Europäisches Patentamt
European Patent Office
Office européen des brevets

Environmental Report 2015

In accordance with Regulation (EC) No 1221/2009

ENVIRONMENTAL REPORT 2015

Environmental Report

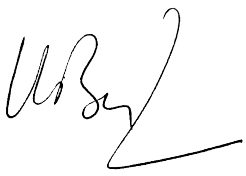
Foreword

With nearly 7,000 staff spread across eight sites, the European Patent Office is an operation that has the potential to consume significant amounts of heat and electrical energy, as well as water and paper. With sizeable premises and buildings, the largest of which entails over 276,000 square metres, carbon dioxide emissions can also be considerable.

In order to responsibly manage these issues, the Office took a significant step in mitigating its environmental impact with the implementation of an environmental management system in 2009, fully certified and compliant with the requirements of the Eco-Management and Audit Scheme (EMAS) at all sites.

In accordance with the requirements of EMAS Regulation (EC) No 1221/2009, the EPO issues an Environmental Report every year, setting out a comprehensive assessment of environmental data and reporting on progress in environmental performance. In this, The Environmental Report 2015, readers have access to a detailed overview of the consumption of various resources such as energy and water, while also giving an understanding of the main outputs, such as waste, paper and emissions. Readers will note that overall, actions taken in 2015 resulted in savings in energy consumption of 401,000 kWh.

The report also details the environmental policy of the EPO and the principles upon which environmental management is based. As well as awareness and minimisation of consumption, the principle of communicating our environmental management to stakeholders underpins the rationale for our annual reporting. More than a communication tool, the report is also a commitment to sustainability. With a view to improving its environmental performance in future, the EPO will continue to assess the environmental impact of its operations, set objectives and targets and will review them on a regular basis.



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 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 will be:

- a framework for all environmental activities
- the integration of EMAS projects into the normal yearly budget cycle
- the clear commitment of EPO´s high management to environmental topics
- an enlarged Environmental Report, part of which is the EMAS Environmental Statement.

2. The European Patent Office

The European Patent Office (EPO) with its roughly 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).

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, 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 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.

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).

Since 2012 the EPO has each year set itself specific environmental objectives. Overall, the action taken in 2015 resulted in energy savings of 401,000 kWh, equivalent to 0.55% compared to the previous year. Hence the target of 1.5% was missed, the reason being that major action planned for 2015 had to be postponed until 2016. The target for energy savings in 2016 has been set at 1%, and this is binding on all EPO sites. This Environmental Report describes how the EPO will ensure that these objectives are achieved.

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; the Capitellum had gas 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 was extensively renovated between 2010 and 2012 to improve its energy rating. The renovation work included replacing all the facade glazing, updating the indoor lighting and upgrading the main technical facilities.

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. No information is available about land contamination at the Munich sites. Hazardous waste consists mainly of spent batteries and fluorescent tubes.

The EPO's single-tenant lease on the only remaining rented building in Munich, the Capitellum, was relinquished on 31 March 2015. That was made possible by office space consolidation in the Isar and PschorrHöfe buildings, allowing Capitellum staff to be moved there. In terms of direct environmental aspects that does not entail savings in individual energy consumption at the workplace, but in future there will be no resource consumption for operating the Capitellum building (heating, lighting) and its special areas (cafeteria, post room, etc.) and functional areas (corridors, entrance areas, underground garage, etc.).

Site/building	Gross floor area	Gross floor area without basement	Workplaces	Status
Isar building	91,400 m²	57,800 m²	787	Proprietor
PschorrHöfe 1-8	276,300 m²	210,600 m²	3,246	Proprietor
Capitellum	25,800 m²	16,200 m²	225	Rented*

* vacated on 31 March 2015.

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 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

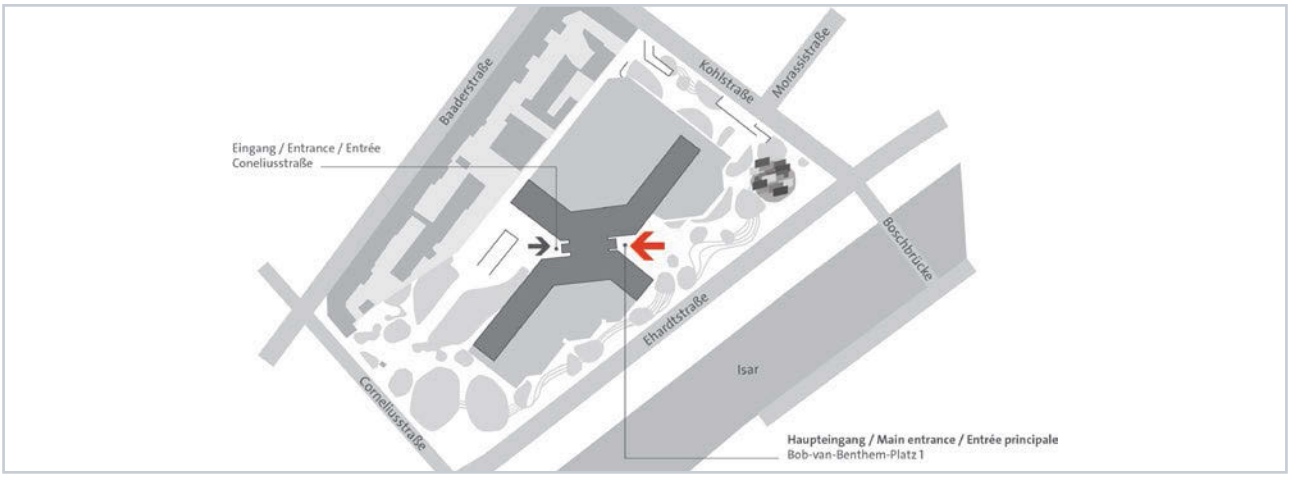


Fig. 1: EPO Munich, Isar building

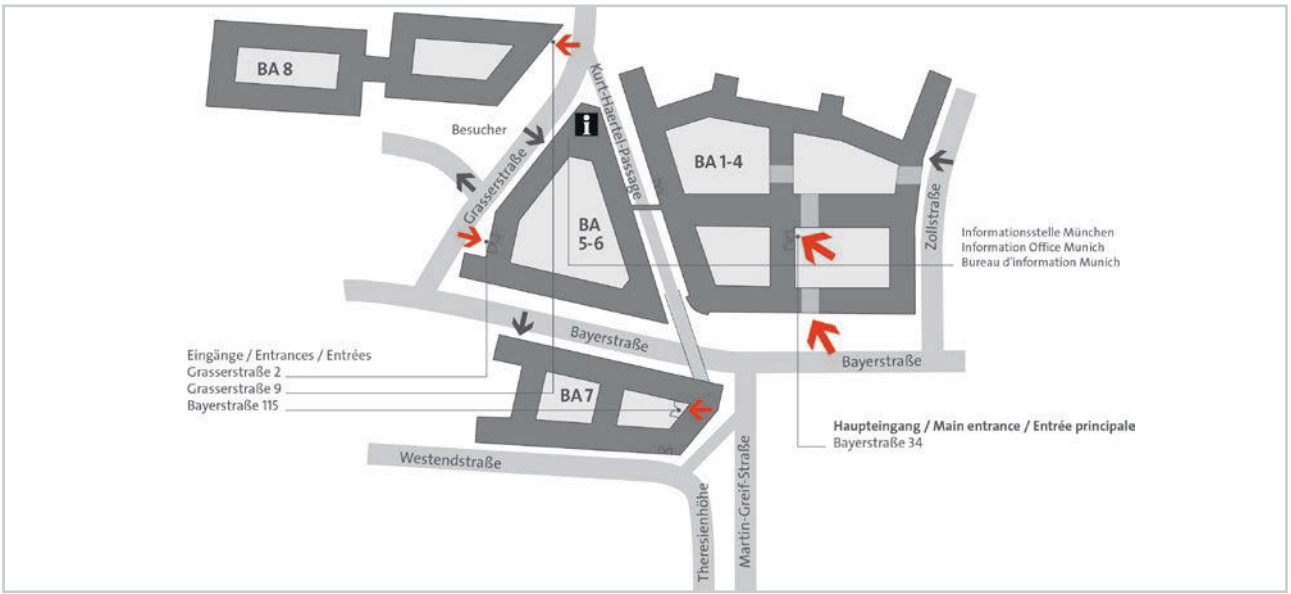


Fig. 2: EPO Munich, PschorrHöfe

2.2 EPO The Hague

After Munich, The Hague is the second-largest site, comprising three building complexes in Rijswijk, one (by far the largest) owned by the EPO and two rented. Owing to their size and condition, certain buildings consume a large amount of heat energy, but this has shown a clearly positive trend over recent years. 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 cleaning agents and several 200-litre containers with 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. No information is available about land contamination at the sites in The Hague. Hazardous waste consists of spent batteries, old fluorescent tubes and waste oil. Under Dutch law the site is subject to an "activity decree", a simplified environmental permit.

