407	2 589	7.6
TH Le Croisé	560	479	481	471	-2.1
TH Rijsvoort[17]	402	339	341	341	0
Vienna[18]	15	16	15	134	793.3

[16] The conversion factor for heat energy to CO_2 is distributed by the energy provider and is the same for all heat energy from district heating provided by the energy provider.

[17] The Rijsvoort data for 2018 was not available at the time of compiling this report. To ensure comparability, the 2017 values were taken as an estimate and used to calculate the figure shown here. These values will be corrected in next year's report.

[18] The conversion factor for heat energy to CO_2 has been made available by the energy provider in 2015. No update could be provided by the energy provider.

5.7 Paper consumption

Total paper consumption 2018: 122.2m sheets

-0.4%
compared to 2017

Large amounts of paper (green and white) are consumed at the EPO. Paper consumption decreased slightly in 2018, which can be attributed mainly to Berlin and Vienna. The reduced consumption in Vienna is due to lower external demand for printing jobs.

Paper consumption in Munich and The Hague can be indicated only for the entire site, not for individual buildings. In 2018, paper consumption increased slightly in The Hague but decreased slightly in Munich. Once again, there was an improvement in efficiency in terms of paper consumption per product (Fig. 17). One reason could be the implementation of the first elements of the electronic patenting process but employee awareness may have played a role too.

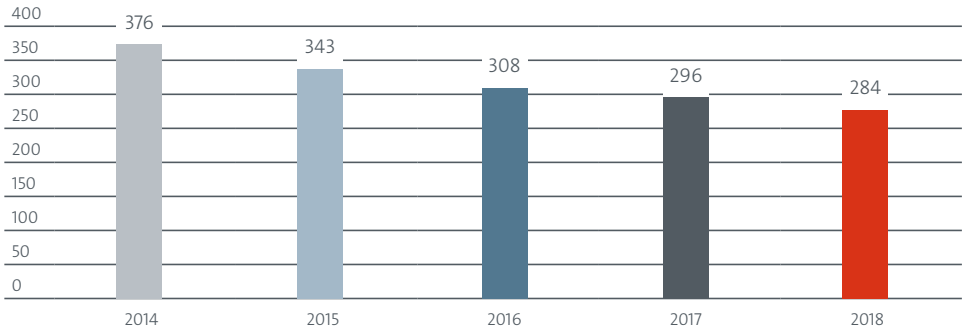
Table 7

Paper consumption per site (sheets)

	2015	2016	2017	2018	Change 2017-18 in %
Berlin	3 000 000	2 896 000	3 379 000	2 792 500	-17.35
Munich	62 385 000	52 838 500	53 988 600	53 889 180	-0.18
The Hague	59 320 000	65 932 000	64 937 500	65 160 000	0.34
Vienna	330 000	374 500	363 125	338 250	-6.85

Figure 17

Paper consumption per product



6. Indirect environmental aspects

The indirect environmental aspects have been identified for all EPO sites and assessed as equally relevant for all sites. All indirect environmental aspects under the EMAS III Regulation have been assessed for relevance to the EPO. Only the aspects that were found to be relevant are included below. As regards their influence in terms of sustainable procurement, improvements have been achieved in recent years owing to regulatory changes that enable environmental criteria to be taken into consideration when making procurement decisions.

	Relevant environmental aspect (indirect)	Impact	Influence
Impact of services	Patent grant procedure	B	II
	Classification scheme "green" patents	A	I
Environmental behaviour of contractors/Procurement	Environmental impact of catering/canteen contractors	A	II
	Environmental impact of technical maintenance contractors	A	II
	Environmental impact of cleaning contractors	A	II
	Environmental impact of other contractors	B	II
	Procurement	B	II
	Purchase of food for canteen	B	II
	Use of ecological resources for building/renovation, e.g. paint	A	II
Others	Staff travel to/from office	A	III
	Capital investments	B	III

The EPO has devoted considerable resources to creating and maintaining its patent databases, which now contain over 100 million documents from some 100 patent authorities worldwide. A significant amount of information relating to sustainable technologies is recorded in patent documents, which are available on the internet free of charge. This technical information is often published in patent applications long before it appears in any other source, such as relevant scientific reviews.

To help engineers, scientists, institutions and decision-makers use this wealth of knowledge in their work, the EPO has developed a patent classification scheme dedicated to climate change mitigation or adaptation technologies. Mitigation technologies focus on controlling, reducing or preventing anthropogenic emissions of greenhouse gases, as covered by the Kyoto Protocol, while adaptation technologies support human action in adapting to already existing effects.

