Europäisches Patentamt
European Patent Office
Office européen des brevets

Environmental Report 2017

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

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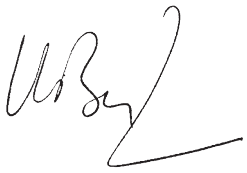
Environmental Report

Foreword

At the EPO, we recognise that we are part of a wider community and take our responsibility towards the environment and the cities we work in seriously. That is why we have always strived to reduce our impact on the world around us. This is now the 10th year in a row that we have bundled these activities under the governance of the Eco-Management and Audit Scheme (EMAS), with the goal of reducing the consumption of heat and electrical energy, water and paper, and cutting both waste and CO_2 emissions.

In 2017, the EPO once more reduced its direct environmental impact compared with the previous year: consumption of electricity fell by 3.1% across all four sites, overall CO_2 emissions by 3.8% and total water consumption by 5.6%. In addition to technical measures to reduce the EPO's CO_2 footprint, actions were taken that have an indirect impact on the environment. Examples are the installation of charging stations for electric cars, greater consideration of environmental aspects in procurement decisions and the continued development of the search scheme for patents on climate change mitigation and adaptation technologies.

The EPO is continuing its environmental programme into the future. We have established a programme of actions for 2018/19 that will be developed into ambitious CO_2-saving goals for the coming years, taking into account the latest developments at the EPO such as our new building in The Hague.



Benoît Battistelli,
President of the European Patent Office

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 2017: 72 835 MWh

Saving: **17%**

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, 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 total energy consumption amounted to 87 758 MWh, but in 2017 it was 72 835 MWh, a reduction of 17%. 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 was extensively renovated between 2010 and 2012 to improve its energy rating. 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.

Electricity consumption in 2012: 23 334 MWh

Electricity consumption in 2017: 19 567 MWh

Saving: **16%**

Heat consumption in 2012: 22 839 MWh

Heat consumption in 2017: 18 749 MWh

Saving: **18%**

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
Health & safety, hazardous materials regulations	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

Site/building	Gross floor area	Net building area[1]	Workplaces	Status
Isar building	91 400 m²	67 847 m²	799	Proprietor
PschorrHöfe 1-8	276 300 m²	178 320 m²	3 145	Proprietor

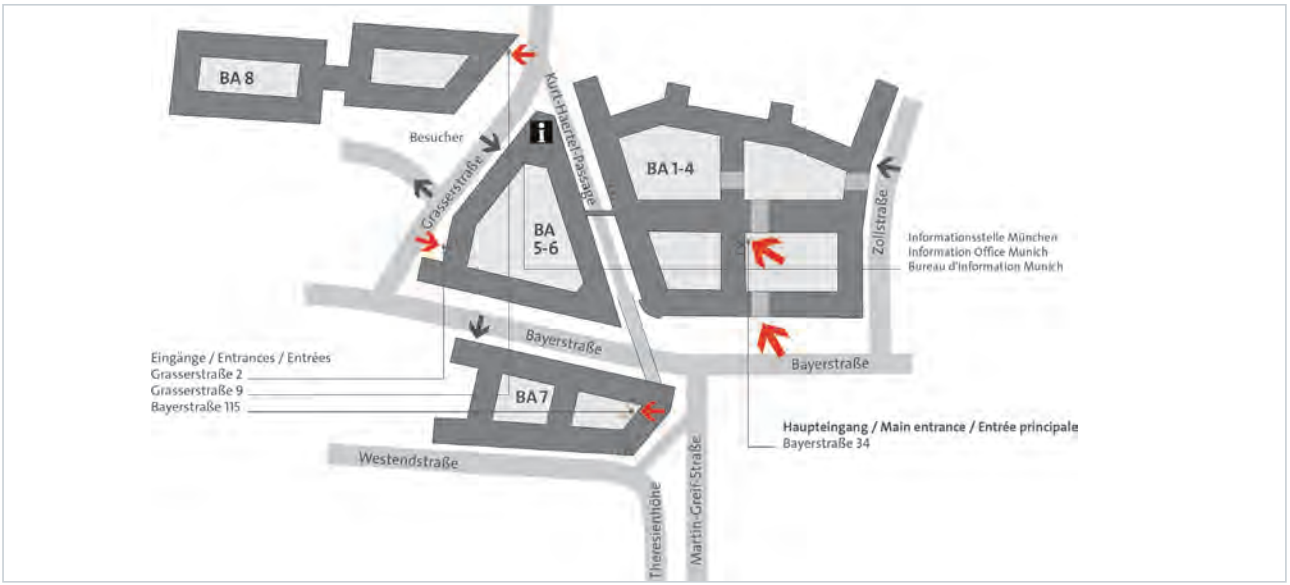
[1] In a change from previous Environmental Reports, the net building area is shown instead of the gross floor area excluding the basement.

Figure 1

EPO Munich, Isar building

Figure 2

EPO Munich, PschorrHöfe



2.2 EPO The Hague

After Munich, The Hague is the second-largest duty station, comprising three building complexes in Rijswijk, one (by far the largest) owned by the EPO and two rented. On the largest of those sites, two new buildings – the New Main and the New Hinge – are currently being built; after their handover, in 2018, all buildings in The Hague will be EPO-owned, and the two rented buildings will be relinquished. Owing to the current buildings' size and condition, some of them consume a large amount of heat energy. All buildings are heated by natural gas.
The gas-powered heating boilers are regularly inspected and comply with emissions thresholds. There are also regular leak tests on the air-conditioning units, which to date have detected no major leaks. All testing is performed by an external service provider in accordance with Dutch law.

In the Shell building there are diesel fuel tanks which feed the emergency generators. Outside the building there is an 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). These likewise feed the emergency generators in the Shell building in the event of power outages. The three kitchens have grease traps and a dish-washing area. In various places there is storage for further hazardous substances. These include 400 litres of cleaning agents and approximately 400 litres of glycol for the ventilation system (Shell building). All substances are stored in accordance with legal requirements, for example using double-walled tanks or drip collectors.
The necessary information such as safety information sheets and operating instructions is available. There is no information to suggest any land contamination at the sites in The Hague. Hazardous waste consists of spent batteries, old fluorescent tubes and waste oil. Hazardous waste disposal includes recording, removing and then certifying the absence of asbestos in accordance with Dutch legislation. Under Dutch law the duty station is subject to an "activity decree", a simplified environmental permit.

Since 2013 construction work has been in progress on the New Main and New Hinge buildings in The Hague. New Main is due to replace the present main building by June 2018. In several respects it is being 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.

Electricity consumption in 2012: 21 602 MWh

Electricity consumption in 2017: 15 745 MWh

Saving:
27%

Water consumption in 2012: 49 336 m^3

Water consumption in 2017: 36 195 m^3

Saving:
27%

15% of the energy required for building operation is likely to be generated on-site, e.g. from groundwater heat and solar power. The installation of cooled ceilings will increase basic energy needs. The overall effect of New Main on total energy consumption cannot yet be quantified. A quantitative evaluation will follow after the building's handover.

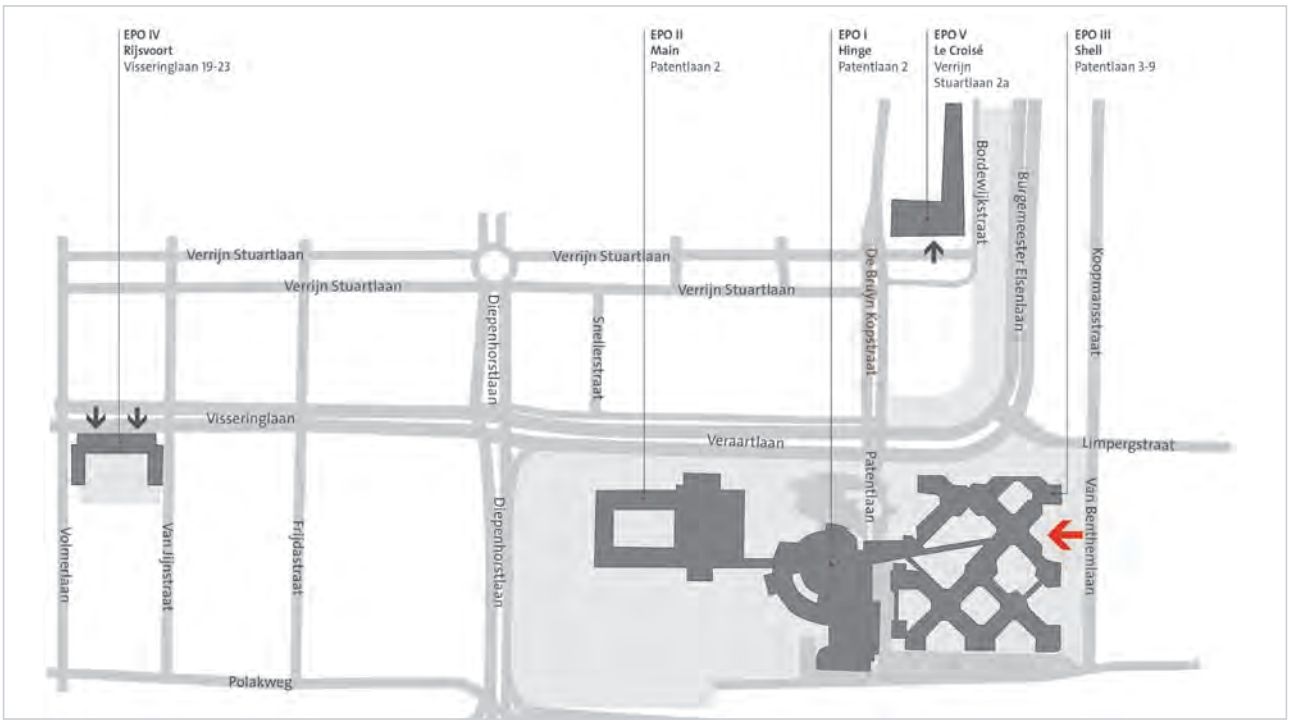
Most relevant areas of environmental law	Relevant facilities/activities
Rules on general environmental management	Environmental permit, annual environmental report to the municipality of Rijswijk
Pollution regulations governing combustion units of type B	Heating system
Water regulations	Water discharge into sewage system
Hazardous materials regulations	Handling/storage/transport of hazardous substances, e.g. glycol, asbestos; transmission of hazardous waste (potential); grease traps
Regulations on underground storage of hazardous substances	Underground storage area for diesel fuel
Regulations on climate protection and refrigerants	Cooling installations with at least 5 kg GWP
Waste regulations	Recycling/separation/disposal of various types of waste
Building regulations	Building activities: criteria for renovation/alteration and new buildings
Health & safety	Appropriate risk assessment, fire prevention, restrictions on certain chemical agents

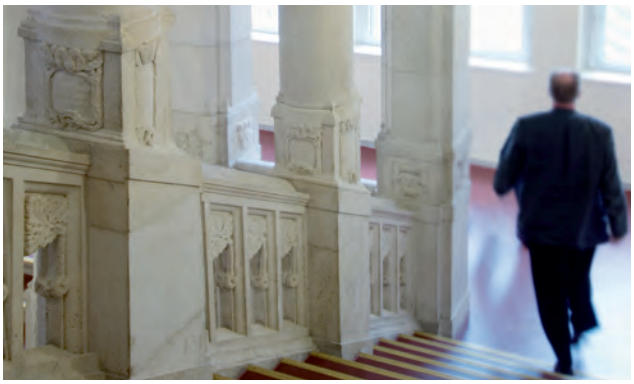
Site/building	Gross floor area	Net building area	Workplaces	Status
Main, Shell, Hinge	192 605 m²	134 342 m²	2 405	Proprietor
Le Croisé	28 049 m² [1]	22 376 m²	430	Rented
Rijsvoort	11 735 m² [1]	10 702 m²	220	Rented

[1] Value corrected compared with previous Environmental Report.

Figure 3

EPO The Hague





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). 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.

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. The only forms of hazardous waste are spent batteries and fluorescent tubes.