Since 2013 construction work has been in progress on the "New Main" building in The Hague, due to replace the present main building by 2017/2018. In several respects "New Main" 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 two standards for sustainable buildings (BREEAM and BNB) and to aim for an energy efficiency rating 20% above the statutory values. In addition, a likely 15% of the energy required for building operation will be generated on site, e.g. from groundwater heat and solar power. The installation of cooled ceilings will increase the basic energy demand.

Site/building	Gross floor area	Gross floor area without basement	Workplaces	Status
Main, Shell, Hinge	192,605 m²	176,421 m²	2,399	Proprietor
Le Croisé	28,700 m²	24,893 m²	417	Rented
Rijsvoort	12,600 m²	9,763 m²	188	Rented

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 type 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

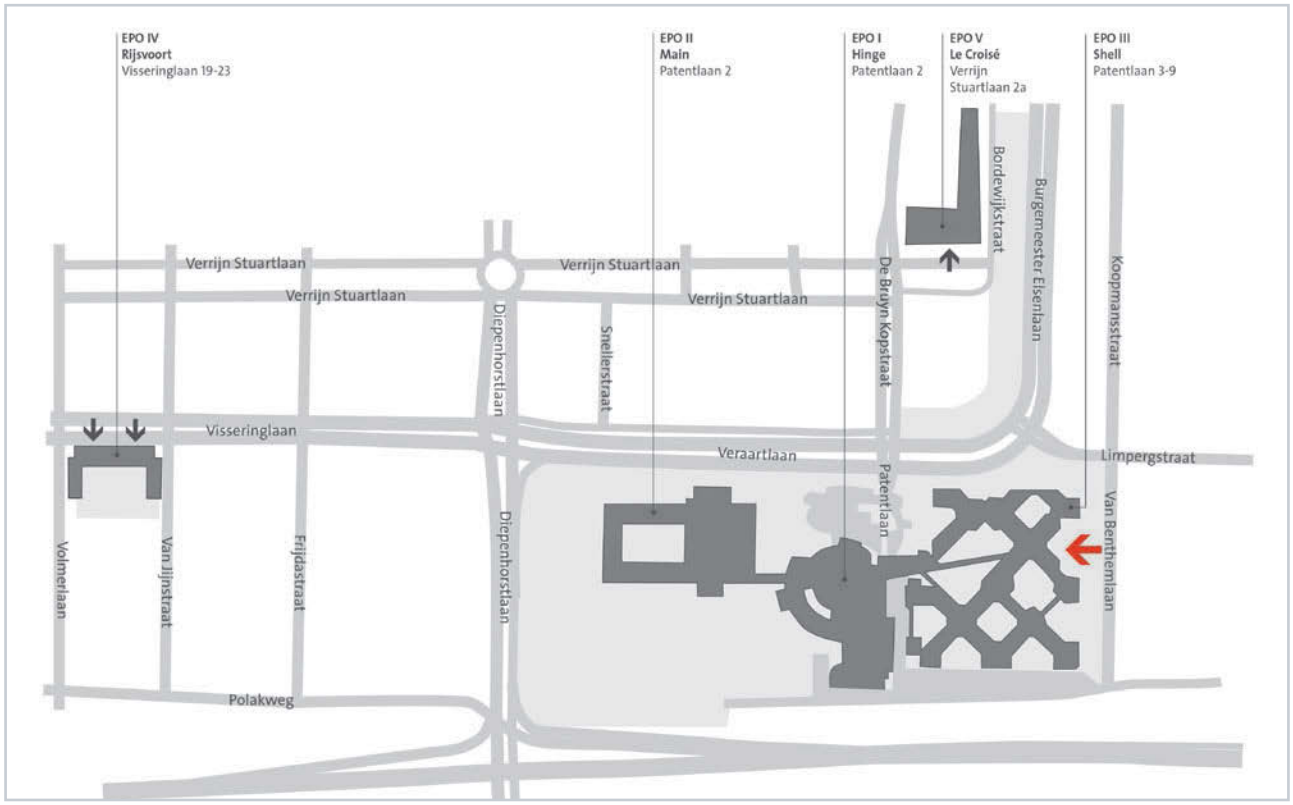
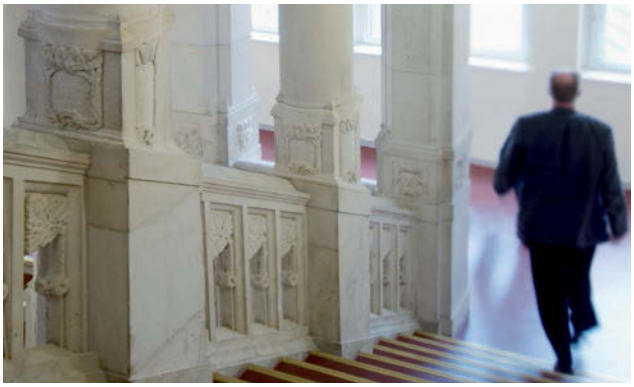


Fig. 3: EPO The Hague



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; however, 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 is likely to start in late 2016, 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. A major part will be devoted to energy-saving items such as cooled ceilings, thermal insulation and lighting control/modification. The work is likely to continue until 2021.

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 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.

Site/building	Gross floor area	Gross floor area without basement	Workplaces	Status
EPO Berlin	18,100 m²	17,600 m²	303	Rented