By tagging patent documents, which traditionally fall under a wide range of technical areas, the Y02/Y04S scheme groups under a common umbrella all mitigation and adaptation technologies as well as smart grids. The scheme was devised in close co-operation with expert partners in the field, using technology guidelines produced by the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC).

As a result, the scheme makes it easier to retrieve relevant information quickly and accurately. It also makes it possible to map sustainable technologies, identify trends and facilitate further R&D. Y02/Y04S has become a standard for searching patents for climate change technologies and is commonly used by patent offices, intergovernmental organisations and academia for producing empirical analysis to support decision-making in the field of climate technology.

In particular, the EPO, in co-operation with the United Nations Environment Programme (UNEP), has produced four studies on patenting trends in climate change mitigation technologies worldwide (2010), in Africa (2013), in Latin America and the Caribbean (2014) and in Europe (2015). In 2017 the EPO enhanced its co-operation with the International Renewable Energy Agency (IRENA) and published a policy brief on the latest trends and statistics concerning the development and deployment of mitigation technologies. The EPO and IRENA are currently working on a second policy brief focusing on digitalisation for the energy transition.

Using the features of the patent system to produce structural transparency regarding climate technologies, the EPO is making a significant contribution to the fight against climate change and sending a strong signal of its willingness to assume broader social responsibilities.

The EPO is taking various steps to raise awareness of the use and benefits of the Y02/Y04S scheme, including participating in specialised conferences and seminars targeting industry and academics in the field of climate technologies and organising information sessions aimed at policymakers at national, European and international level.

The EPO is an accredited observer at the UNFCCC and participates regularly in the Conference of the Parties meetings, where it follows discussions on innovation and technology. The EPO also attends the UNFCCC Technology Executive Committee in its observer capacity.

The table below shows the current technology sub-groups in the Y02/Y04S scheme.

Sub-group	Description	Comment
Y02	Technologies or applications for mitigation or adaptation against climate change	
Y02A	Technologies for adaptation to climate change	Technologies that enable adaptation to the adverse effects of climate change in human, industrial (including agriculture and livestock) and economic activities
Y02B	Climate change mitigation technologies related to buildings, e.g. housing, house appliances or related end-user applications	Integration of renewables into buildings, lighting, HVAC (heating, ventilation and air-conditioning), home appliances, lifts and escalators, constructional or architectural elements, ICT and power management
Y02C	Capture, storage, sequestration or disposal of greenhouse gases (GHG)	CO_2 capture and storage, also of other relevant GHG
Y02D	Climate change mitigation technologies in information and communication technologies (ICT), i.e. information and communication technologies aiming at the reduction of their own energy use	This subclass does not cover the use of a technology supporting energy-efficient operation of a further piece of equipment, nor the reuse or recycling of ICT equipment
Y02E	Reduction of greenhouse gas (GHG) emissions, related to energy generation, transmission or distribution	Renewable energy, efficient combustion, nuclear energy, biofuels, efficient transmission and distribution, energy storage, hydrogen technology
Y02P	Climate change mitigation technologies in the production or processing of goods	Metal processing, chemical/petrochemical industry, minerals processing (e.g. cement, lime, glass), agroalimentary industries
Y02T	Climate change mitigation technologies related to transportation	E-mobility, hybrid cars, efficient internal combustion engines, efficient technologies in railways and air/waterway transport
Y02W	Climate change mitigation technologies related to waste water treatment or waste management	Waste water treatment, solid waste management, biopackaging
Y04	Information or communication technologies having an impact on other technology areas	
Y04S	Systems integrating technologies related to power network operation, communication or information technologies for improving the electrical power generation, transmission, distribution, management or usage, i.e. smart grids	Power network operation, end-user application management, smart metering, electric and hybrid vehicle interoperability, trading and marketing aspects

Each of these sub-groups is further divided into more specific technology tags. There are over 1 900 tags, all relating to sustainable technologies. Nearly four million documents are currently tagged under the Y02/Y04S scheme.

At present, the Y02/Y04S scheme is maintained manually, and must be regularly adjusted according to new and changed classification codes. The longer-term aim is to automate the updating of the scheme, potentially using "artificial intelligence", to ensure its future sustainability.