Electricity consumption in 2012: 558 MWh

Electricity consumption in 2017: 432 MWh

Saving:
23%

Residual waste in 2012: 33 t

Residual waste in 2017: 26 t

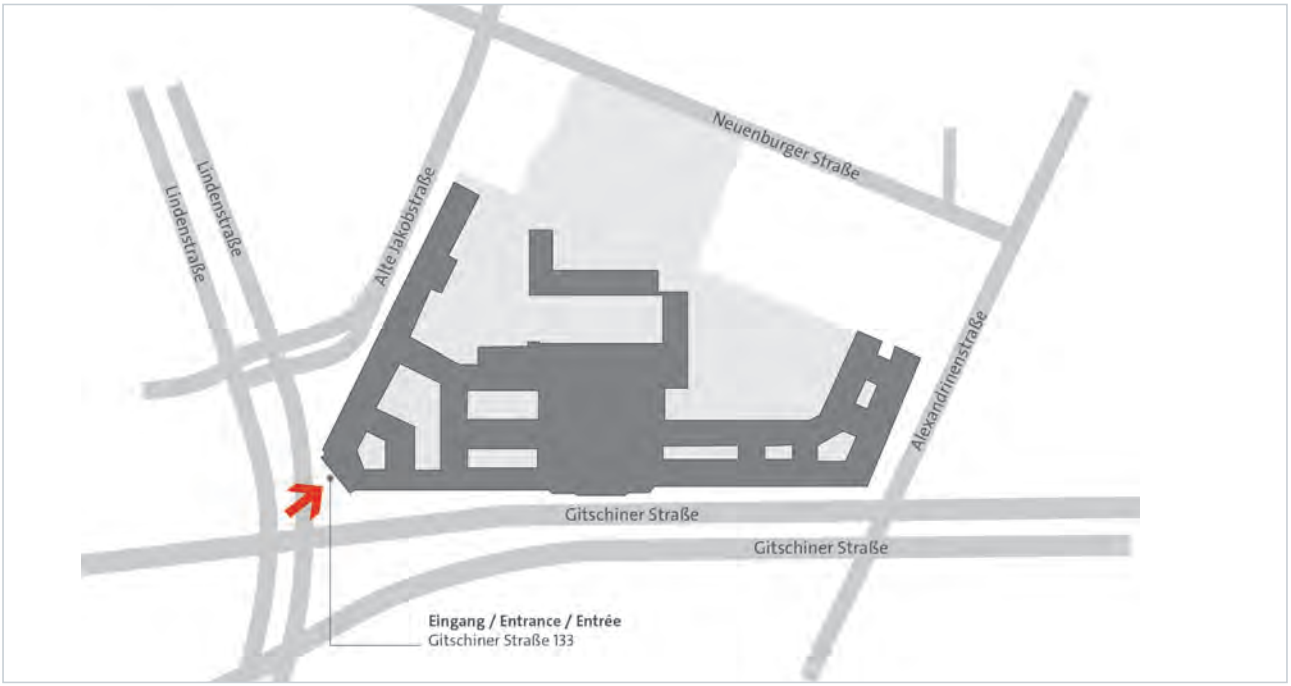
Saving:
21%

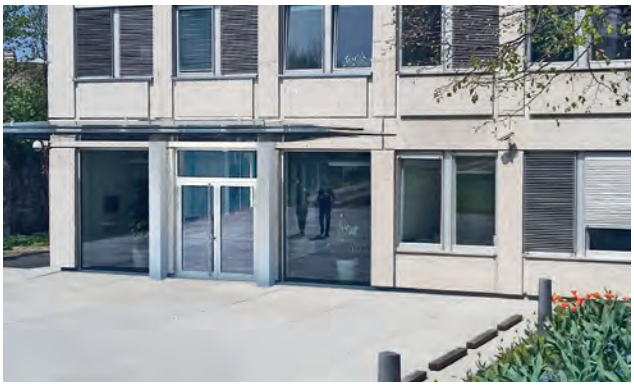
Most relevant areas of environmental law	Relevant facilities/activities
Water regulations	Water discharge into sewage system
Waste regulations	Recycling/separation/disposal of various types of waste
Building energy efficiency regulations	Building insulation, energy-efficient technologies
Health & safety, hazardous materials regulations	Risk assessment, fire prevention, restrictions on certain chemical agents

Site/building	Gross floor area	Net building area	Workplaces	Status
EPO Berlin	18 100 m²	18 093 m²	268	Rented

Figure 4

EPO Berlin





2.4 EPO Vienna

Vienna is the smallest of all the EMAS-verified 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 2017: 587 MWh

Saving: **17%**

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	12 300 m²	7 133 m²	94	Proprietor

Figure 5

EPO Vienna

3. Environmental management system

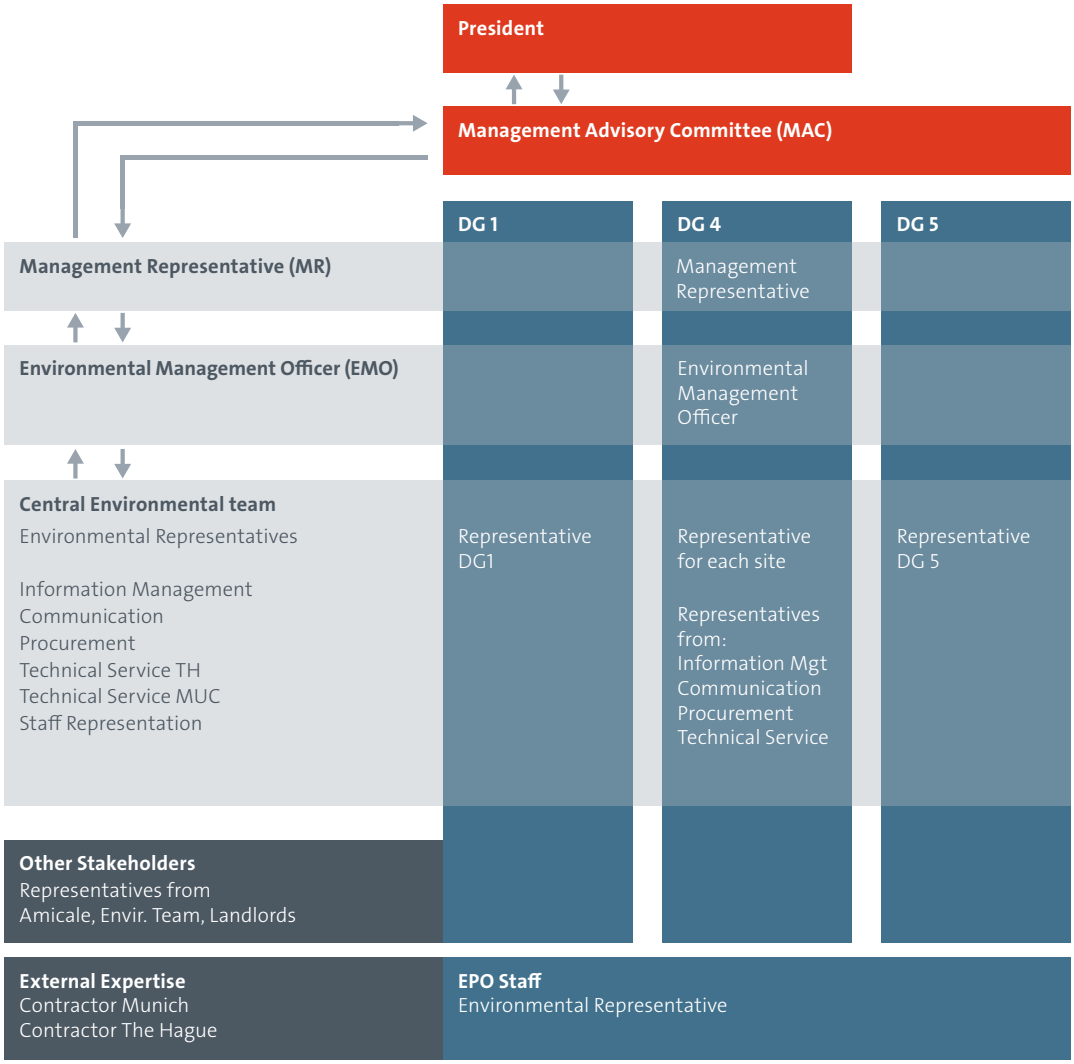
The 2009 environmental policy implemented an environmental management system under EMAS and the EPO took on a leading environmental role as an administrative institution. The management system integrates environmental aspects into all the Office's operational processes. All the EPO's processes are regularly assessed with a view to potential improvements to environmental protection. Last year the EPO extended this environmental assessment by evaluating its environmental context and by identifying relevant stakeholders and their expectations with regard to the environmental management system. All employees are regularly addressed and encouraged through recommendations and information 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 centrally by the Environmental Management Officer located in Munich. In addition, there are site-specific procedures and documents for each location. 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 Office'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, regular articles in the staff gazette, etc., and is made available to the public in this Environmental Report.

Figure 6

EMAS organisational structure



4. Compliance with legal requirements

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 which are relevant and obligatory 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 laws and implement new requirements. Moreover, all periodic obligations at the different sites (e.g. periodic inspection of diesel tanks) 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[1]

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 that aspect is either assessed at a higher level (e.g. "Overall aspect/Resource consumption/Electricity") or not assessed at all (e.g. "Resource consumption/Cooling water/Water for other systems").

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 only in long term or subject to third-party decisions

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.

[1] The EMAS core indicators have moved to Annex.

Table

Direct environmental aspects

		Berlin	MUC Isar	MUC PH 1-8	TH Hinge	TH Shell	TH Main	TH Le Croisé	TH Rijsvoort	Vienna
Resource consumption Electricity	Overall aspect Resource consumption Electricity	A II	A II	A II	A II	A II	A II	A II	A II	A II
	Computer centre	-	A II	A II	-	A III	-	-	-	A II
	Garages	-	B I	A I	B II	B II	-	-	-	A I
	HVAC	-	A II	A III	A II	A I	A II	-	-	A II
	Canteen	-	A III	A III	A III	-	-	-	-	-
	Cooling/cold water	-	A II	A II	A II	A II	-	-	-	A II
	Humidification	-	B II	B II	A I	A I	-	-	-	-
Emissions from electricity generation (not on-site)		C II	C II	C II	C II	C II	C II	C III	C III	C II
Resource consumption Heating energy	Overall aspect Resource consumption Heating energy	A II	-	-	-	-	-	B II	B II	B II
	Building heating	-	A I	A I	A III	A II	A II	-	-	-
	Hot water	-	B III	B II	A II	B II	-	-	-	-
	Humidification	-	B II	-	B III	A II	-	-	-	-
Emissions from district heating		-	B III	B III	-	-	-	-	-	B III
Emissions from gas		B III	-	-	A III	A III	A III	A III	A III	-
Emissions from business travel by air		A II	A II	A II	A II	A II	A II	A II	A II	A II
Emissions from other business travel		C II	C II	C II	C II	C II	C II	C II	C II	C II
Resource consumption Water for sanitary facilities/canteen		B II	B II	A II	A II	A II	A II	B II	B II	B II
Resource consumption Cooling water/Water for other systems		-	B II	B II	B II	B II	-	-	-	-
Hazardous substances in waste water		B II	B II	B II	B II	B II	B II	B II	B II	B II
Waste – non-hazardous		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	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	B II
Risk of environmental accidents		C II	B II	B II	B II	B II	B II	B II	C II	C II

Some aspects have received an updated rating compared with the 2016 report in order to reflect changes in 2017. For the garages in Munich and in The Hague, influence over electricity consumption has been downgraded (Isar building from A I to B I and Hinge/Shell from A I to B II), due to energy consumption reductions already achieved by the implementation of LED projects. The potential to influence emissions from electricity generation is relatively limited. With the exception of the two rented buildings in The Hague, all sites use electricity from renewable sources. In Munich, the introduction of MeteoViva in PschorrHöfe 7 has led to major savings. Influence over heating energy consumption has increased due to plans to implement MeteoViva in more parts of the PschorrHöfe. In The Hague the potential to influence heating energy consumption is currently limited due to the construction of the new buildings. However the potential for the Main and Hinge has already improved from A III to A II and will improve further when New Main is handed over.

5.1 Overview of all sites

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

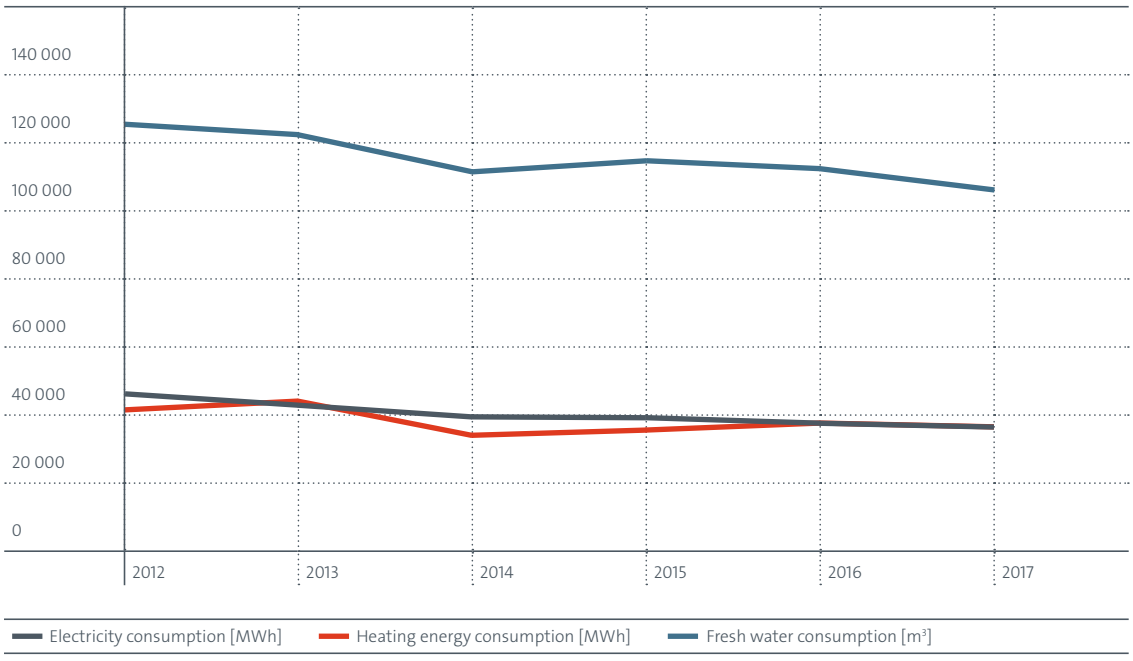
The following tables summarise the chief environmental data for all buildings.

Input	Unit	2012	2013	2014	2015	2016	2017
Electricity consumption	MWh	46 196	42 958	39 491	39 225	37 495[1]	36 331
Heating energy consumption (all factors)	MWh	41 561	44 985	33 973	35 739	37 775[1]	36 504
Fresh water consumption	m^3	125 203	122 555	111 515	114 806	112 416[1]	106 156

[1] Value corrected compared with previous Environmental Report.

Figure 7

Input (all buildings)



Output	Unit	2012	2013	2014	2015	2016	2017
Residual waste generation	t	474	509	560	415	429	422
Waste water generation	m^3	101 554	119 472	108 537	110 480[1]	106 142[1]	96 077
CO_2 emissions from electricity and heating energy	t CO_2e	17 618	7 792	5 800	6 613	6 848[1]	6 586

[1] Value corrected compared with previous Environmental Report.