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

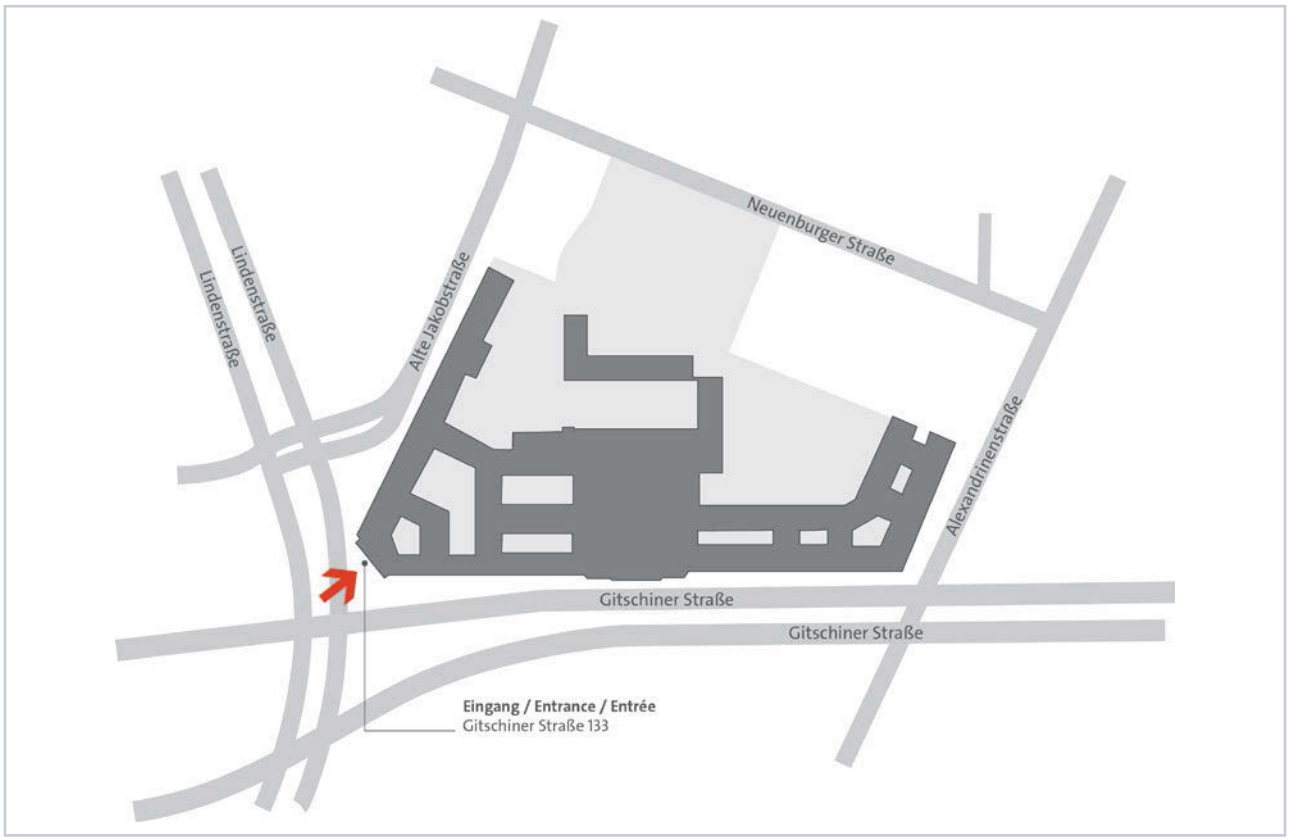


Fig. 4: EPO Berlin

2.4 EPO Vienna

Vienna is the smallest of all the 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 store for cleaning agents. No information is available about land contamination at the Vienna site. The only forms of hazardous waste are spent batteries and fluorescent tubes.

Site/building	Gross floor area	Gross floor area without basement	Workplaces	Status
EPO Vienna	12,300 m²	6,979 m²	105	Proprietor

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

Fig. 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. 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 EPO 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 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.

The Environmental Management Officer and the local environmental representatives, together with representatives from Procurement, Information Management and Technical Services, form the EPO's central environmental team, which meets at least twice a year. The team also includes representatives of all Directorates-General. 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 through the intranet, regular articles in the staff gazette, etc., and is made available to the public in this Environmental Statement.

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. These have not identified any violations of the legal requirements.

5. Direct environmental aspects

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. All significant environmental aspects are recorded and assessed on an annual basis. This evaluation serves as a basis for developing new environmental objectives and measures for further improvement. 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.

		Berlin	MUC Isar	MUC PH 1-8	TH Hinge	TH Shell	TH Main	TH Le Croisé	TH Rijsvoort	Vienna
Direct environmental aspects										
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	–	A I	A I	A I	A I	–	–	–	A I
	HVAC	–	A II	A II	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		C II	C II	C II	C I	C I	C I	C III	C III	C I
Resource consumption Heating energy	Overall aspect Resource consumption Heating energy	A II	–	–	–	–	–	B II	B II	B II
	Building heating	–	A II	A II	A II	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	–	–	–	–	–	B III
Emissions from gas		–	–	–	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

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 table summarises the chief environmental data for all buildings.

Input	Unit	2013	2014	2015
Electricity consumption	MWh	42,958.73	39,491.47	**39,225.88**
Heating energy consumption (all factors)	MWh	44,987.20	33,973.13	**35,739.12**
Fresh water consumption	m^3	122,555*	111,515	**114,806**

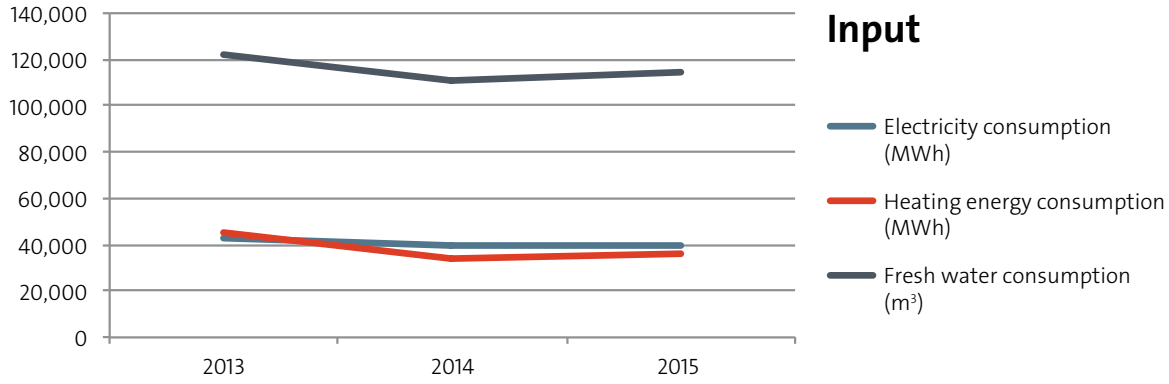


Fig. 6: Input

Output	Unit	2013	2014	2015
Residual waste generation	t	509	560	**415**
Waste water generation	m^3	119,472*	108,537	**113,612**
CO_2 emissions from electricity and heating energy	t CO_2e	7,792	5,800	**6,613**

* Consumption data for TH Rijsvoort not supplied by proprietor.

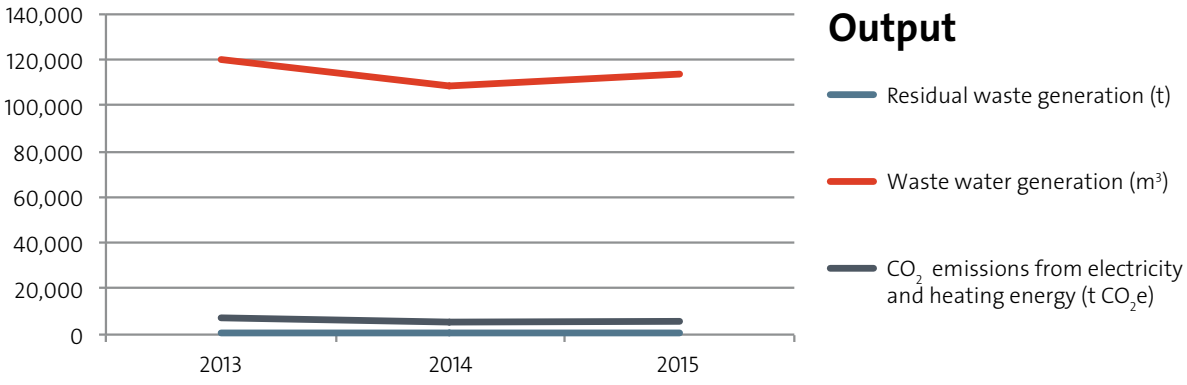


Fig. 7: Output

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 in this Statement it goes into more detail on other criteria more relevant to the EPO.