7. Improvements: objectives and actions

Energy savings generated by technical measures in 2018: 300 915 kWh

0.39%
of total energy consumption

Total number of improvement measures taken in 2018:
20

Energy savings planned for measures in 2019/20: 401 000 kWh

0.52%
of total energy consumption

In accordance with its environmental policy the EPO primarily seeks to:
- Minimise the consumption of energy, water, paper and other resources, and reduce costs
- Reduce its CO_2 emissions through optimised energy and mobility management
- Standardise procedures within and between the different sites
- Act as a role model for its contractors and suppliers
- Regularly inform all members of staff and the public of its environmental activities

To achieve these overall goals, the central environmental management team each year defines an environmental programme with targets and improvement measures. It takes account of developments in environmental aspects, suggestions for improvements from internal audits and external inspections, and suggestions from local employees and environmental groups.

Besides the programme of actions for 2019/20 we have defined long-term environmental objectives that will be developed into ambitious CO2-saving goals for the coming years. The objectives include not only energy savings but also improvements in resource efficiency, waste avoidance and organic food catering. As long-term savings goals, they will enable a strategic approach and will provide a longer-term perspective as a complement to the yearly monitoring that will ensure the fulfilment of the objectives over time.

The tables below present an extract including the main actions from 2018 and for 2019/20. The technical measures of the environmental programme essentially relate to the EPO's own buildings. The EPO has less influence over rented buildings, though here too we try to exert some influence on the proprietors, to implement improvements and to make our staff more environmentally aware.

7.1 Actions planned for and implemented in 2018

Berlin

	Action	Savings/Impact	Status
Energy	Replace desktop lights with LED lights	915 kWh	Completed
CO_2	Plan e-car-charging stations with landlord	not quantifiable	In progress
Waste water	Check whether and to what extent cleaning detergents used by cleaning company can be replaced with biodegradable products	not quantifiable	Completed
Awareness	Regularly inform DG 1 staff about EMAS	not quantifiable	Completed
	Raise awareness of new Berlin - Munich ICE train connection	not quantifiable	In progress
Other	Take structured approach to investigating what office supply items can be replaced with environmentally-friendly alternatives	not quantifiable	In progress
	Stop using thin plastic bags for office bins	not quantifiable	In progress

Munich

	Action	Savings/Impact	Status
Energy	Optimise cooling facilities in Isar (Project: EOI)	300 000 kWh	In progress
	Installation of electric charging stations for four cars each at PH 7 and PH 8 garages and one additional charging station at the PH 1-6 and Isar garages	not quantifiable	completed

The Hague

	Action	Savings/Impact	Status
Mobility	Develop improved mobility plan	not quantifiable	In progress
Energy	A number of technical improvement measures were implemented in The Hague in 2018, largely as part of making New Main operational. New Main was built according to the highest efficiency standards and will therefore lead to energy efficiency gains. No further measures were implemented.		
Communication	Organise a "repair café"	Held once in February	Completed
	Hold lunch talks for staff about green IT, energy efficiency improvement of homes, etc.	35-50 participants at each talk	Completed

Vienna

No environmental actions were taken; measures will be implemented in the future in accordance with the new buildings strategy.

All sites

	Action	Savings/Impact	Status
DG 1	Change of organisation of DG 1 manager meetings from on-site to video conference, which saves about 1 500 flights per year.	100 t CO_2	Completed
DG 4: Information Management (IM)	Increase awareness in IM	not quantifiable	In progress
	Establish the baseline of the environmental footprint for the MU + TH data centres	not quantifiable	In progress
	Ensure that the green IT aspects are taken into account for the new data recovery centres in Munich	not quantifiable	In progress
	Update template for IM procurement activity	not quantifiable	Completed
DG 4: Procurement	Embed ICT sustainability criteria in major tenders, where applicable	not quantifiable	In progress
Other	Update EMAS intranet site with new strategy	not quantifiable	In progress
	Publish Gazette article raising awareness of ways of avoiding waste, focusing on the AMICALE repair café and including tips for employees on how to act in a more environmentally-friendly way	readership of 10 250 people	Completed
	Provide communication support for various Environmental Group activities, such as bicycle collection for refugees	not quantifiable	Completed
	Provide environmental tips for the EPO Infopoint (digital signage system) (pending system go-live and input from EMAS)	not quantifiable	Completed
	Draw up communication plan outlining and co ordinating communication tactics for 2018	not quantifiable	Completed

7.2 Actions planned for 2019/20

Berlin

So far no site-specific measures for Berlin have been defined.