Figure 8.1

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

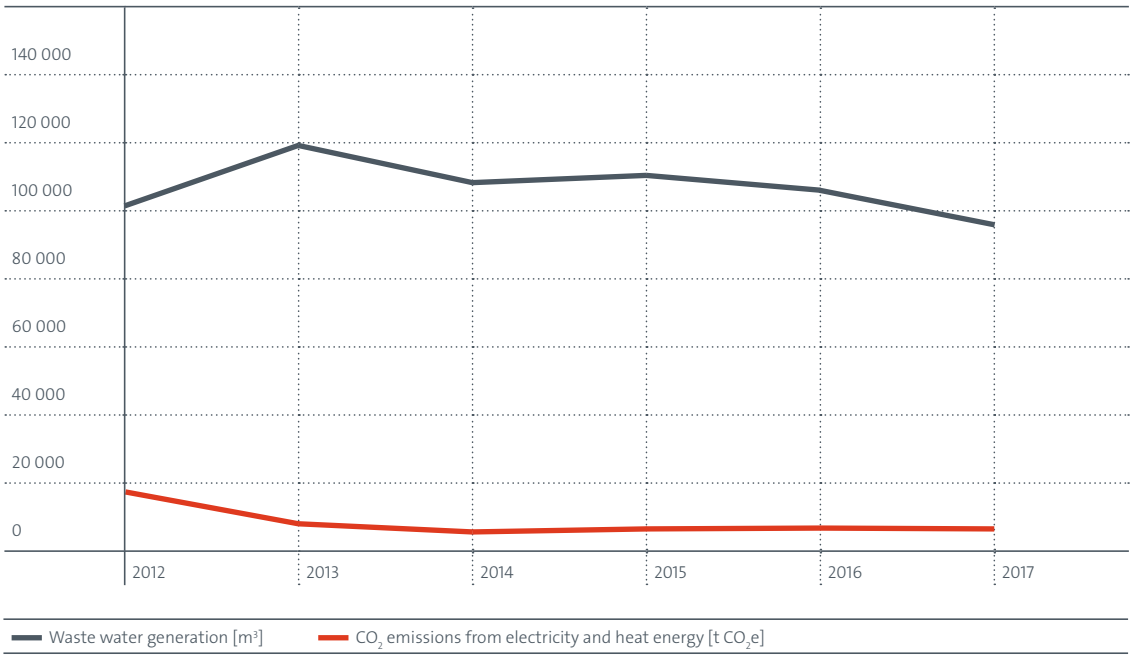
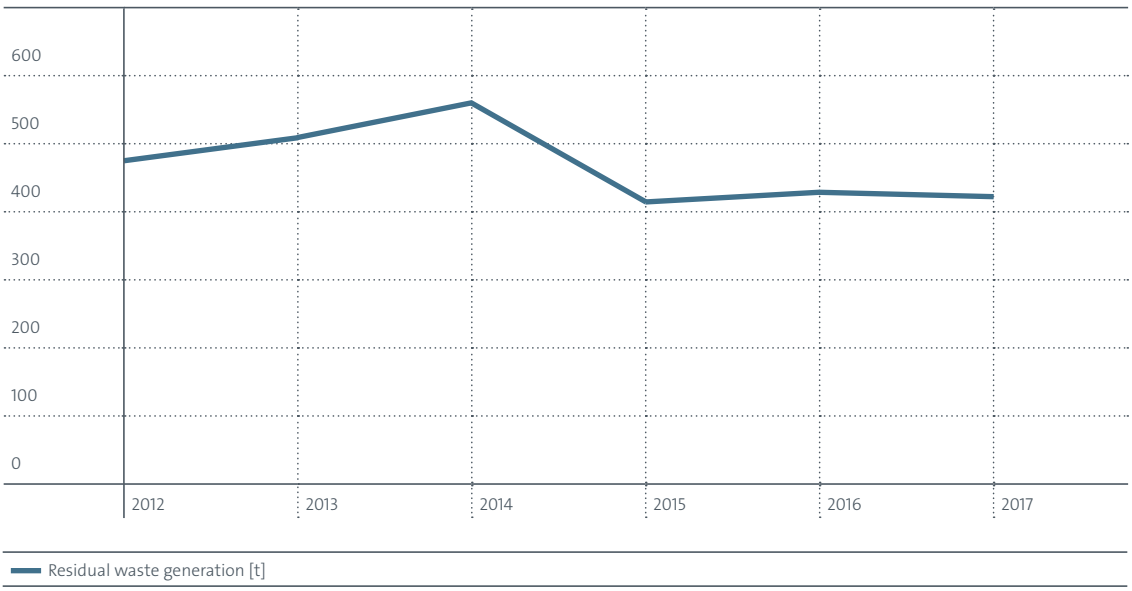


Figure 8.2

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.

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.

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).

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.

In 2017, electricity consumption decreased in Berlin (-0.9%), The Hague (-5.9%), Munich (-0.8%) and Vienna (-3.2%). In The Hague, the reduction was achieved thanks to the new LED lighting in the garage and the sports hall of the Hinge building, which generated a total saving of nearly 7% for Hinge/Shell/Main. On the other hand there was an increase of 5.7% in electricity consumption in the Rijsvoort building, due to the fact that more people moved into it.
In Vienna the decrease of 3.2% in electricity consumption was partly achieved by changing the emergency lighting to LED. As no other technical measures were implemented in 2017, the remaining savings must have been generated by employees' behaviour and past energy-efficiency projects.

The EPO's overall heating energy demand decreased by 3.4% in 2017 (Berlin -0.6%, Munich +1.0%, The Hague -8.7%, Vienna -2.0%). Weather-adjusted[2] figures show a 2.7% decrease (Berlin +0.8%, Munich -0.7%, The Hague -5.4%, Vienna -3.0%). The decrease in The Hague is primarily linked to the renovation of the Hinge building. The saving was achieved by fixing the problem of the poorly insulated temporary walls which had been built for construction reasons. For Le Croisé and Rijsvoort, heating energy consumption was almost unchanged compared with 2016.
In Vienna the decrease of 3% (weather-adjusted) is a reasonable fluctuation between the years.

With regard to heating energy, the energy monitoring and control system supplies valuable information on load points where there might be saving potential, allowing optimisation measures to be taken in the heat/heating energy field as well.

[2] Weather-adjustment of consumption figures enables controlling for the influence of the weather. Weather-adjusted figures show what would have been consumed if the weather had conformed to what is normal or the long-time average. The influence of e.g. particularly cold winter and hot summer months can thus be extracted.

Electric car charging stations in Munich

At the Munich sites electric car charging stations have been installed during recent years. Electric vehicle charging is becoming a popular workplace benefit and the EPO is supporting drivers of electric vehicles to travel in and around the region's main city. Offering charging stations for commuters helps to reduce the CO_2 emissions caused by EPO staff. As the availability of charging stations has been communicated actively, the number of charging cycles and consumption increased during 2017.

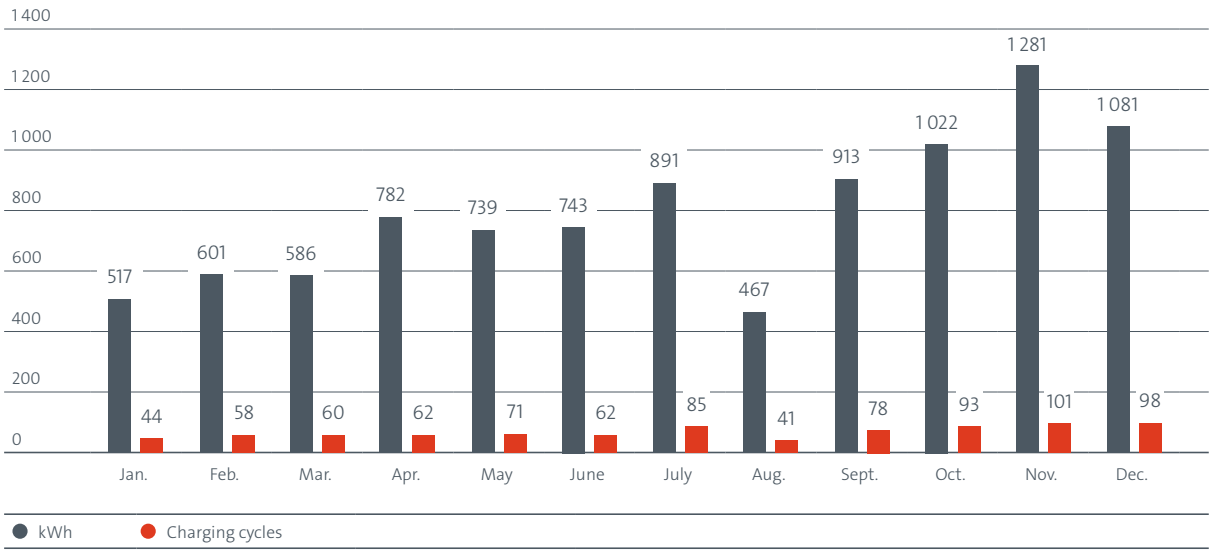


Figure 9

Absolute electricity consumption (MWh per year)

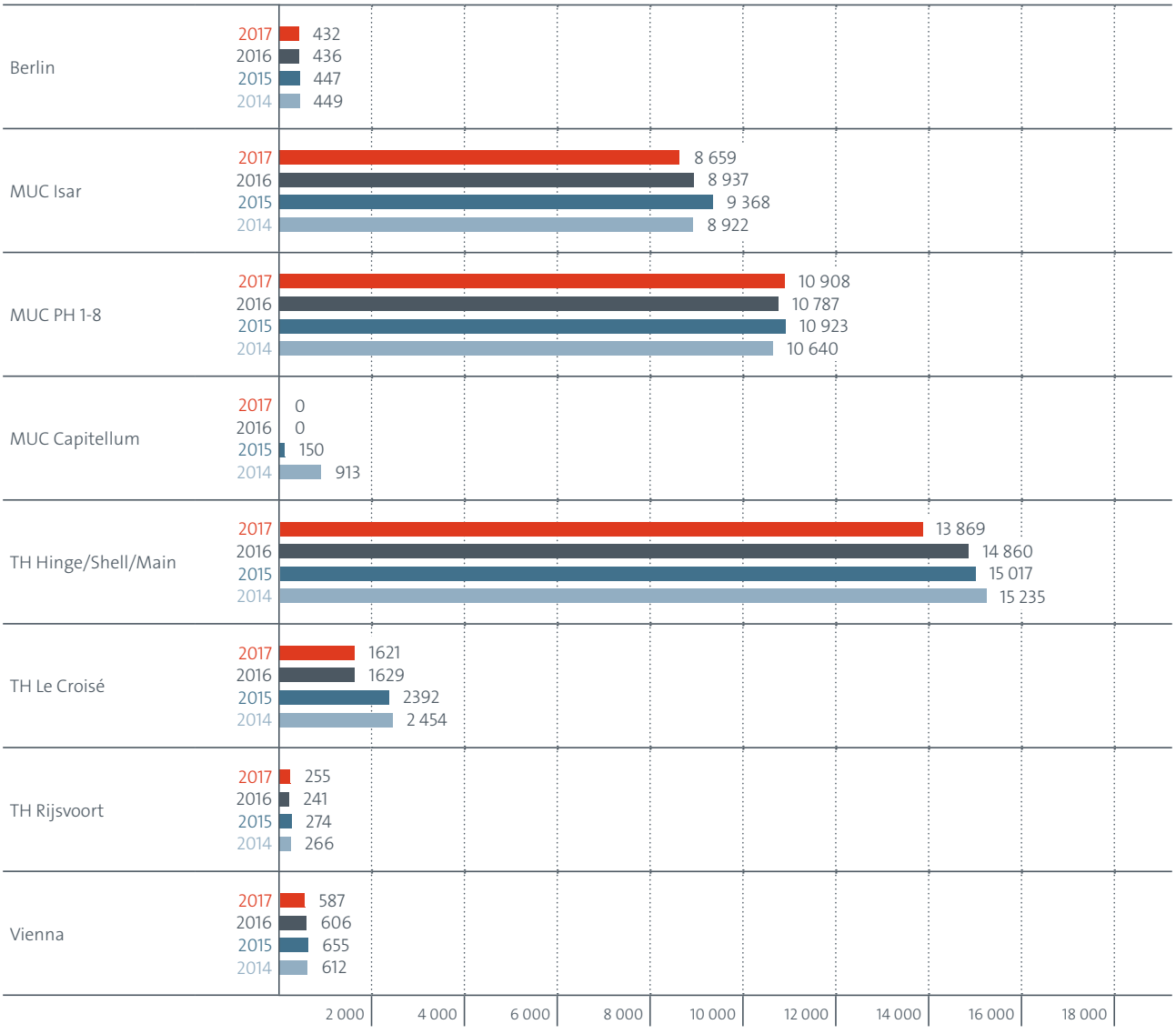
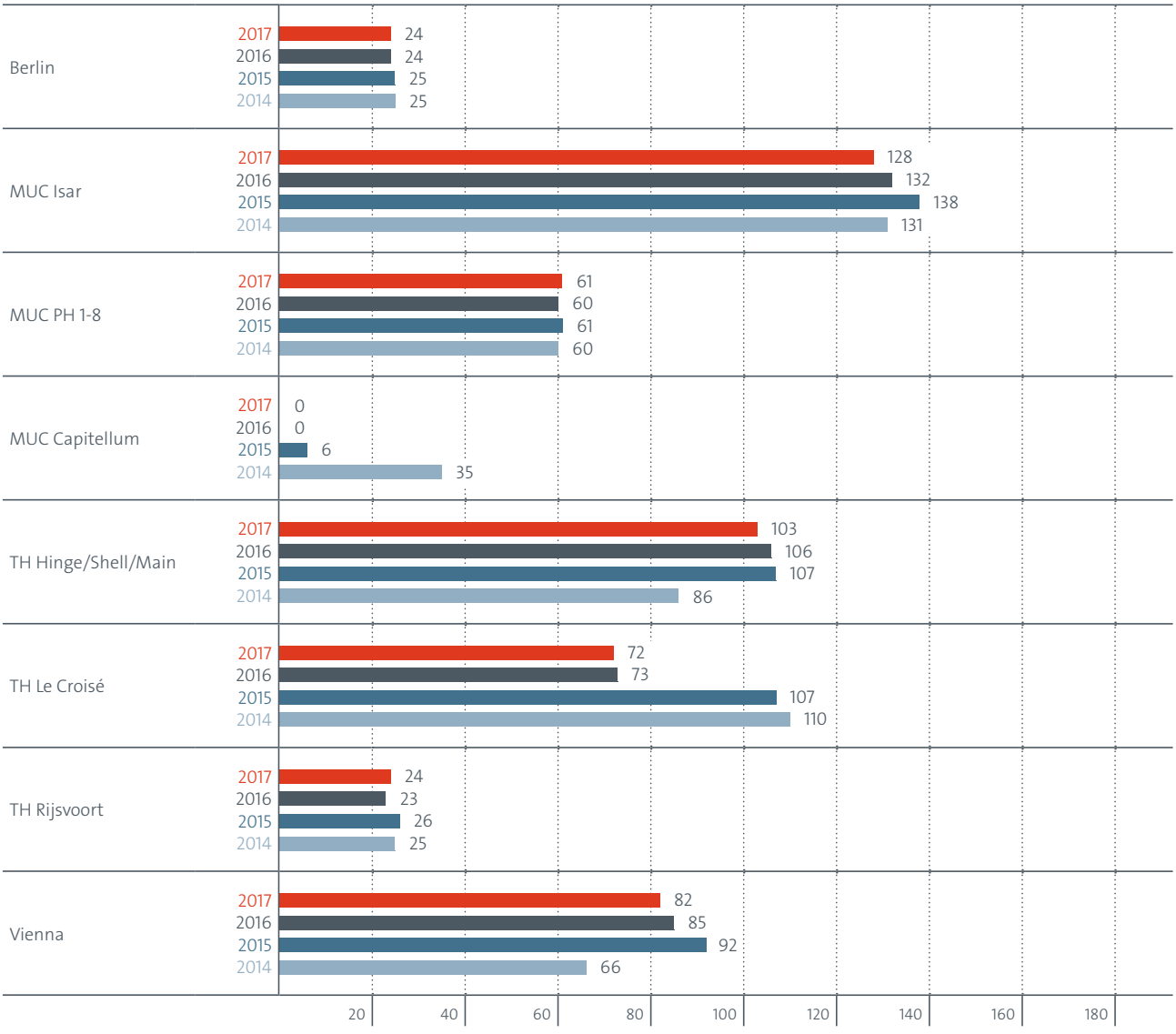