EPO Berlin	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	9.26	7.44	**8.09**
Renewable energy as percentage of total consumption (electricity and heat)	%	17.82	19.85	**18.25**
Paper consumption (material efficiency)	sheet/empl	8,000	6,250	**9,901**
Water consumption	m^3/empl	12.72	8.72	**8.61**
Total waste generation				
Residual waste	t/empl	0.11	0.12	**0.09**
Paper/card	t/empl	0.06	0.14	**0.06**
Food waste	t/empl	0.04	0.04	**0.04**
Grease trap residues	t/empl	0.05	0.04	**0.04**
Total hazardous waste generation	kg/empl	0	0	**0**
Built-up area (sealed)	m^2	11,250	11,250	**11,250**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	2.47	1.20	**1.33**
SO_2	kg/empl	0.009	0.007	**0.008**
NO_x	kg/empl	0.15	0.11	**0.13**
Particulates	kg/empl	0.06	0.04	**0.05**

EPO Munich – Isar building	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	23.63	19.64	**20.55**
Renewable energy as percentage of total consumption (electricity and heat)	%	50.13	57.31	**57.97**
Paper consumption (material efficiency)	sheet/empl	13,985	15,128	**15,216**
Water consumption	m^3/empl	28.43	23.23	**25.99**
Total waste generation				
Residual waste	t/empl	0.14	0.19	**0.11**
Paper/card	t/empl	0.07	0.72[1]	**0.15**
Food waste	t/empl	0.05	0.07	**0.07**
Grease trap residues	t/empl	0.14	0.16	**0.17**
Total hazardous waste generation	kg/empl	1.56	5.37[1]	**8.63[1]**
Built-up area (sealed)	m^2	18,113	18,113	**18,113**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	1.44	1.02	**1.35**
SO_2	kg/empl	0	0	**0**
NO_x	kg/empl	0	0	**0**
Particulates	kg/empl	0	0	**0**

1 The higher value is attributable to renovation and clearance work due to removals.

EPO Munich – PschorrHöfe 1-8	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	7.74	6.72	**6.48**
Renewable energy as percentage of total consumption (electricity and heat)	%	48.66	52.56	**51.99**
Paper consumption (material efficiency)	sheet/empl	13,985	15,128	**15,216**
Water consumption	m^3/empl	14.38	13.89	**14.28**
Total waste generation				
Residual waste	t/empl	0.04	0.05	**0.04**
Paper/card	t/empl	0.11	0.11	**0.07**
Food waste	t/empl	0.03	0.03	**0.03**
Grease trap residues	t/empl	0.04	0.06	**0.07**
Total hazardous waste generation	kg/empl	1.36	2.04	**0.92**
Built-up area (sealed)	m^2	42,641	42,641	**42,641**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	0.49	0.39	**0.49**
SO_2	kg/empl	0	0	**0**
NO_x	kg/empl	0	0	**0**
Particulates	kg/empl	0	0	**0**

EPO Munich – Capitellum[1]	Unit	2013	2014	2015[2]
Total direct energy consumption (electricity and heat)	MWh/empl	11.10	8.87	**8.08**
Renewable energy as percentage of total consumption (electricity and heat)	%	32.64	35.40	**27.63**
Paper consumption (material efficiency)	sheet/empl	13,985	15,128	**15,216**
Water consumption	m^3/empl	8.40	9.43	**5.27**
Total waste generation				
Residual waste	t/empl	0,1	0.14	**0.03**
Paper/card	t/empl	0.11	0.15	**0.14**
Food waste	t/empl	0.03	0.02	**0.01**
Total hazardous waste generation	kg/empl	0	0	**0**
Built-up area (sealed)	m^2	3,502	3,502	**3,502**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	1.74	1.16	**1.18**
SO_2	kg/empl	0.01	0.01	**0.01**
NO_x	kg/empl	1.62	1.07	**1.09**
Particulates	kg/empl	0.06	0.04	**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.

EPO The Hague – Main, Hinge, Shell	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	13.14	10.79	**11.45**
Renewable energy as percentage of total consumption (electricity and heat)	%	53.19	59.07	**54.66**
Paper consumption (material efficiency)	sheet/empl	16,560	18,690	**19,747**
Water consumption	m^3/empl	18.82	16.01	**15.10**
Total waste generation				
Residual waste	t/empl	0.07	0.06	**0.05**
Paper/card	t/empl	0.06	0.07	**0.08**
Food waste	t/empl	0.04	0.04	**0.04**
Grease trap residues	t/empl	0.01	0.01	**0.00**[1]
Total hazardous waste generation	kg/empl	1.05	5.63[2]	**23.93**[3]
Built-up area (sealed)	m^2	94,450	94,450	**94,450**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	1.24	0.89	**1.05**
SO_2	kg/empl	0.01	0.01	**0.01**
NO_x	kg/empl	1.15	0.83	**0.97**
Particulates	kg/empl	0.04	0.03	**0.04**

1 Value could not be established due to change of provider as from 1 January 2016.
2 Rise attributable to increase in building waste disposal work and improved availability of disposal data.
3 Rise attributable to major renovation work producing large volumes of building waste.

EPO The Hague – Le Croisé	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	9.35[1]	**9.19**	**9.11**
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	16,560	**18,690**	**19,747**
Water consumption	m^3/empl	7.98	**8.94**	**8.71**
Total waste generation				
Residual waste	t/empl	0.04	**0.04**	**0.05**
Paper/card	t/empl	0.03	**0.04**	**0.04**
Food waste	t/empl	0.03	**0.02**	**0.02**
Total hazardous waste generation	kg/empl	0	**0**	**0**
Built-up area (sealed)	m^2	4,200	**4,200**	**4,200**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	1.34	**1.32**	**1.34**
SO_2	kg/empl	0.004	**0.004**	**0.004**
NO_x	kg/empl	0.59	**0.60**	**0.63**
Particulates	kg/empl	0.02	**0.02**	**0.02**

1 Electricity consumption extrapolated as only values for less than a year are available.
2 Values not available.

EPO The Hague - Rijsvoort	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	13.50	10.00	**11.22**
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	16,560	18,690	**19,747**
Water consumption	m^3/empl	n.a.[1]	15.70	**17.97**
Total waste generation				
Residual waste	t/empl	0.07	0.05	**0.05**
Paper/card	t/empl	0.02	0.02	**0.02**
Food waste	t/empl	0.05	0.09	**0.05**
Total hazardous waste generation	kg/empl	0	0	**0**
Built-up area (sealed)	m^2	4,558	4,558	**4,558**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	2.56	1.89	**2.14**
SO_2	kg/empl	0.02	0.01	**0.02**
NO_x	kg/empl	2.18	1.59	**1.82**
Particulates	kg/empl	0.08	0.06	**0.07**

1 Values not available.

EPO Vienna	Unit	2013	2014	2015
Total direct energy consumption (electricity and heat)	MWh/empl	12.44	13.42	**13.28**
Renewable energy as percentage of total consumption (electricity and heat)	%	42.11	10.76[1]	**47.09[1]**
Paper consumption (material efficiency)	sheet/empl	8,871	8,178	**3,143[2]**
Water consumption	m^3/empl	7.79	10.38	**17.19[3]**
Total waste generation				
Residual waste	t/empl	0.12	0.14	**0.13**
Paper/card	t/empl	0.20	0.23	**0.22**
Food waste	t/empl	n.a.[4]	n.a.[4]	**n.a.[4]**
Total hazardous waste generation	kg/empl	0	2.43	**0**
Built-up area (sealed)	m^2	2,547	2,547	**2,547**
Emissions (electricity and heat)				
CO_2 equivalent	t CO_2e/empl	0.31[5]	0.93[5,6]	**0.14[5]**
SO_2	kg/empl	0	0	**0**
NO_x	kg/empl	0	0	**0**
Particulates	kg/empl	0	0	**0**

1 Fluctuating values owing to repeated change of electricity provider, with varying proportions of green power.
2 Lower value due to less demand for printing from other sites.
3 Rise attributable to increased water requirements for building work on outside installations during forum alteration.
4 Disposal handled by canteen service provider. Waste removed and disposed by head office.
5 Fluctuating emission factors for electricity owing to repeated change of provider.
6 Value corrected compared to previous Environmental Report.

5.1 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 tables and 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 heated area and per employee).

In The Hague and Munich, 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, thereby helping to reduce electricity consumption.

In 2015, absolute electricity consumption fell in Berlin (-0.5%) and The Hague (1.5%). At the Isar and PschorrHöfe buildings in Munich it rose by 5% and 2.7% respectively, and in Vienna it increased by 7%. The increase in Vienna is attributable to the alteration work in the foyer; in Munich it was primarily due to the hot summer and the attendant rise in the demand for ventilation – 2015 was the hottest year since records began. In addition, staff numbers in PschorrHöfe rose with the arrival of some 280 employees from the Capitellum.