Munich

	Action	Savings/Impact
Energy	Refit the gym (PH) with LED lighting	93 000 kWh (electricity)
	Modernise lighting in TRH B and E, replacing it with LEDs	6 000 kWh (electricity)
	Installation of weather-dependent control of heating, ventilation and air conditioning at PH 6 and PH 8.	420 000 kWh heat energy 147 000 electricity
	Renovation of bathrooms at PH including the change to cold water.	savings of heat energy, not quantifiable

The Hague

	Action	Savings/Impact
Energy	In 2019, energy management in The Hague will focus on optimising the new buildings.	
Communication	Hold lunch talks for staff, focusing on home automation, heat pumps, plastic waste, the energy transition of the Hague area and heating system control	4 lunch talks with probably 35-50 participants
	Hold e-mobility fair in 2019	One-day fair for all staff in The Hague

Vienna

	Action	Savings/Impact
Energy	Install motion detectors for lighting in sanitary rooms, hallways and staircases	Electricity
	Install charging station for e-cars	CO_2-emissions (not quantifiable)

All sites

	Action	Savings/Impact
DG 4: Information Management	Discuss the inclusion of ICT sustainability in project business cases	not quantifiable
	Study and evaluate the potential for EPO participation in the European Code of Conduct for Data Centres	not quantifiable
	Study and evaluate the possibility of an ICT sustainability policy to support the EPO environmental policy	not quantifiable
	Provide the EPO with the 2018 ICT sustainability report for the IaaS services	not quantifiable
DG 4: Communication	Launch communication on new EMAS 2022 strategy	not quantifiable
	Provide communication support for quarterly "Food & Climate" days	Four events a year
DG 4: Procurement	Raise awareness within CP and among internal clients at info sessions	not quantifiable

Annex

EMAS core indicators[19]

The following tables present the EMAS core indicators for environmental aspects. The emission values for SO_2 (sulphur dioxide), NO_X (nitrogen oxide) and particulates are shown only if they arise directly at the building in question. They are not calculated for electricity and district heating. The value for paper consumption in Munich and The Hague is in each case the average of the values for all sites there.

The EPO considers some of the core indicators to be irrelevant on the basis of its assessment of the environmental aspects, so it does not include them below. At the same time, this report goes into more detail on other criteria more relevant to the EPO.

EPO Berlin	Unit	2016	2017	2018
Number of employees	empl.	278	268	236
Total direct energy consumption (electricity and heat)	MWh/empl.	9.06	9.34	9.79
Renewable energy as percentage of total consumption (electricity and heat)	%	17.31	17.27	20.00
Paper consumption (material efficiency)	sheet/empl.	10 417	12 608	11 833
Water consumption	m^3/empl.	9.50	10.48	12.71
Total waste generation				
Residual waste	t/empl.	0.14[20]	0.15[21]	0.17
Paper/card	t/empl.	0.06	0.11	0.07
Food waste	t/empl.	0.05	0.04	0.05
Food waste as percentage of food served	kg/meal	-	0.38	0.39
Grease trap residues	t/empl.	0.04	0.04	0.04
Total hazardous waste generation	kg/empl.	0	0.87[22]	0
Built surface area (sealed)	m^2	11 250	11 250	11 250
Total nature-oriented area on site	m^2	4 417	4 417	4 417
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/empl.	1.51	1.56[23]	1.58
SO_2	kg/empl.	0.008	0	0
NO_x	kg/empl.	0.14	0	0
Particulates	kg/empl.	0.06	0	0

[20] Value corrected compared to previous Environmental Report.

[21] Value corrected compared to previous Environmental Report.

[22] In 2017 some old refrigerators were disposed of, causing an increase in hazardous waste. This value has also been corrected compared to previous Environmental Report.

[23] From 2017 on CO_2-equivalent emissions from cooling agent losses have been taken into account.

[19] Not all environmental data is reported on in section 5 and 8 as some data was not considered as significant in the environmental aspects evaluation.