Figure 10

Specific electricity consumption (kWh per m² floor area)[3]



[3] The 2014 and 2015 figures may differ from those previously published on account of a better data basis for calculating the square-metre floor area.

Figure 11

Absolute heat energy consumption (MWh per year)

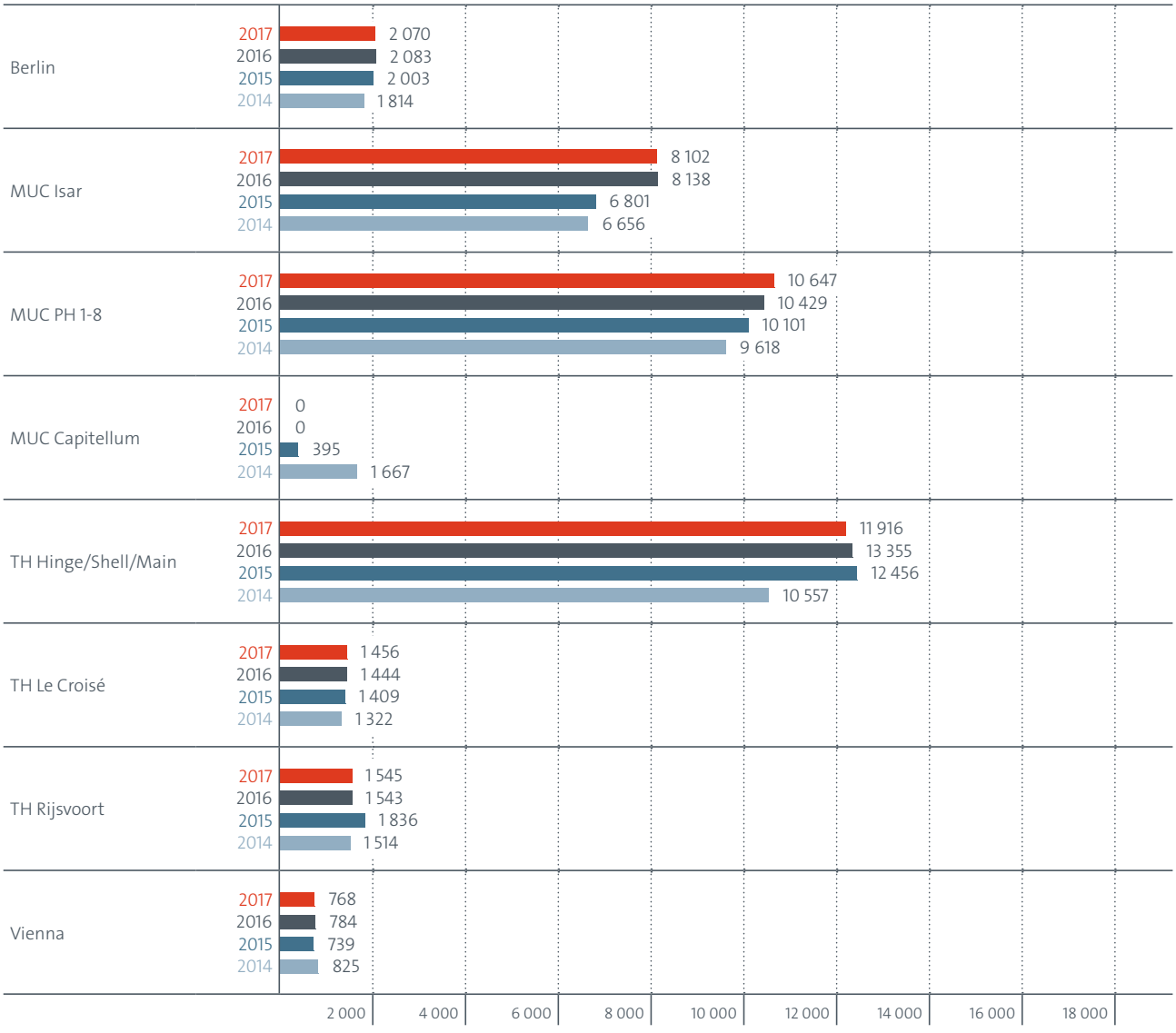


Figure 12

Weather-adjusted heat energy consumption (MWh per year)

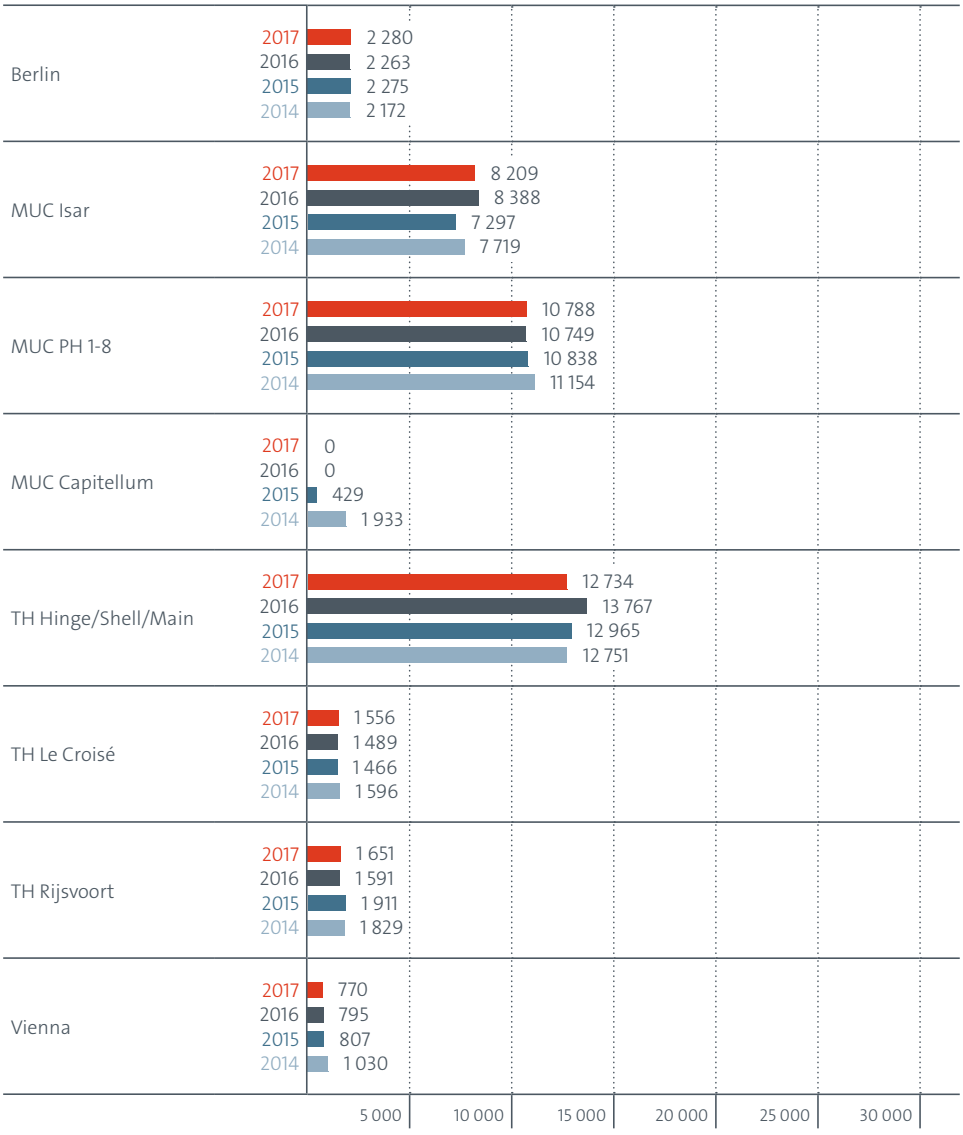
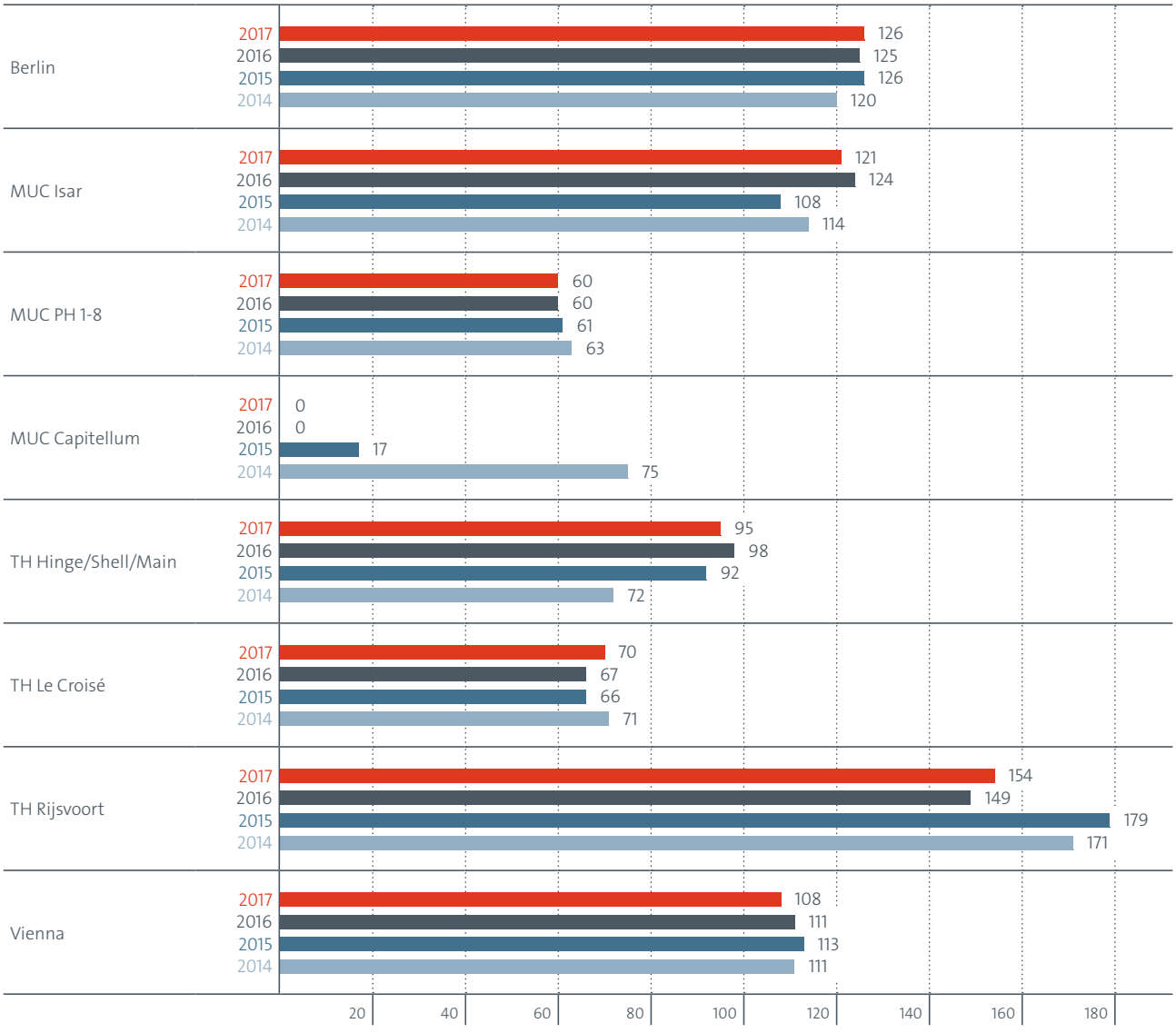


Figure 13

Specific weather-adjusted heat energy consumption (kWh per m² floor area)[4]



[4] The 2014 and 2015 figures may differ from those previously published on account of a better data basis for calculating the square-metre floor area. The 2016 figure for Hinge/Shell/Main has been corrected compared with the previous Environmental Report.