The EPO's heating energy demand rose by 5.2% overall in 2015 (Berlin +10.4%, Munich -3.6%, The Hague +17.23%, Vienna -10.4%). Weather-adjusted[1] figures show a 4.9% fall (Berlin +4.8%, Munich -9.7%, The Hague +1%, Vienna -21.7%). The fall in Vienna is attributable to pipe and joint insulation in the heating centre at the end of 2014. The rise in The Hague is primarily due to the old main building now being permanently manned by security staff, such that the heating systems are constantly in operation or on stand-by.

In Munich, the vacation of the Capitellum and the resultant consolidation in the Isar and PschorrHöfe buildings meant that electricity consumption fell by 34 MWh, heat consumption by 645 MWh.

1 Weather adjustment of consumption figures allows controlling for the influence of the weather. Weather adjusted figures show what would have been consumed if the weather had conformed to normal or the longtime average. The influence of e.g. particular cold winter and hot summer months can thus be extracted.

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

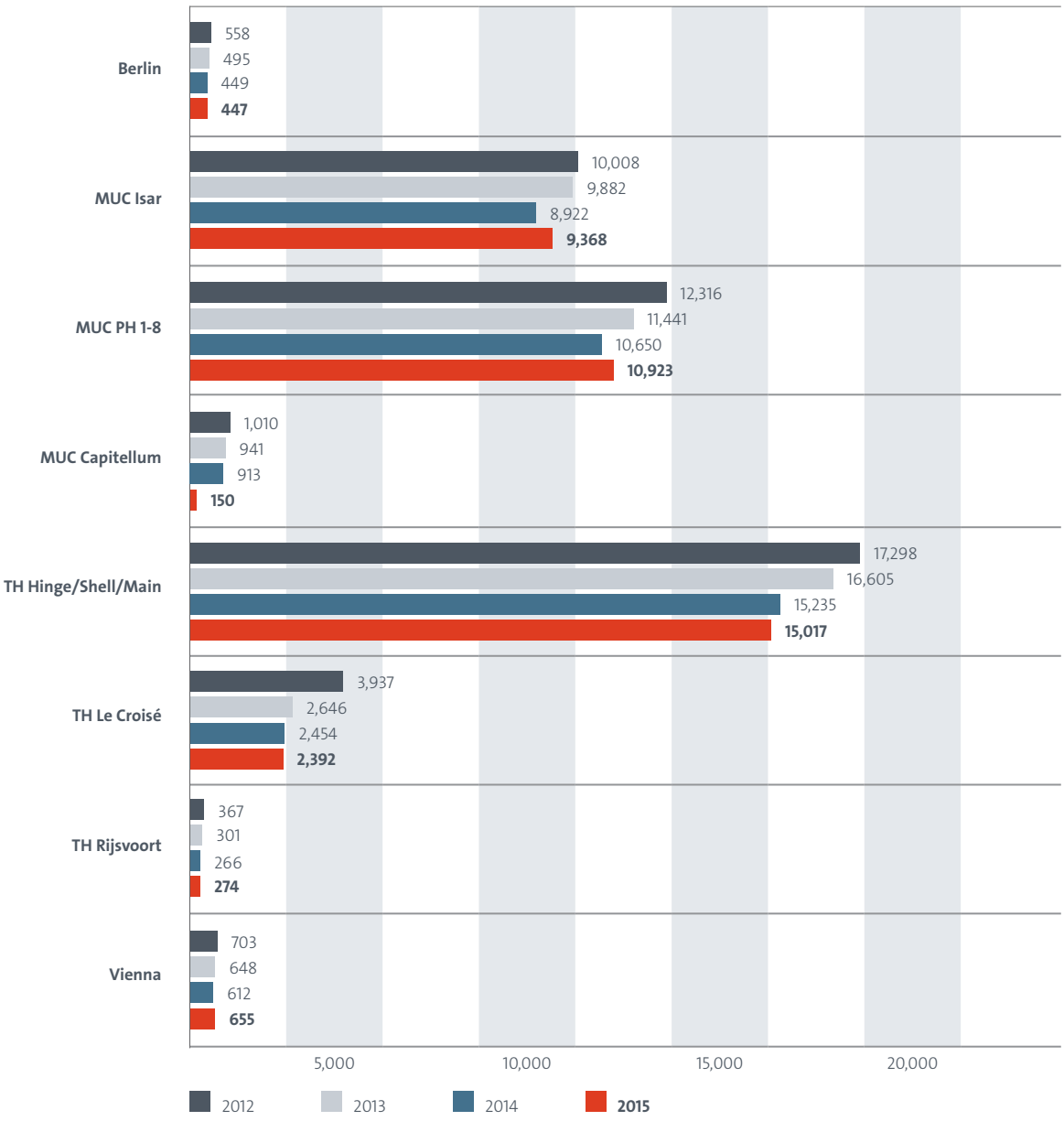


Fig. 8: Absolute electricity consumption (MWh per year)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

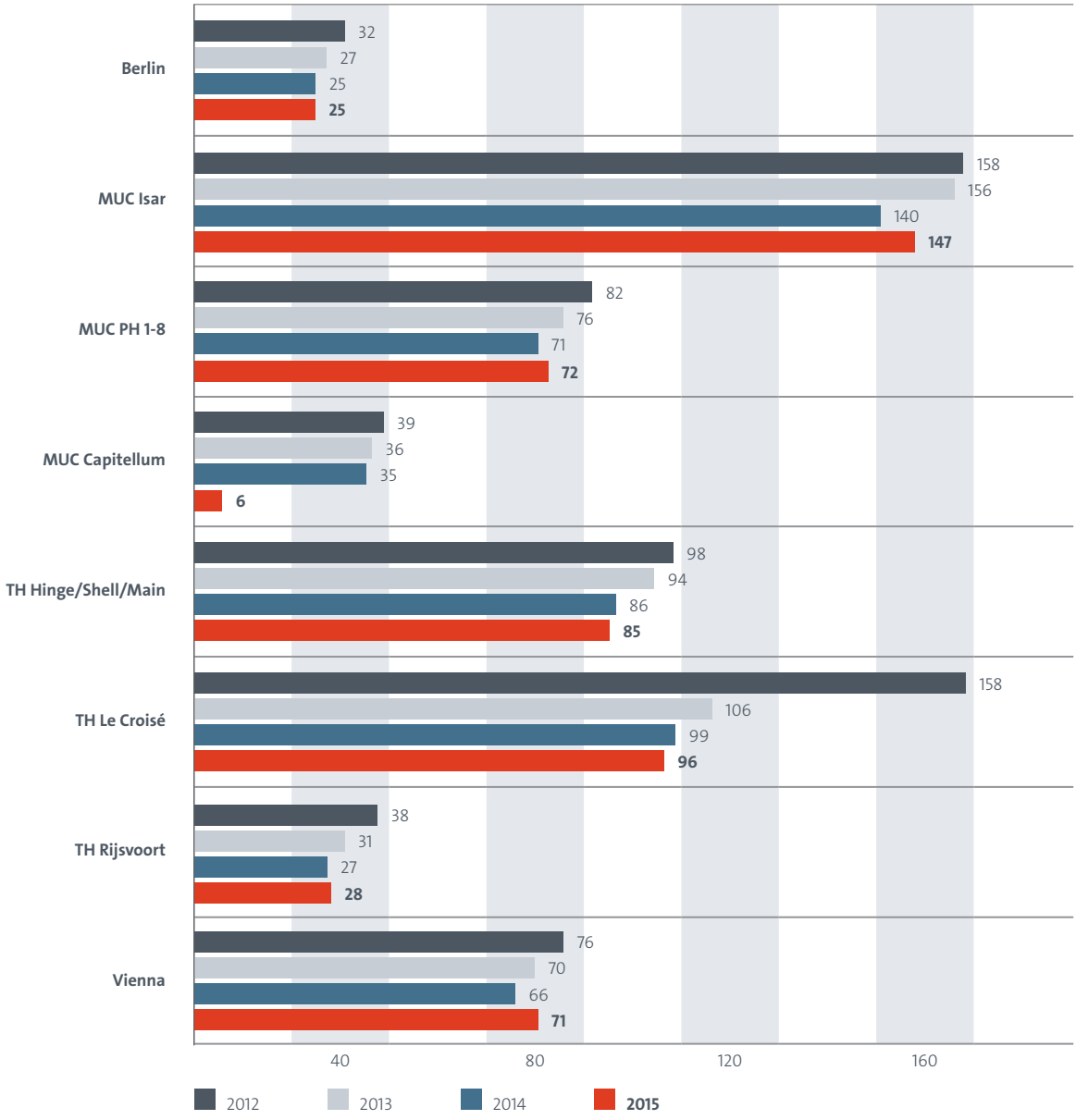


Fig. 9: Specific electricity consumption (kWh per m² floor area)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