EPO Munich – Isar building	Unit	2016	2017	2018
Number of employees	empl.	806	799	830
Total direct energy consumption (electricity and heat)	MWh/empl.	21.18	20.98	19.22
Renewable energy as percentage of total consumption (electricity and heat)	%	55.82	55.19	55.98[24]
Paper consumption (material efficiency)	sheet/empl.	12 897	13 166	13 109
Water consumption	m^3/empl.	24.85	28.53	27.83
Total waste generation				
Residual waste	t/empl.	0.11	0.12	0.07
Paper/card	t/empl.	0.27	0.23	0.15
Food waste	t/empl.	0.06	0.04	0.05
Food waste as percentage of food served	kg/meal	0.27	0.29	0.30
Grease trap residues	t/empl.	0.16	0.14	0.16
Total hazardous waste generation	kg/empl.	20.73[25]	3.41[26]	9.09
Built surface area (sealed)	m^2	18 113	18 113	18 113
Total nature-oriented area on site	m^2	10 579	10 579	10 579
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/empl.	1.58	1.65[27]	1.45
SO_2	kg/empl.	0	0	0
NO_x	kg/empl.	0	0	0
Particulates	kg/empl.	0	0	0

[24] Share of renewable energies was calculated with the percentage of 2017, as the energy supplier could not deliver current data.

[25] Value corrected compared to previous Environmental Report.

[26] Value corrected compared to previous Environmental Report.

[27] From 2017 on CO_2-equivalent emissions from cooling agent losses have been taken into account.

EPO Munich – PschorrHöfe 1-8	Unit	2016	2017	2018
Number of employees	empl.	3.305	3.145	2.897
Total direct energy consumption (electricity and heat)	MWh/empl.	6.42	6.85	7.05
Renewable energy as percentage of total consumption (electricity and heat)	%	54.43	54.21	56.09[28]
Paper consumption (material efficiency)	sheet/empl.	12 897	13 166	13 109
Water consumption	m^3/empl.	13.90	13.64[29]	15.11
Total waste generation				
Residual waste	t/empl.	0.04	0.04	0.05
Paper/card	t/empl.	0.07	0.06	0.07
Food waste	t/empl.	0.03	0.03	0.03
Food waste as percentage of food served	kg/meal	0.27	0.62	0.60
Grease trap residues	t/empl.	0.07	0.07	0.06
Total hazardous waste generation	kg/empl.	3.84[30]	5.04[31]	1.88
Built surface area (sealed)	m^2	42 641	42 641	42 641
Total nature-oriented area on site	m^2	18 422	18 422	18 422
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/empl.	0.49	0.57[32]	0.60
SO_2	kg/empl.	0	0	0
NO_x	kg/empl.	0	0	0
Particulates	kg/empl.	0	0	0

[28] Share of renewable energies was calculated with the percentage of 2017, as the energy supplier could not deliver current data.

[29] Value corrected compared to previous Environmental Report (rounding mistake).

[30] Value corrected compared to previous Environmental Report.

[31] Value corrected compared to previous Environmental Report. Numerous disposals of computers and various IT devices and removal of "old" mineral wool from the corridors and halls in PschorrHöfe 1-6.

[32] Values corrected compared to previous Environmental Report. From 2017 on CO_2-equivalent emissions from cooling agent losses have been taken into account.

EPO The Hague – Main, Hinge, Shell	Unit	2016	2017	2018
Number of employees	empl.	2.454	2.405	2.580
Total direct energy consumption (electricity and heat)	MWh/empl.	11.50	10.72	12.36
Renewable energy as percentage of total consumption (electricity and heat)	%	52.67	53.79	59.8
Paper consumption (material efficiency)	sheet/empl.	21 421	21 256	20 173
Water consumption	m^3/empl.	14.58	12.51	16.49
Total waste generation				
Residual waste	t/empl.	0.05	0.05	0.09
Paper/card	t/empl.	0.08	0.07	0.14
Food waste	t/empl.	0.03	0.03	0.02
Food waste as percentage of food served	kg/meal	0.36	0.28	0.26
Grease trap residues	t/empl.	0.00[33]	0.04	0.04
Total hazardous waste generation	kg/empl.	7,6[34]	4.52[35]	0
Built surface area (sealed)	m^2	81 450	60 247	51 196
Total nature-oriented area on site	m^2	data not available	data not available	43 018
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/empl.	1.10	1.00	1.00
SO_2	kg/empl.	0.01	0	0
NO_x	kg/empl.	0.96	0	0
Particulates	kg/empl.	0.04	0.00	0.00

[33] Value could not be established due to change of provider as of 1 January 2016.
[34] Values corrected compared to previous Environmental Report.
[35] Values corrected compared to previous Environmental Report.