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. That explains the high water consumption there compared with other sites.
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.

The EPO's water consumption decreased by 5.6% in 2017. However, the trend varied by site. At some, water consumption fell (MUC PschorrHöfe -6.6%, TH Hinge/Shell/Main -15.9%, TH Rijsvoort -35.3%); at others, it rose (MUC Isar +13.8%, Berlin +6.3%, TH Le Croisé +3.8%, Vienna +46.5%).

The increase in Vienna is partly a result of legionella bacteria being detected in parts of the piping; before decontamination work could begin, there had to be a continuous flow in the piping, increasing water consumption. In addition, more water was needed for garden irrigation due to the long spell of high temperatures in the summer. In the Isar building water consumption increased because of higher cooling and irrigation demand. In Berlin the increase in water consumption was caused by the work to renovate the building which started in July 2017.

There was a significant decrease in the Hinge/Shell/Main buildings thanks to the renovation of several toilet areas, which eliminated water leakages. The decrease in the Rijsvoort building did not seem plausible and was therefore discussed with the landlord, who confirmed the figures. In the PschorrHöfe water consumption fell thanks to a technical problem in PschorrHöfe 8 being solved in early 2016.

Figure 14

Fresh water consumption (m³ per year)

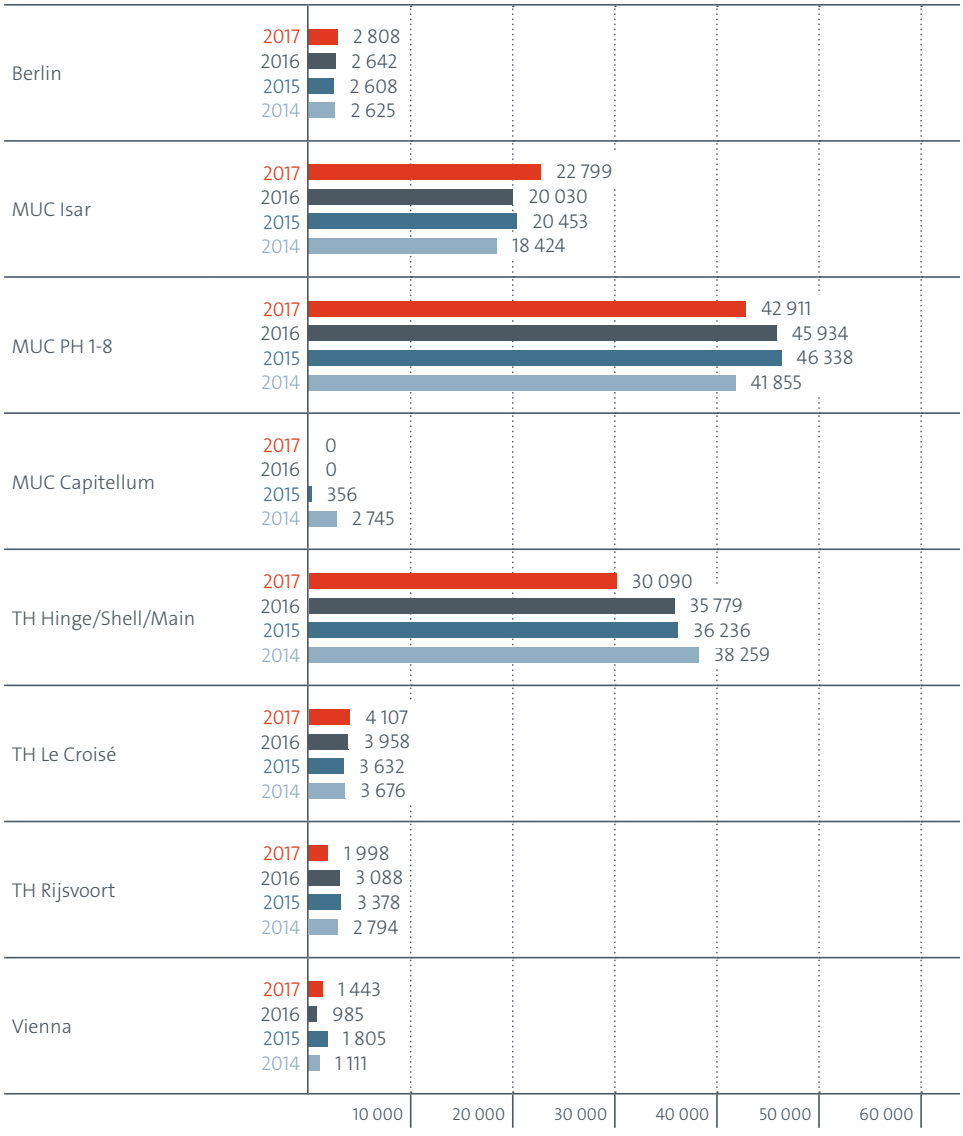
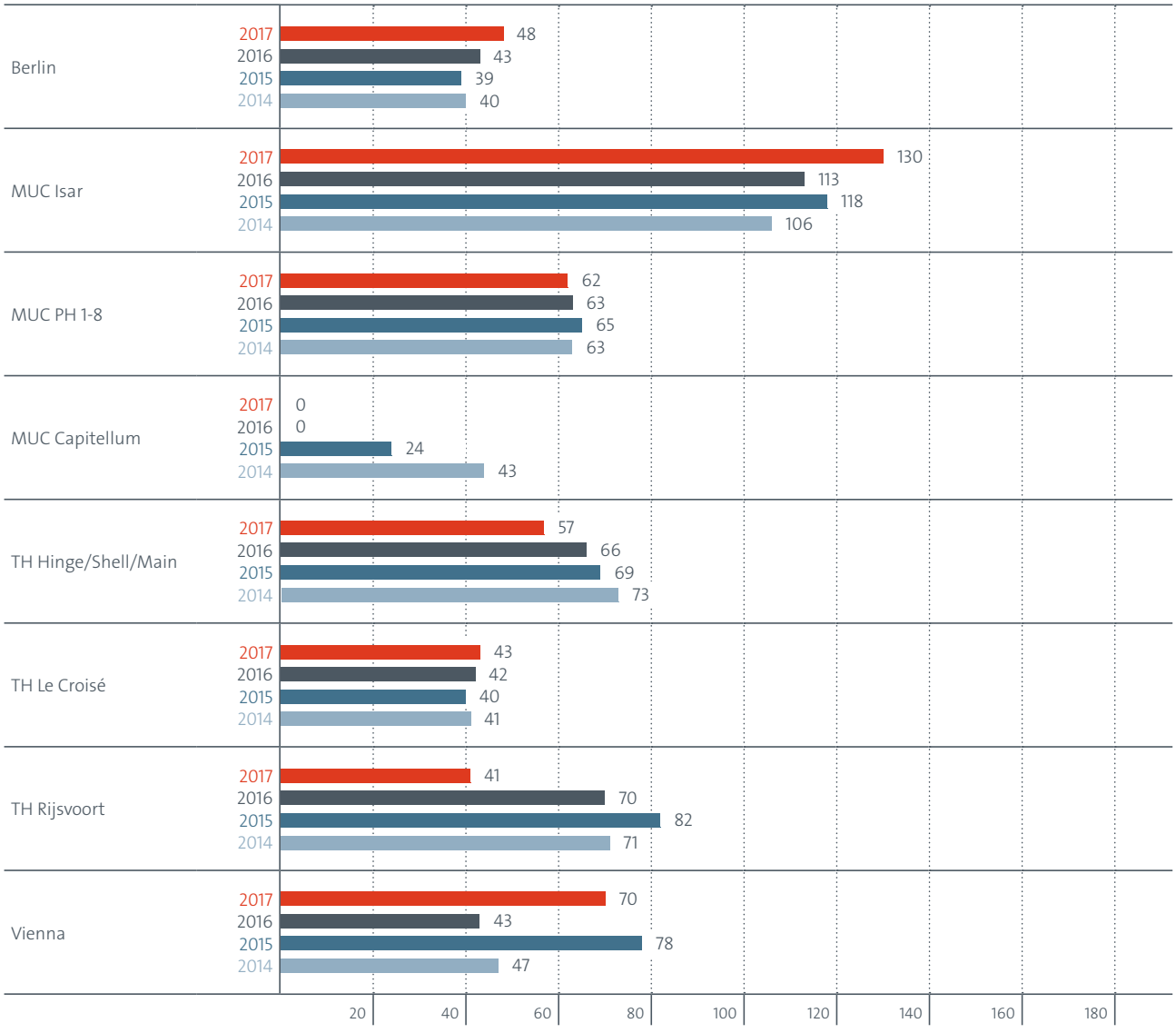


Figure 15

Fresh water consumption per employee and day (l/employee/day)



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. From day to day, residual waste and waste paper constitute the main categories of waste at all sites.

In 2017 the amount of residual waste fell by 1.6%, particularly in The Hague (-7.1%). Residual waste amounts were almost unchanged in Munich (+1.8%), Vienna (0.0%) and Berlin (0.0%). The reduction in residual waste in The Hague was helped by the introduction of a better waste separation system for the office floors in 2017. Compared with 2016, residual waste in the Rijsvoort building increased by 33.3% due to the clearing of the storage areas in the cellar.

In Berlin paper waste increased significantly by 61.1% due to the clearing of archives in preparation for the construction work. Paper waste in Le Croisé increased by 21.4%, also due to the fact that a large amount of data from the archives was destroyed. In Munich paper waste decreased considerably by 15.4% – after it had risen by 29.3% in 2016 because in PschorrHöfe 8 and in the Isar building large quantities of files had had to be destroyed. In Vienna paper waste fell by 36.8% compared with 2016, when the high amount of paper waste resulted from a one-off disposal of old EPO books.

There was also a significant fall in food waste in the Isar and the PschorrHöfe buildings (Isar 22.2%, PschorrHöfe -10.5%). The decrease is a result of the patisserie services moving from the Isar building and of the optimisation of food waste disposal.

Figure 16

Total residual waste generation (t per year)

Figure 17

Residual waste per employee and day (in kg)