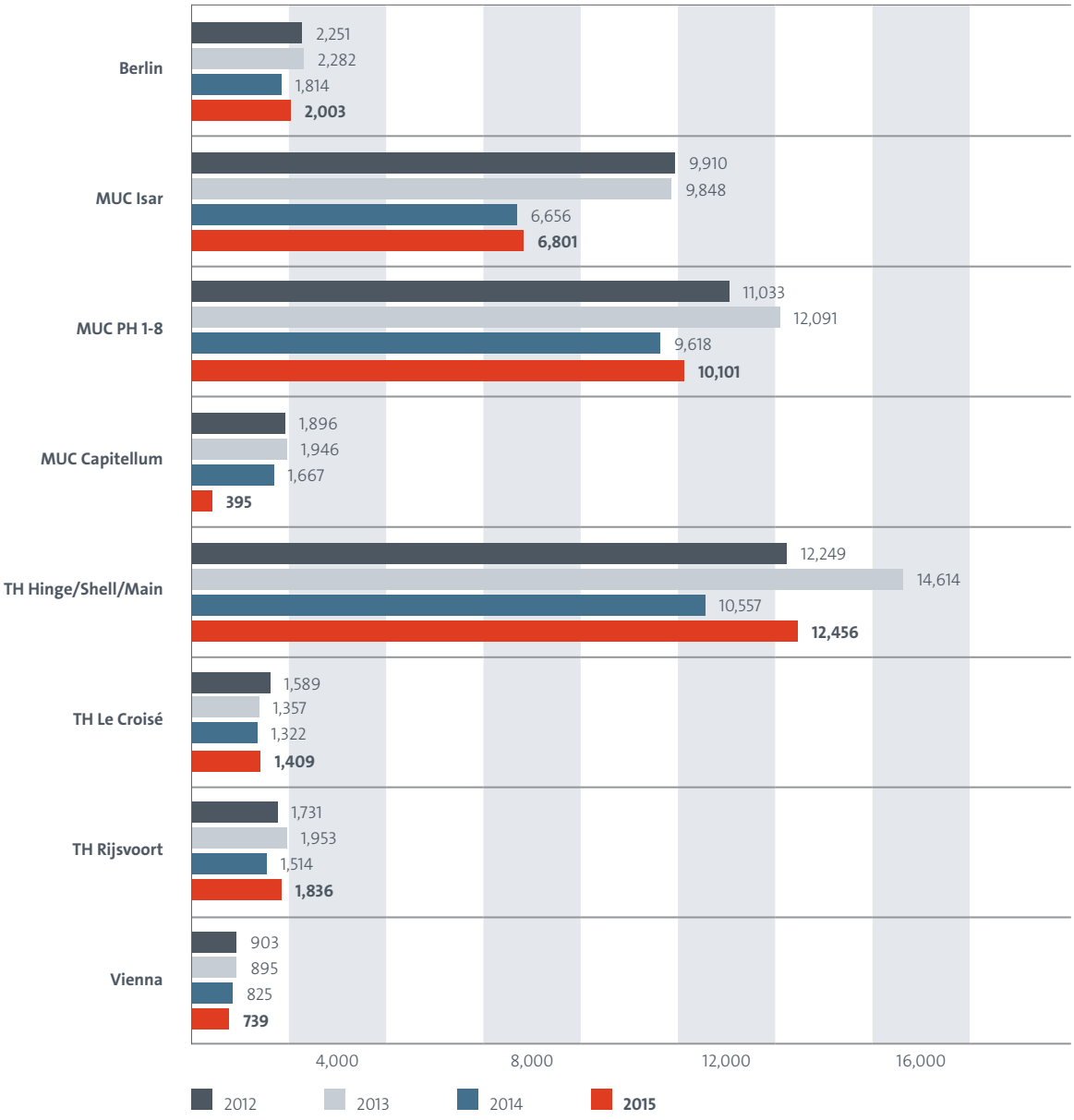


Fig. 10: Absolute heat energy consumption (MWh per year)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

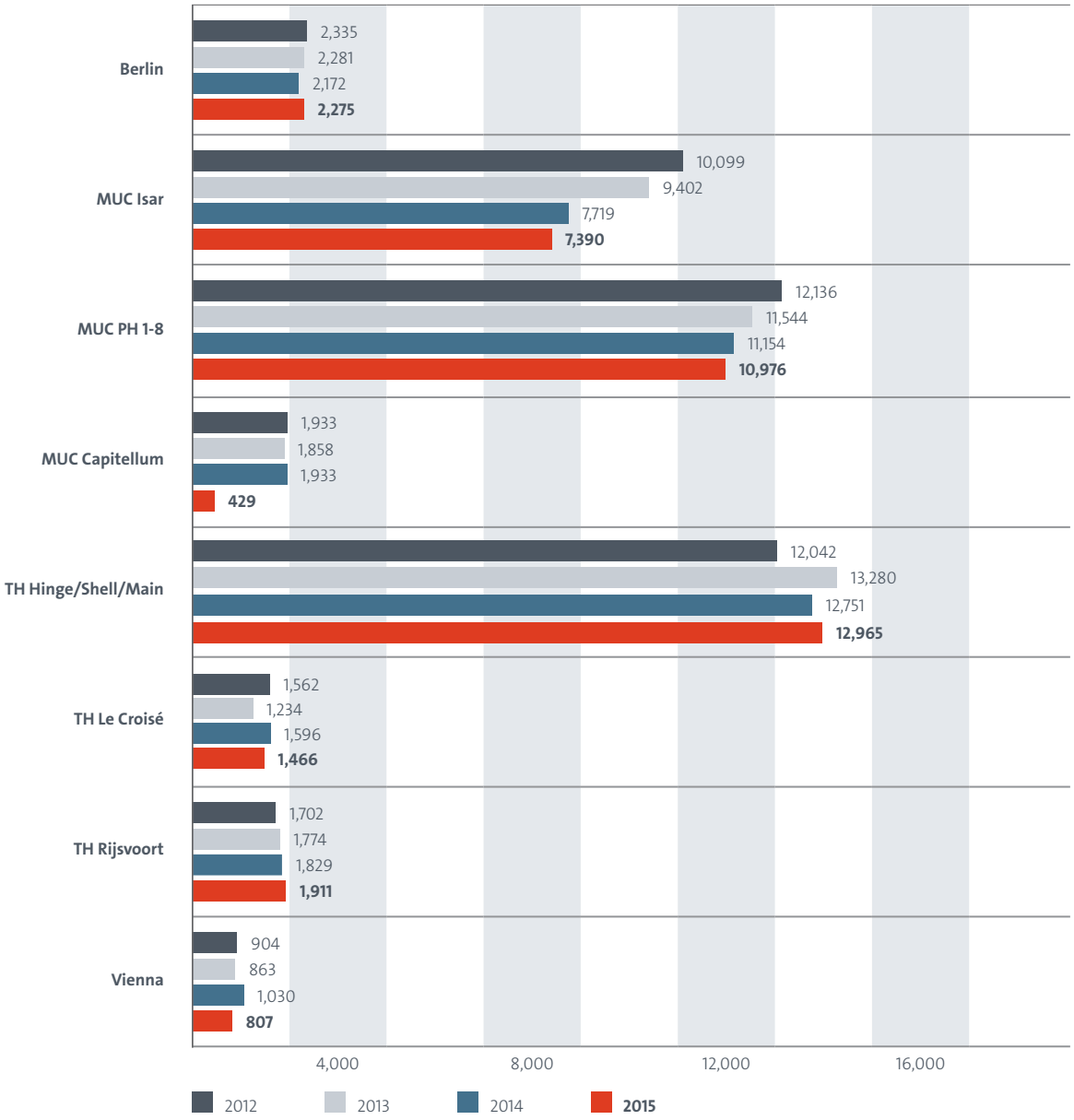


Fig. 11: Weather-adjusted heat energy consumption (MWh per year)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