EPO The Hague – Le Croisé	Unit[36]	2016	2017	2018
Number of workplaces	wp	424	430	450
Total direct energy consumption (electricity and heat)	MWh/wp	7.25[37]	7.16	6.62
Renewable energy as percentage of total consumption (electricity and heat)	%	n.a.	n.a.	n.a.[38]
Paper consumption (material efficiency)	sheet/wp	21 421	21 256	12 168
Water consumption	m^3/wp	9.33	9.55	7.14
Total waste generation				
Residual waste	t/wp	0.05	0.04	0.09
Paper/card	t/wp	0.03	0.04	0.08
Food waste	t/wp	0.02	0.02	0.01
Food waste as percentage of food served	kg/meal	0.41	0.35	0.32
Total hazardous waste generation	kg/wp	0.11	4.23[39]	0
Built surface area (sealed)	m^2	4 200	4 200	4 200
Total nature-oriented area on site[40]	m^2	n.a.	n.a.	n.a
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/wp.	1.13	1.12[41]	1.05
SO_2	kg/wp	0.004	0.00	0
NO_x	kg/wp	0.60	0.00	0
Particulates	kg/wp	0.03	0.00	0

[36] As the building has been emptied step by step during 2018 reporting employees would not have been representative of the consumption. Therefore workplaces have been chosen as reference.
[37] Electricity consumption extrapolated as only values for less than a year were available.
[38] No data provided by landlord.
[39] Value corrected compared to previous Environmental Report.
[40] The lease terminated at the end of 2018 and the landlord did not provide data anymore.
[41] From 2017 on CO_2-equivalent emissions from cooling agent losses have been taken into account.

EPO The Hague – Rijsvoort	Unit[42]	2016	2017	2018
Number of workplaces	wp	200	220	200
Total direct energy consumption (electricity and heat)	MWh/wp	8.92	8.18	9.00
Renewable energy as percentage of total consumption (electricity and heat)	%	n.a.	n.a.	n.a.[43]
Paper consumption (material efficiency)	sheet/wp	21 421	21 256	12 168
Water consumption	m^3/wp	15.44	9.08	9.99
Total waste generation				
Residual waste	t/wp	0.06	0.07	0.17
Paper/card	t/wp	0.02	0.02	0.09
Food waste	t/wp	0.04	0.04	0.03
Food waste as percentage of food served	kg/meal	1.38	1.19	0.96
Built surface area (sealed)	m^2	4 558	4 558	4 558
Total nature-oriented area on site[44]	m^2	n.a.	n.a.	n.a.
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/wp.	1.70	1.55	1.71
SO_2	kg/wp	0.01	0.00	0
NO_x	kg/wp	1.37	0.00	0
Particulates	kg/wp	0.06	0.00	0

[42] As the building has been emptied step by step during 2018 reporting employees would not have been representative of the consumption. Therefore workplaces have been chosen as reference.

[43] Values not provided by landlord.

[44] The lease terminated at the end of 2018 and the landlord did not supply the data anymore.

EPO Vienna	Unit	2016	2017	2018
Number of employees	empl.	104	94	110
Total direct energy consumption (electricity and heat)	MWh/empl.	13.37	14.41	11.29
Renewable energy as percentage of total consumption (electricity and heat)	%	54.22	53.97	55.68
Paper consumption (material efficiency)	sheet/empl.	3 601	3 863	3 075
Water consumption	m^3/empl.	9.47	15.24[45]	17.11
Total waste generation				
Residual waste	t/empl.	0.14	0.16	0.14
Paper/card	t/empl.	0.37	0.26	0.22
Food waste	t/empl.	n.a.	n.a.	n.a.[46]
Total hazardous waste generation	kg/empl.	0.00	10.74[47]	1.36
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
Emissions (electricity, heat and cooling agent losses)				
CO_2 equivalent	t CO_2e/empl.	0.15	0.16[48]	1.21[49]
SO_2	kg/empl.	0	0	0
NO_x	kg/empl.	0	0	0
Particulates	kg/empl.	0	0	0

[45] Value corrected compared to previous Environmental Report.

[46] Disposal handled by canteen service provider. Waste removed and disposed of by head office.

[47] Value corrected compared to previous Environmental Report.

[48] From 2017 on CO_2-equivalent emissions from cooling agent losses have been taken into account.

[49] Significant increase in emissions, due to cooling agent losses in Vienna.

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

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

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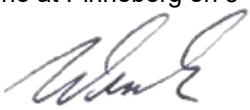
of the European Parliament and of the Council on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS).

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 and No 2017/1505
- 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.

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

Done at Pinneberg on 5th of June 2019



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