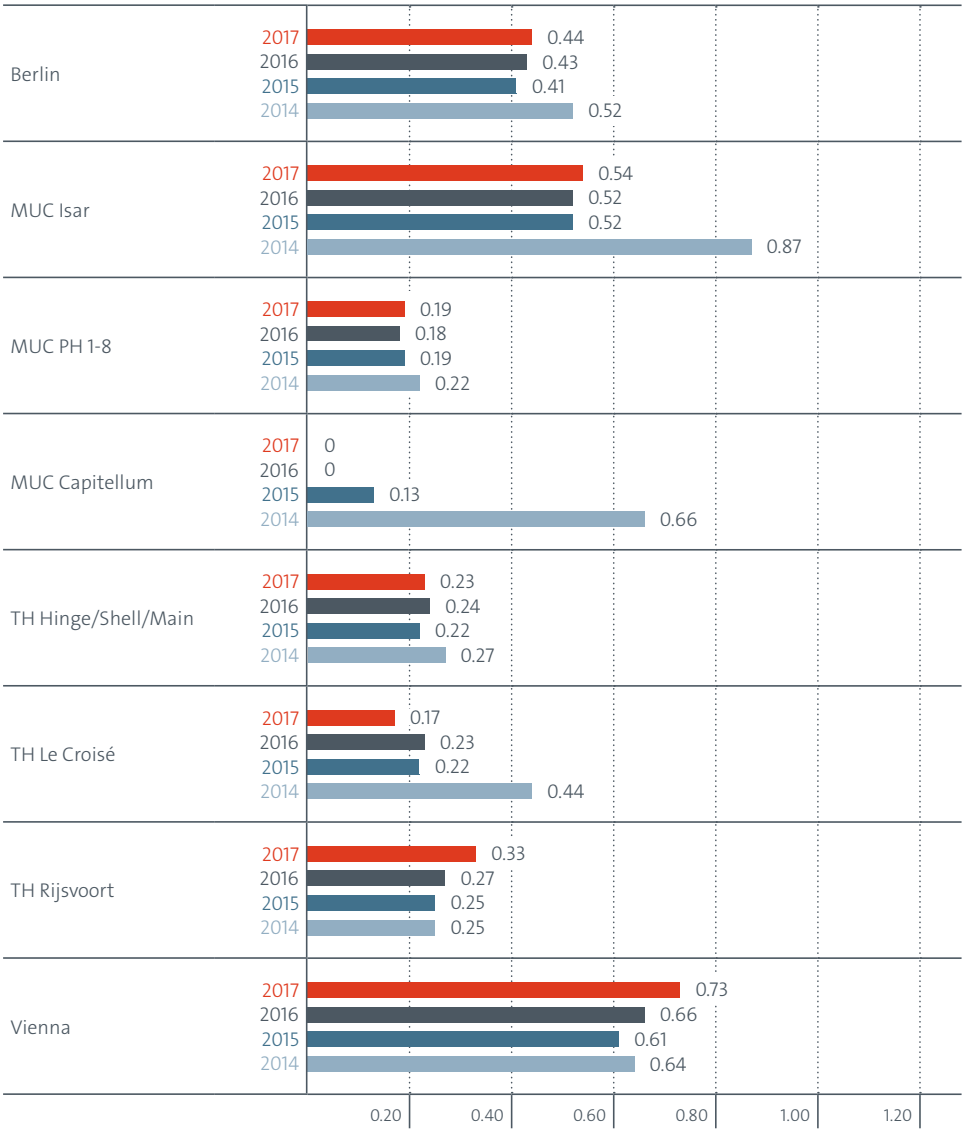
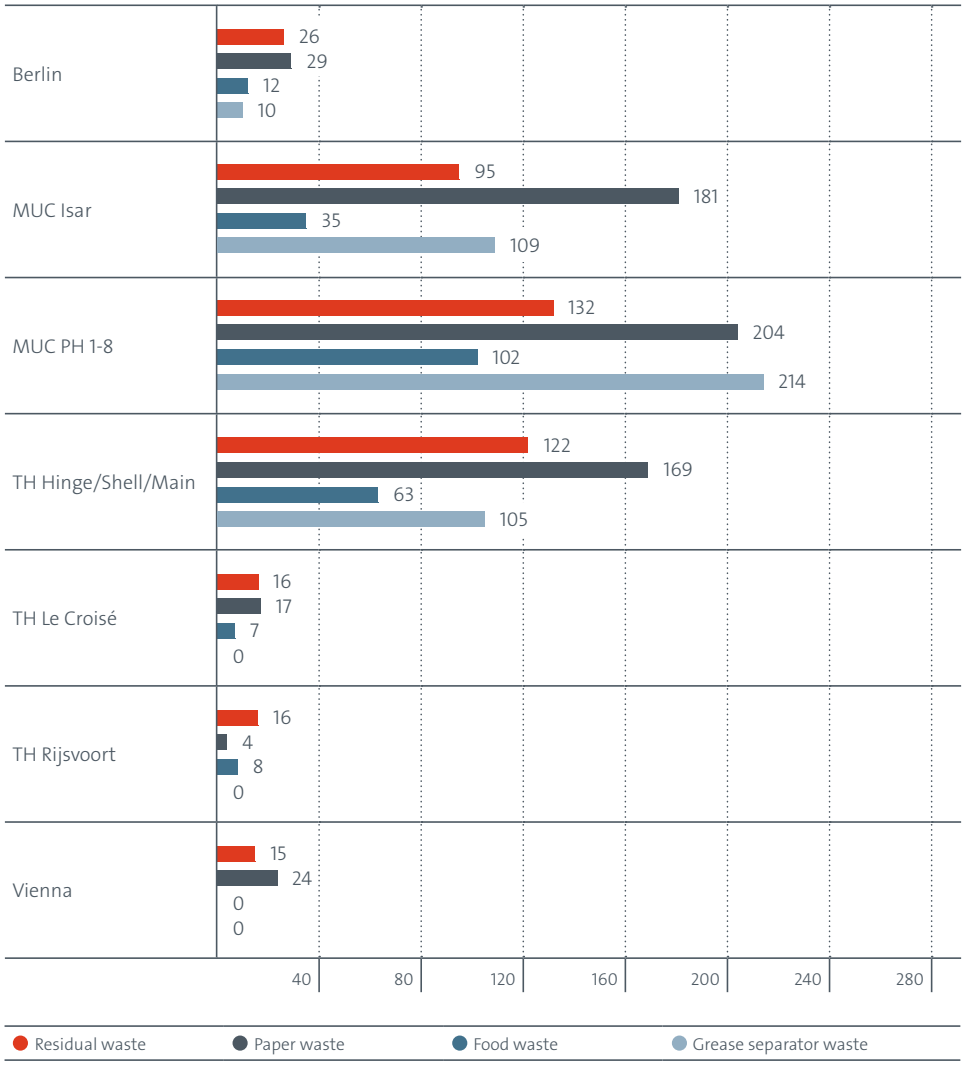


Figure 18

Composition of waste in 2017 (in tonnes)



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. To date, only data for business trips between sites has been collected.

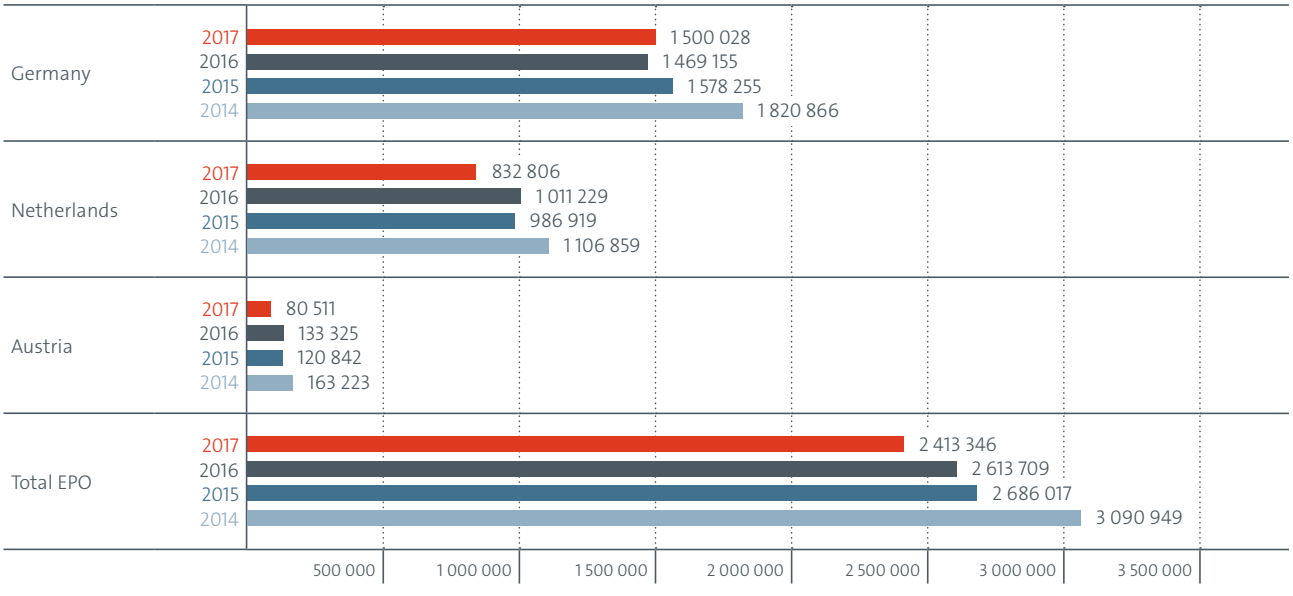
In the light of the EPO's efforts to reduce its carbon footprint, employees at all sites are informed of the CO_2 emissions associated with business travel and are encouraged to use the videoconference rooms.

Fig. 19 shows a decrease in emissions from air travel in 2017 of more than 200 363 kg CO_2 equivalent (8%) for all sites considered together. The use of the videoconference rooms rose from 9 060 hours in 2016 to 13 570 hours in 2017. The decrease was also helped by the installation of the Lync system in 2014, which enables staff to conduct videoconferences from their own PCs, without using the videoconference rooms.

Fig. 20 shows CO_2 emissions from train travel. Having already fallen by 43% the previous year, in 2017 they fell again – by 56% from 49.12 to 21.52 kg CO_2 equivalent. However, it is important to note that in 2017 rail travel in the Netherlands was considered to be CO_2-neutral. Furthermore, for 2017 the graphic only displays data for the period April to December. The former travel data manager, BCD, could not provide the data for January to March 2017.

Figure 19

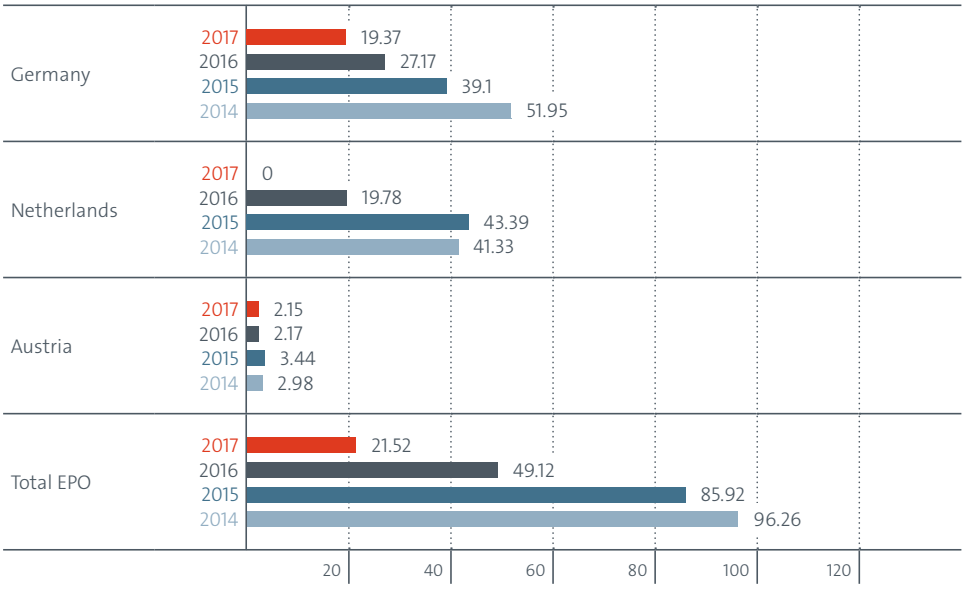
CO_2 emissions from air travel (in kg CO_2e)



Source: BCD Travel data manager/DEFRA for the period January to March 2017, American Express Global Business Travel for the period April to December 2017.
Note: Emissions allocated to place of departure. Emissions displayed this year by country not by individual location due to the data structure of the new service provider.

Figure 20

CO_2 emissions from train travel (in kg CO_2e)



Source: American Express Global Business Travel for April until December 2017. The data from the first quarter of 2017 could not be provided; therefore 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. SO_2 (sulphur dioxide), NOx (nitrogen oxide) and particulates are considered only if they arise directly at the building in question. Our primary objective in minimising emissions is 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.

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.

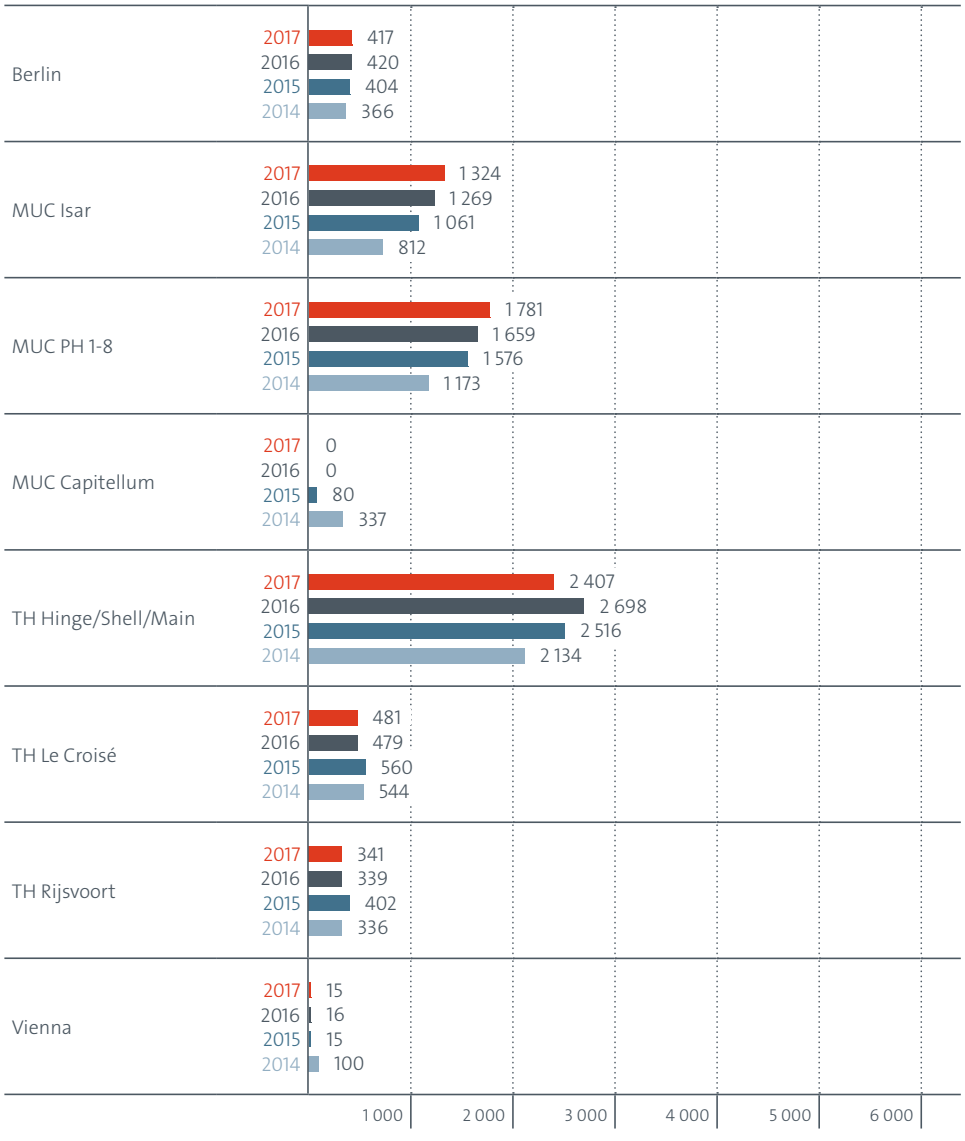
The Hinge/Shell/Main buildings have been using electricity from renewable sources since 2011. All Munich sites followed suit in 2013 and Berlin in 2014. The Vienna site switched to a provider with 100% green electricity in 2015. So there have been no emissions from electricity consumption at the Hinge, Shell and Main buildings and at the Munich, Berlin and Vienna sites since these points in time. However, there are still CO_2 emissions from electricity as a result of the consumption of the rented buildings Le Croisé and Rijsvoort in The Hague.
Office-wide, emissions from electricity consumption increased by 0.3%.