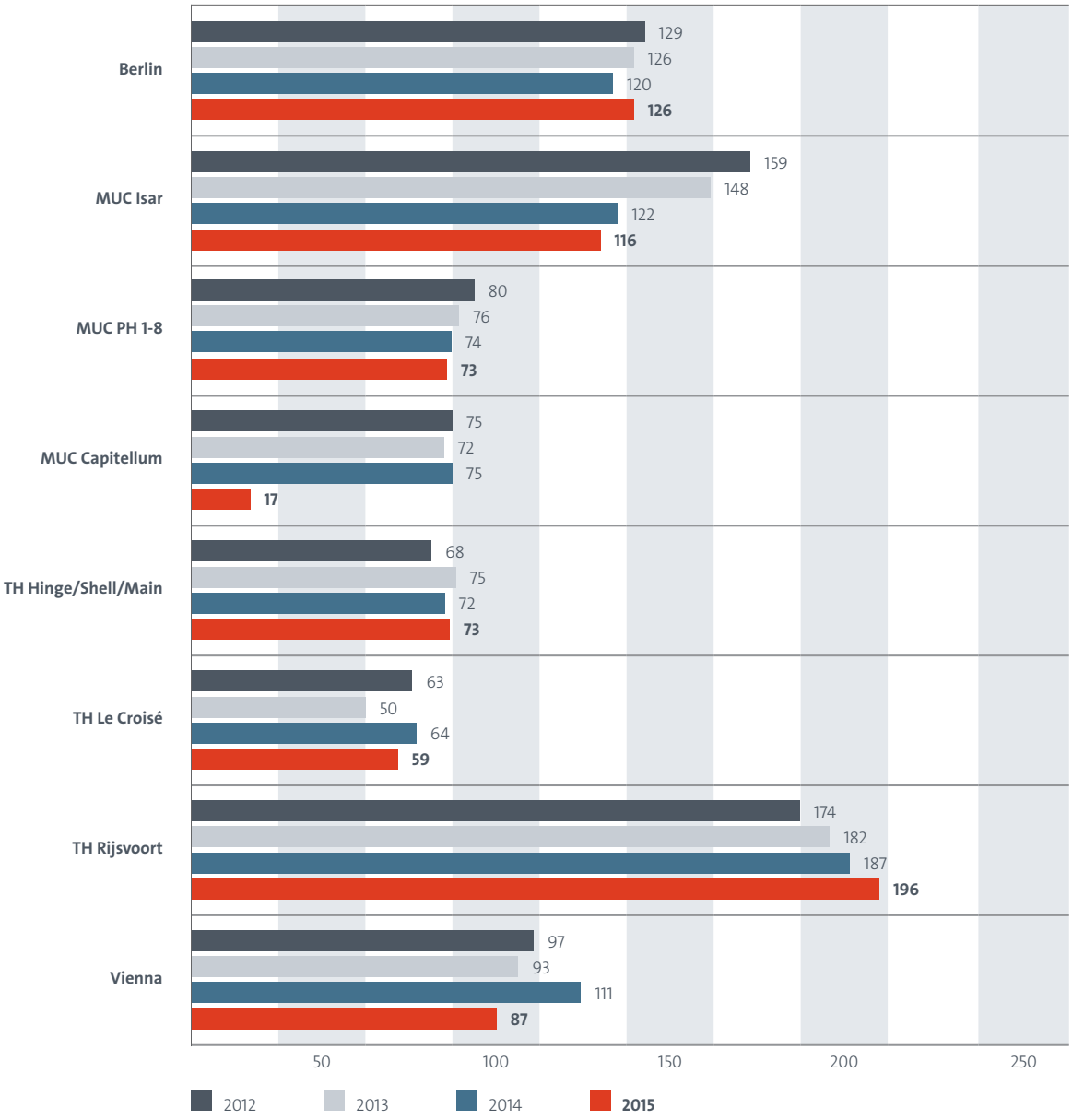


Fig. 12: Specific weather-adjusted heat energy consumption (kWh per m² floor area)

MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

5.2 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 in 2015 was 3% higher than the year before. At the individual sites there were differing trends. At some, water consumption fell (Berlin -1.6%, TH Hinge/Shell/Main 5.3%, TH Le Croisé -1.2%), while at others it rose (MUC Isar +11%, MUC PschorrHöfe +10.7%, Vienna +62.5%, TH Rijsvoort +20.9%). In Vienna the rise is partly attributable to building work on outside installations during alteration of the foyer. In Munich it is due primarily to the higher ventilation demand on account of the long hot summer.