CO_2 emissions from heat energy fell by 4% in 2017, particularly due to a decrease in The Hague (8.7%); whereas for Le Croisé and Rijsvoort CO_2 emissions from heat energy were almost unchanged, they decreased by 10.8% at the Hinge/Shell/Main buildings. This can be attributed mainly to lower heating energy consumption.

In addition we consider CO_2-equivalent emissions from losses of cooling agents at cooling facilities. These occur sporadically due to defects and/or repairs leading to leakage. Maintenance of cooling facilities is performed highly frequently to minimise the risk of cooling agent losses. In 2017 there were 120 t of CO_2-equivalent emissions due to cooling agent losses. In 2016 there were 32 t, in 2015 none and in 2014 losses of 2 t CO_2 equivalent occured.

Figure 21

Total CO_2-equivalent emissions from electricity, heating and cooling agents (t per year)[5]



[5] First Environmental Report in which the CO_2-equivalent emissions from cooling agents were taken into account. The data for all years reported may therefore differ from previous reports.

5.7 Paper consumption

Large amounts of paper (green and white) were consumed at the Office in 2017. Paper consumption increased by 0.5%. This increase can be attributed mainly to Berlin (+16.7%) and Munich (+2.2%). The reason for the significant increase in Berlin is currently being investigated.

Paper consumption in Munich and The Hague can be indicated only for the entire site, not for individual buildings. Paper consumption in The Hague decreased by one million sheets (-1.5%) in 2017. One reason could be the implementation of the first elements of the electronic patenting process. Paper consumption in Vienna decreased by 11 375 sheets (-3.0%) due to lower external demand for printing jobs.

As part of the increasing digitisation of administrative processes we are aiming to significantly reduce paper consumption. Staff will continue to be encouraged to avoid unnecessary printing or to print double-sided or condensed. eDrex was launched at the beginning of 2017, meaning that the patent specification intended for publication ("Druckexemplar") is no longer collated and edited on paper in most cases. Paper consumption in the patenting process is expected to fall by around 10% as a result.

Fig. 23 illustrates the decrease in paper used per product since 2014. This development shows clearly that the EPO is using less paper, despite the increased number of products.

Figure 22

Paper consumption per site (sheets)

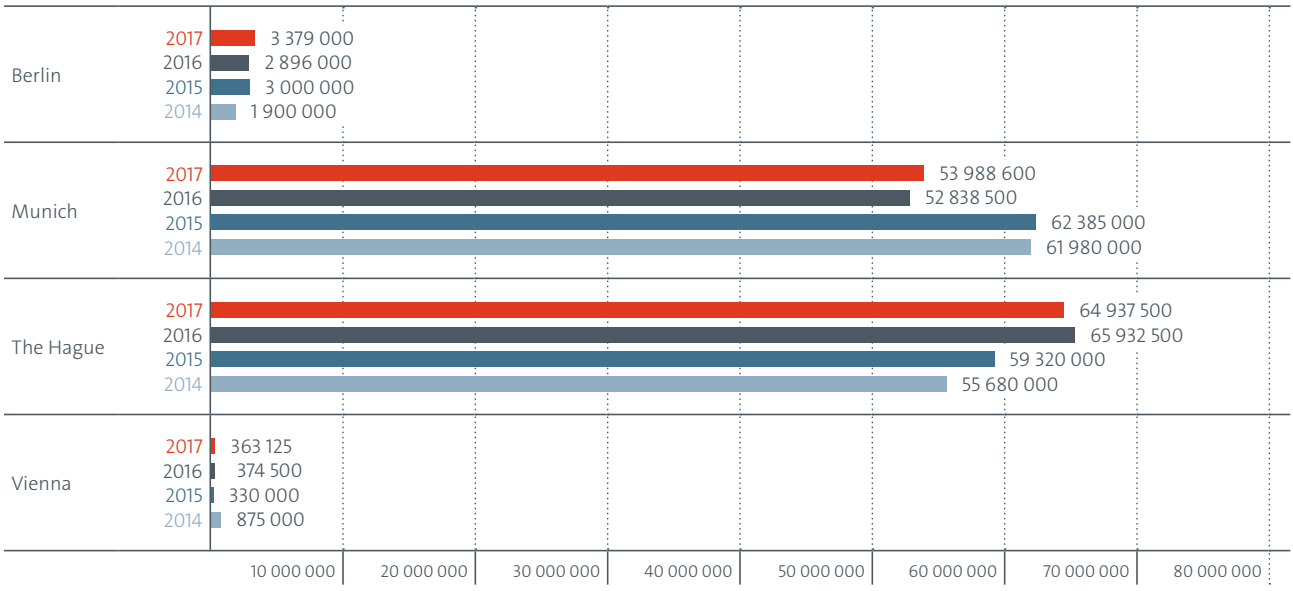


Figure 23

Sheets of paper consumed per product

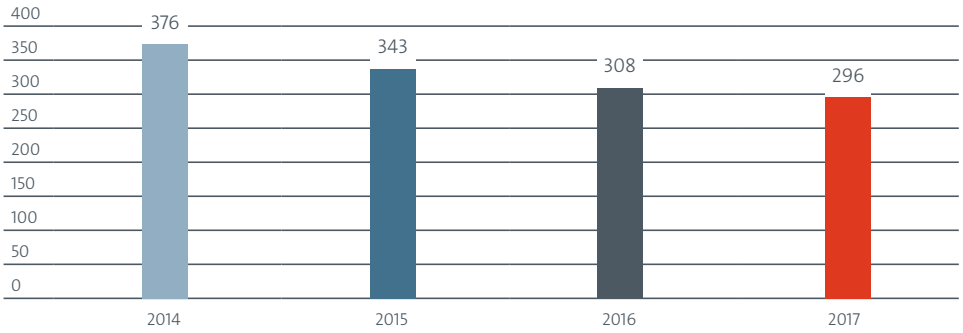
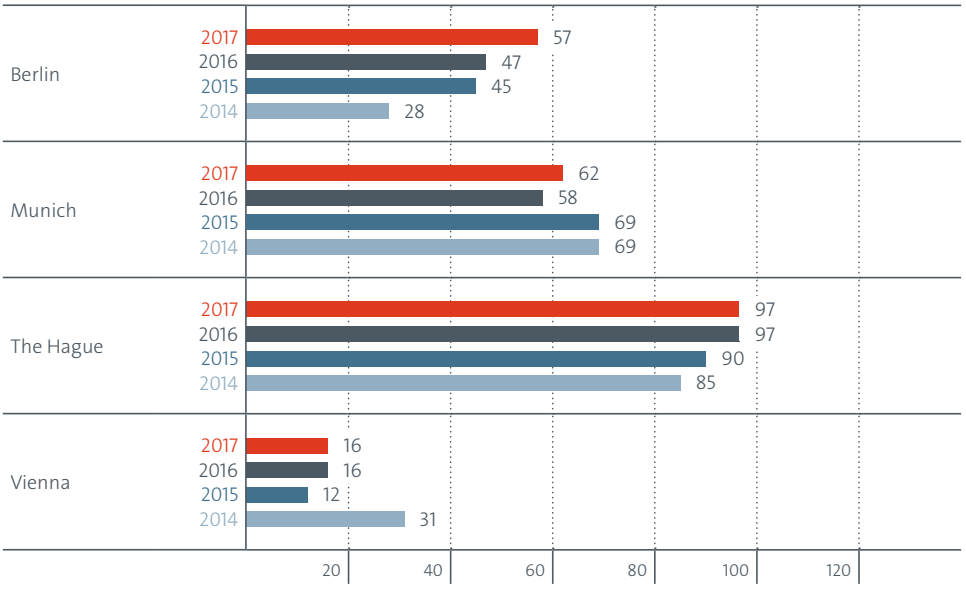


Figure 24

Paper consumption per employee and day (sheets)



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.

The EPO has spent a considerable amount of money on the creation and maintenance of 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 Office 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.

Table

Y02 Technologies or applications for mitigation or adaptation against climate change

Sub-group	Description	Comment
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 wastewater treatment or waste management	Waste water treatment, solid waste management, biopackaging

Table

Y04 Information or communication technologies having an impact on other technology areas

Sub-group	Description	Comment
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. Over three million documents are currently tagged under the Y02/Y04S scheme.

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

7. Improvements: objectives and actions

In accordance with its environmental policy the Office 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 extensive programme of actions for 2018/19 we have defined long-term environmental objectives that will be developed into ambitious CO_2-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 2017 and for 2018/19. The technical measures of the environmental programme essentially relate to the EPO's own buildings. The Office 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 2017

Table

Munich

	Action	Savings	Status
Energy	Convert emergency lighting in PschorrHöfe to LED	14 146 kWh electricity	Completed
	Weather-dependent regulation of heating and cooling equipment in PschorrHöfe 7	Planned: 96 000 kWh electricity, 282 200 kWh heat energy Actual savings: 165 000 kWh electricity, 168 000 kWh heat energy	Completed
	Refurbish outdoor lighting at PschorrHöfe 8 with new LED lighting	7 300 kWh electricity	Completed
	Modernise circular luminaires in core area and corridors	65 000 kWh electricity	Completed
	Adapt safety lighting in Isar building	3 000 kWh electricity	Completed
	Partially modernise garage lighting in PschorrHöfe 1-8	17 000 kWh electricity	Completed
	Replace gutter heating system for frost protection in Isar building	300 000 kWh electricity	Pending
CO_2	Feasibility study on installing photovoltaic modules on Isar building roof	Unquantifiable	Dismissed as statics of roof do not meet requirements
	Collect clothing and toys for donation campaign	Indirect, CO_2	Completed, 21 m^3 toys and 28.8 m^3 clothes collected
	Increase proportion of organic produce in catering	Data not yet available	Ongoing, included in the long-term MAC goals
Awareness	Hold repair café to help staff fix broken items easily at home	Unquantifiable	Completed
	Install beehives on Isar building. Gazette article raising awareness of biodiversity and the new beehives (readership: 10 250)	Unquantifiable	Completed

In Munich, the planned daylight-dependent lighting control in the core area was cancelled and instead the circular luminaires in the core area and corridors were modernised.

Table

The Hague

	Action	Savings	Status
Energy	Replace boilers in Hinge with more efficient models	Electricity	Completed
	Investigate future of Shell building with regard to general maintenance in terms of environmental aspects	Data not yet available	In progress, five different options are currently being investigated
CO_2	Install eight e-charging stations	Indirect, CO_2	Completed
	Install new meters	Indirect, CO_2	Completed, four additional electricity meters installed
	Collect books and toys for donation campaign	Indirect, CO_2	Collection of books ongoing, no storage space for toys
	Hold bike workshop once a month	Indirect, CO_2	Ongoing, every second week
	Hold repair café	Indirect, CO_2	Completed
Waste	Improve waste concept in new cleaning contract by taking up the separation of glass, paper, plastic and residual waste	Unquantifiable	Completed
Water and hazardous substances	Green car washing	Water, hazardous substances	Ongoing, once a week
Paper	Use green printer paper for notebooks	Paper	Ongoing
Awareness	Hold repair café to help staff fix broken items easily at home	Unquantifiable	Completed
	Provide information about newly installed e-charging stations (readership: 1 450)	Indirect, CO_2	Completed

Table

Berlin

	Action	Savings	Status
CO_2	Install charging stations for electric cars	Indirect, CO_2	Still ongoing until finalisation of building work in 2023
Waste water	Check whether and to what extent cleaning agents used by the cleaning company can be replaced with biodegradable ones	Less contaminated waste water	In progress
Awareness	Create awareness by participating in Health & Safety Day 2017 with EMAS stand	Unquantifiable	Completed
	Evaluate whether cleaning detergents can be replaced with biodegradable products	Unquantifiable	Completed
	Regularly inform DG 1 staff about EMAS	Unquantifiable	In progress
	Investigate possible co-operation with the *Bundesanstalt für Immobilienaufgaben* with regard to synergies from the two organisations' environmental management systems	Synergies from inter-institutional co-operation	Co-operation initiated, but has not resulted in any specific actions so far

Table

Vienna

	Action	Savings	Status
Energy	Install low-energy cooling system for the data centre	77 000 kWh electricity	Pending due to central study on data centres
	Install motion sensors for lighting in sanitary rooms, corridors and staircases	Data not yet available	Postponed to 2018
CO_2	Charging station for electric cars	Indirect, CO_2	Implementation planned for 2018

Table

DGs 1, 4 and 5

	Action	Savings	Status
DG 1	Use of eDrex removes the need for the "Druckexemplar" in patent applications as of 1 December 2016	Approx. 10% paper in application process	Completed
DG 4: Health and Safety	Health and Safety event with information to encourage employees to cycle to work (1 190 employees received a set of bike lights, 40 more won a helmet)	Indirect, CO_2	Completed
DG 4: Information Management (IM)	Launch an IM intranet site on ICT sustainability and green IT	Unquantifiable	Completed
	Ensure consideration of green IT in the lease agreement for the data centres in Luxembourg	Unquantifiable (Green IT aspects have been considered; gains in energy efficiency can only be determined once the move has taken place.)	Completed
	Increase environmental awareness in IM by regular communication via the environmental representative	Unquantifiable	Completed
	Nominate a dedicated infrastructure environment representative (IER)	Unquantifiable	Completed
	Update template for all IM procurement activities taking into consideration environmental criteria	Unquantifiable	Completed
	Receive 2017 ICT sustainability report for the IaaS services	Unquantifiable	Completed
	Integrate ICT sustainability criteria in MPAS tenders and where possible in other large tenders	Indirect, CO_2	Completed, in progress for 2018-2022
DG 4: Procurement	In 2016 the consideration of environmental criteria was included in the financial regulations (FinRegs) for procurement processes; in 2017 it was included in one more FinRegs article and the tender guidelines	Unquantifiable	Completed
DG 5	Assess processes' paper needs, and whether some could be switched to paperless information exchange	Paper	Continuously
	DG 5 has developed a patent classification scheme simplifying the search for climate change mitigation technology patents and will make available an easily accessible database for patented climate change mitigation technologies	Indirect, CO_2	Completed

7.2 Action planned for 2018/19

Table

Munich

	Action	Savings
Energy	Weather-dependent regulation of heating and cooling equipment in PschorrHöfe 6 and 8	PschorrHöfe 6: 30 000 kWh electricity, 70 000 kWh heat energy PschorrHöfe 8: 65 000 kWh electricity, 120 000 kWh heat energy
	Convert lighting to LED in staircases B and E	6 000 kWh electricity
	Refurbish gym in PschorrHöfe with LED lighting	93 000 kWh electricity
	Optimise cooling units in Isar building (EOI project)	300 000 kWh electricity
	Gradually replace conventional electric motors in cooling and ventilation equipment with frequency-controlled motors	Data not yet available
Waste	Switch milk supply for coffee machines from Tetra Pak cartons (70 a day) to large containers with pumps	70 Tetra Pak cartons a day
Indirect CO_2 savings	Regularly communicate environmental and health aspects related to food	Indirect, CO_2
	Install more charging stations for electric cars with payment via the new security cards	Indirect, CO_2
Indirect environmental aspects	Regularly communicate environmental group activities, such as bicycle collection for refugees	Unquantifiable

Table

The Hague

	Action	Savings
Energy	Replace cooling machines on 14th floor for the upper part of the Shell building (in progress and will be finished in July 2018)	Data not yet available
	Replace old cooling machine	300 000 kWh heat
Waste	Tender for new coffee machines is ongoing. This will lead to better waste separation and reduction of waste because the new coffee cups will be collected separately. The tender procedure has been delayed. The new agreement is expected to be in place in mid-2018.	Residual waste
Indirect environmental aspects	Lunch events on "Influence of social thought patterns on global inequality and the environment", organised with ETWA	Unquantifiable
	Regular information events on green topics for staff interested (e.g. green IT, energy-efficient optimisations in homes, e mobility, neighbourhood energy initiatives)	Unquantifiable

Table

Berlin

	Action	Savings
Indirect CO_2 savings	Collect clothing and toys for donation campaign	Indirect, CO_2
	Bike repairs once a year in spring	Indirect, CO_2
	Regularly communicate environmental and health aspects related to food	Indirect, CO_2

Table

DG 4

	Action	Savings
Energy	Look into and evaluate potential application of the European Code of Conduct for Data Centres	Data not yet available

	Action	Savings
Information Management	Look into and evaluate the possibility of an ICT sustainability policy to support the EPO environmental policy	Unquantifiable
	Establish the baseline environmental footprint of the data centres in Munich and The Hague	Unquantifiable
	Ensure that green IT aspects are taken into consideration for the new data recovery centres in Munich	Unquantifiable
Communication	Environmental tips on the EPO Infopoint digital signage system (pending system launch and input from EMAS)	Unquantifiable
	Intranet post informing staff of the latest additions to the Y02 scheme, again raising awareness of the initiative and how it is being taken up externally (in progress)	Unquantifiable
	Gazette article on Y02 scheme in November, taking up a policy briefing (in progress)	Unquantifiable
	Update EMAS intranet site with new strategy (in progress; draft submitted for comment, pending strategy approval)	Unquantifiable
	Communication plan outlining and co-ordinating communication strategy for the year 2018 (in progress)	Unquantifiable
Procurement	Discuss integrating ICT sustainability criteria into business cases to raise awareness	Indirect, CO_2
	Environmental criteria will be considered in the awarding decision in about 15 large tenders in 2018	Unquantifiable
	Look into possibility of a new field in the SAP procurement system to indicate tendering processes of environmental relevance	Unquantifiable

Annex

EMAS core indicators

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	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	8.09	9.06	9.34
Renewable energy as percentage of total consumption (electricity and heat)	%	18.25	17.31	17.27
Paper consumption (material efficiency)	sheet/empl	9 901	10 417	12 608
Water consumption	m^3/empl	8.61	9.50	10.48
Total hazardous waste generation	kg/empl	0	0	0.234[2]
Built surface area (sealed)	m^2	11 250	11 250	11 250
Total waste generation				
Residual waste	t/empl	0.09	0.09	0.10
Paper/card	t/empl	0.06	0.06	0.11
Food waste	t/empl	0.04	0.05	0.04
Food waste as percentage of food served	kg/food	-	-	0.38
Grease trap residues	t/empl	0.03[1]	0.04	0.04
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	1.33	1.51	1.56
SO_2	kg/empl	0.008	0.008	0
NO_x	kg/empl	0.13	0.14	0
Particulates	kg/empl	0.05	0.06	0

[1] Value corrected compared with previous Environmental Report.
[2] In 2017 a few old refrigerators were disposed of, hence the increase in hazardous waste.

EPO Munich – Isar building	Unit	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	20.55	21.18	20.98
Renewable energy as percentage of total consumption (electricity and heat)	%	61.01[1]	55.82[1]	55.19
Paper consumption (material efficiency)	sheet/empl	15 216	12 897	13 166
Water consumption	m^3/empl	25.99	24.85	28.53
Total hazardous waste generation	kg/empl	6.79[1]	16.71[1]	2.72
Built surface area (sealed)	m^2	18 113	18 113	18 113
Total waste generation				
Residual waste	t/empl	0.11	0.11	0.12
Paper/card	t/empl	0.15	0.27	0.23
Food waste	t/empl	0.07	0.06	0.04
Food waste as percentage of food served	kg/food	-	0.27	0.29
Grease trap residues	t/empl	0.17	0.16	0.14
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	1.35	1.58	1.65[2]
SO_2	kg/empl	0	0	0
NO_x	kg/empl	0	0	0
Particulates	kg/empl	0	0	0

[1] Value corrected compared with previous Environmental Report.
[2] First Environmental Report where CO_2-equivalent emissions from cooling agents were taken into account.

EPO Munich – PschorrHöfe 1-8	Unit	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	6.48	6.42	6.85
Renewable energy as percentage of total consumption (electricity and heat)	%	55.46[1]	54.43[1]	54.21
Paper consumption (material efficiency)	sheet/empl	15 216	12 897	13 166
Water consumption	m^3/empl	14.28	13.90	14
Total hazardous waste generation	kg/empl	2.98[1]	11.52[1]	15.87[2]
Built surface area (sealed)	m^2	42 641	42 641	42 641
Total waste generation				
Residual waste	t/empl	0.04	0.04	0.04
Paper/card	t/empl	0.07	0.07	0.06
Food waste	t/empl	0.03	0.03	0.03
Food waste as percentage of food served	kg/food	-	0.27	0.62
Grease trap residues	t/empl	0.07	0.07	0.07
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	0.49	0.50[3]	0.73[3]
SO_2	kg/empl	0	0	0
NO_x	kg/empl	0	0	0
Particulates	kg/empl	0	0	0

[1] Value corrected compared with previous Environmental Report.
[2] Numerous disposals of computers and various IT devices and removal of "old" mineral wool from the corridors and halls in PschorrHöfe 1-6.
[3] First Environmental Report where CO_2-equivalent emissions from cooling agents were taken into account. Values changed compared with previous Environmental Report.

EPO Munich – Capitellum[1]	Unit	2015[2]	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	8.08	-	-
Renewable energy as percentage of total consumption (electricity and heat)	%	32.86[3]	-	-
Paper consumption (material efficiency)	sheet/empl	15 216	-	-
Water consumption	m^3/empl	5.27	-	-
Total hazardous waste generation	kg/empl	0	-	-
Built surface area (sealed)	m^2	3 502	-	-
Total waste generation				
Residual waste	t/empl	0.03	-	-
Paper/card	t/empl	0.14	-	-
Food waste	t/empl	0.01	-	-
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	1.18	-	-
SO_2	kg/empl	0.01	-	-
NO_x	kg/empl	1.09	-	-
Particulates	kg/empl	0.04	-	-

[1] The Munich Capitellum site was vacated on 31 March 2015.
[2] Extrapolated values for whole of 2015 for comparability with previous years.
[3] Value corrected compared with previous Environmental Report.

EPO The Hague – Main, Hinge, Shell	Unit	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	11.45	11.50[2]	10.72
Renewable energy as percentage of total consumption (electricity and heat)	%	54.66	52.67	53.79
Paper consumption (material efficiency)	sheet/empl	19 747	21 421	21 256
Water consumption	m^3/empl	15.10	14.58	12.51
Total hazardous waste generation	kg/empl	57.40[2]	18.64[2]	10.86
Built surface area (sealed)	m^2	81 450[3]	81 450[3]	60 247
Total waste generation				
Residual waste	t/empl	0.05	0.05	0.05
Paper/card	t/empl	0.08	0.08	0.07
Food waste	t/empl	0.04	0.03	0.03
Food waste as percentage of food served	kg/food	-	0.36	0.28
Grease trap residues	t/empl	0.00[1]	0.00[1]	0.04
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	1.05	1.10[2]	1.00
SO_2	kg/empl	0.01	0.01	0
NO_x	kg/empl	0.97	0.96[2]	0
Particulates	kg/empl	0.04	0.04[2]	0

[1] Value could not be established due to change of provider as from 1 January 2016.
[2] Value corrected compared with previous Environmental Report.
[3] Values differ from those published in previous reports due to the buildings' partial demolition to make way for the New Main building.

EPO The Hague – Le Croisé	Unit	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	9.11[1]	7.25[1]	7.16
Renewable energy as percentage of total consumption (electricity and heat)	%	n.a.[2]	n.a.[2]	n.a.[2]
Paper consumption (material efficiency)	sheet/empl	19 747	21 421	21 256
Water consumption	m^3/empl	8.71	9.33	9.55
Total hazardous waste generation	kg/empl	0	0.47[3]	1.82
Built surface area (sealed)	m^2	4 200	4 200	4 200
Total waste generation				
Residual waste	t/empl	0.05	0.05	0.04
Paper/card	t/empl	0.04	0.03	0.04
Food waste	t/empl	0.02	0.02	0.02
Food waste as percentage of food served	kg/food	-[3]	0.41[3]	0.35
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	1.34	1.13	1.12
SO_2	kg/empl	0.004	0.004	0.00
NO_x	kg/empl	0.63	0.60	0.00
Particulates	kg/empl	0.02	0.03	0.00

[1] Electricity consumption extrapolated as only values for less than a year are available.
[2] Values not available.
[3] Value corrected compared with previous Environmental Report.

EPO The Hague – Rijsvoort	Unit	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	11.22	8.92	8.18
Renewable energy as percentage of total consumption (electricity and heat)	%	n.a.[1]	n.a.[1]	n.a.[1]
Paper consumption (material efficiency)	sheet/empl	19 747	21 421	21 256
Water consumption	m^3/empl	17.97	15.44	9.08
Built surface area (sealed)	m^2	4 558	4 558	4 558
Total waste generation				
Residual waste	t/empl	0.05	0.06	0.07
Paper/card	t/empl	0.02	0.02	0.02
Food waste	t/empl	0.05	0.04	0.04
Food waste as percentage of food served	kg/food	-	1.38	1.19
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	2.14	1.70	1.55
SO_2	kg/empl	0.01[2]	0.01	0.00
NO_x	kg/empl	1.82	1.37	0.00
Particulates	kg/empl	0.07	0.06	0.00

[1] Values not available.
[2] Value corrected compared with previous Environmental Report.

EPO Vienna	Unit	2015	2016	2017
Total direct energy consumption (electricity and heat)	MWh/empl	13.28	13.37	14.41
Renewable energy as percentage of total consumption (electricity and heat)	%	58.33[1]	54.22[1]	53.97
Paper consumption (material efficiency)	sheet/empl	3 143	3 601	3 863
Water consumption	m^3/empl	17.19	9.47[1]	15.35
Total hazardous waste generation	kg/empl	0	0	0.00
Built surface area (sealed)	m^2	2 547	2 547	2 547
Total waste generation				
Residual waste	t/empl	0.13	0.14	0.16
Paper/card	t/empl	0.22	0.37	0.26
Food waste	t/empl	n.a.[2]	n.a.[2]	0.00
Emissions (electricity, heat and cooling agents)				
CO_2 equivalent	t CO_2e/empl	0.14	0.15	0.16
SO_2	kg/empl	0	0	0
NO_x	kg/empl	0	0	0
Particulates	kg/empl	0	0	0

[1] Value corrected compared with previous Environmental Report.
[2] Disposal handled by canteen service provider. Waste removed and disposed of by head office.

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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D-80469 Munich

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 7th of June 2018

Dr.-Ing. Hans-Peter Wruk
Environmental Verifier

Office: Im Stook 12, 25421 Pinneberg
Phone.: +49 4101 51 39 09
Fax.: +49 4101 51 39 79

accredited by:
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Dr. Hans-Peter Wruk
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