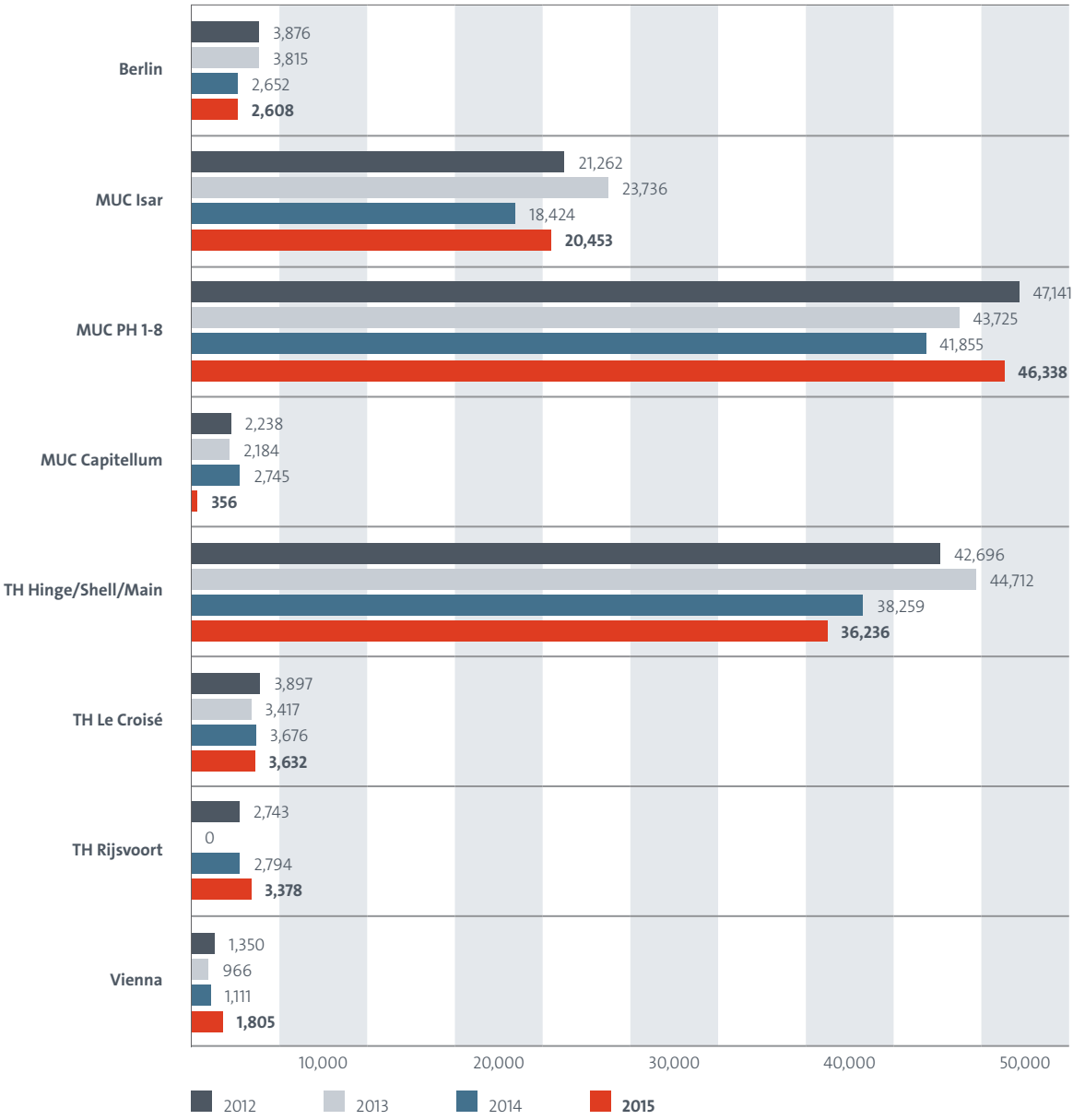


Fig. 13: Fresh water consumption (m³ per year)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

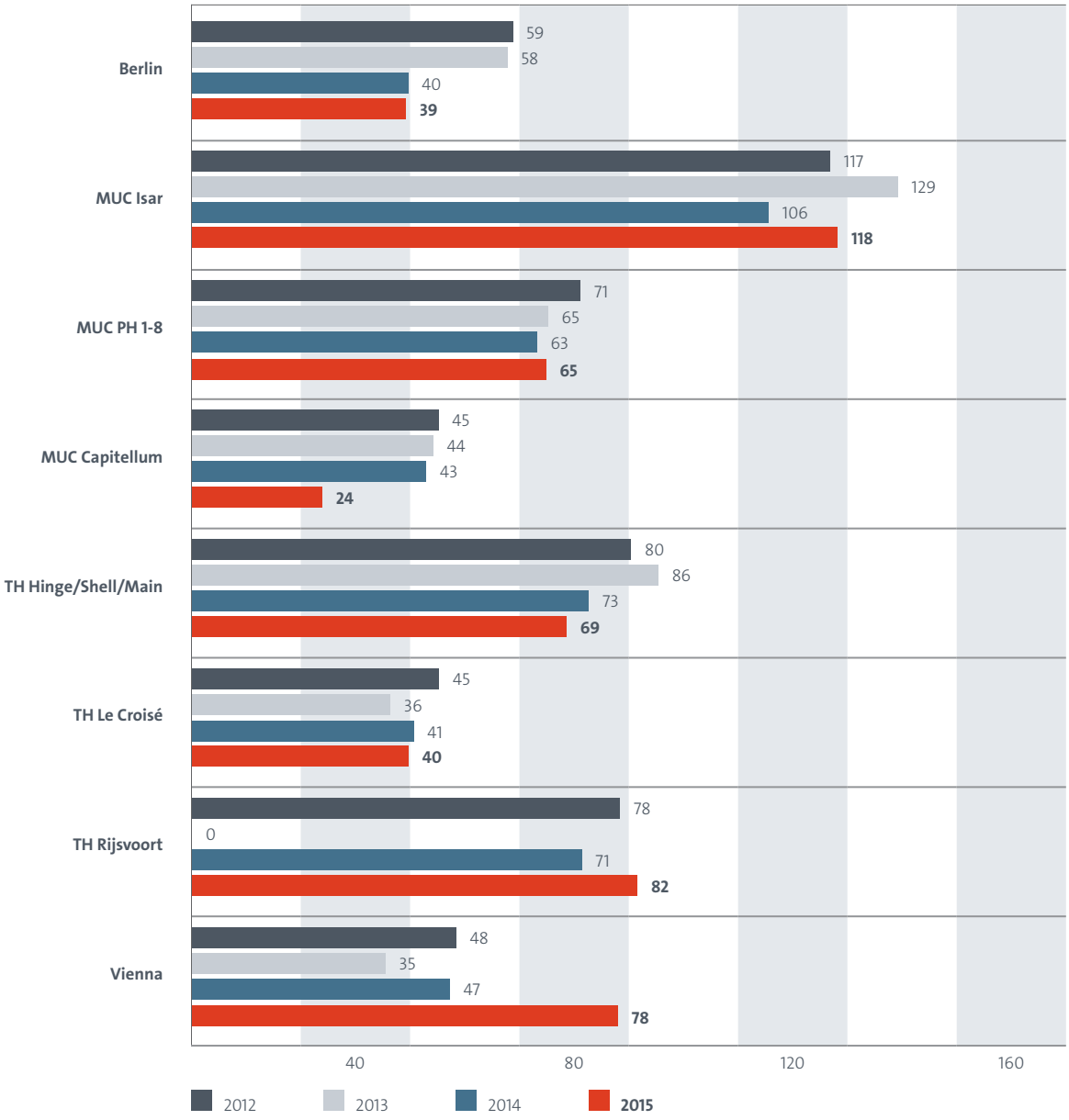


Fig. 14: Fresh water consumption per employee and day (l/employee/day)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

5.3 Waste

To guarantee that waste is collected and disposed of separately, we have 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 2015 the quantity of residual waste was 26% lower than the previous year. This trend was particularly marked at Munich Isar (-40.5%). There the volume in the previous year had risen by 29.9% because of preparations for the arrival of staff from the Capitellum. In The Hague total residual waste was 12.7% down because the demolition of parts of the main and Hinge buildings meant that considerably less office space was available and accordingly less waste was generated. However, the volume of paper waste rose by 8.9% because there will be fewer stores and archives in the New Main building, which meant disposing of older documents from the existing stores and archives.

In Berlin residual waste fell by 22.9%. The proprietor of the Berlin site does not record values in terms of weight, only in terms of the number of waste collections. Hence the weight figures always have to be extrapolated from the annual cost of waste disposal. In 2015 the interval between collections was again extended because the containers were as a rule not completely full at the old times; and the proprietor also claimed a new “public authority rate”. These two factors resulted in the roughly 20% reduction in costs. Thus there was not necessarily a real reduction in the amount of waste compared to previous years. In fact, the constant changes in the intervals between collections means the weight extrapolation is growing ever closer to the true value.

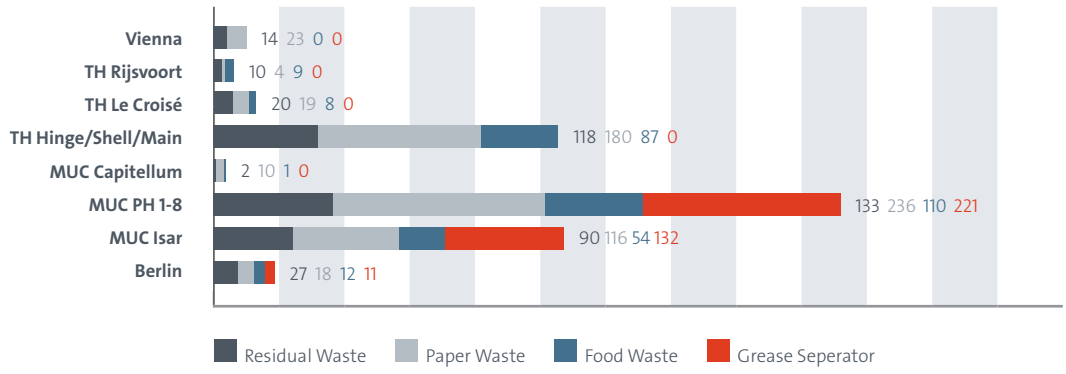


Fig. 15: Composition of waste in 2015 (in tonnes)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

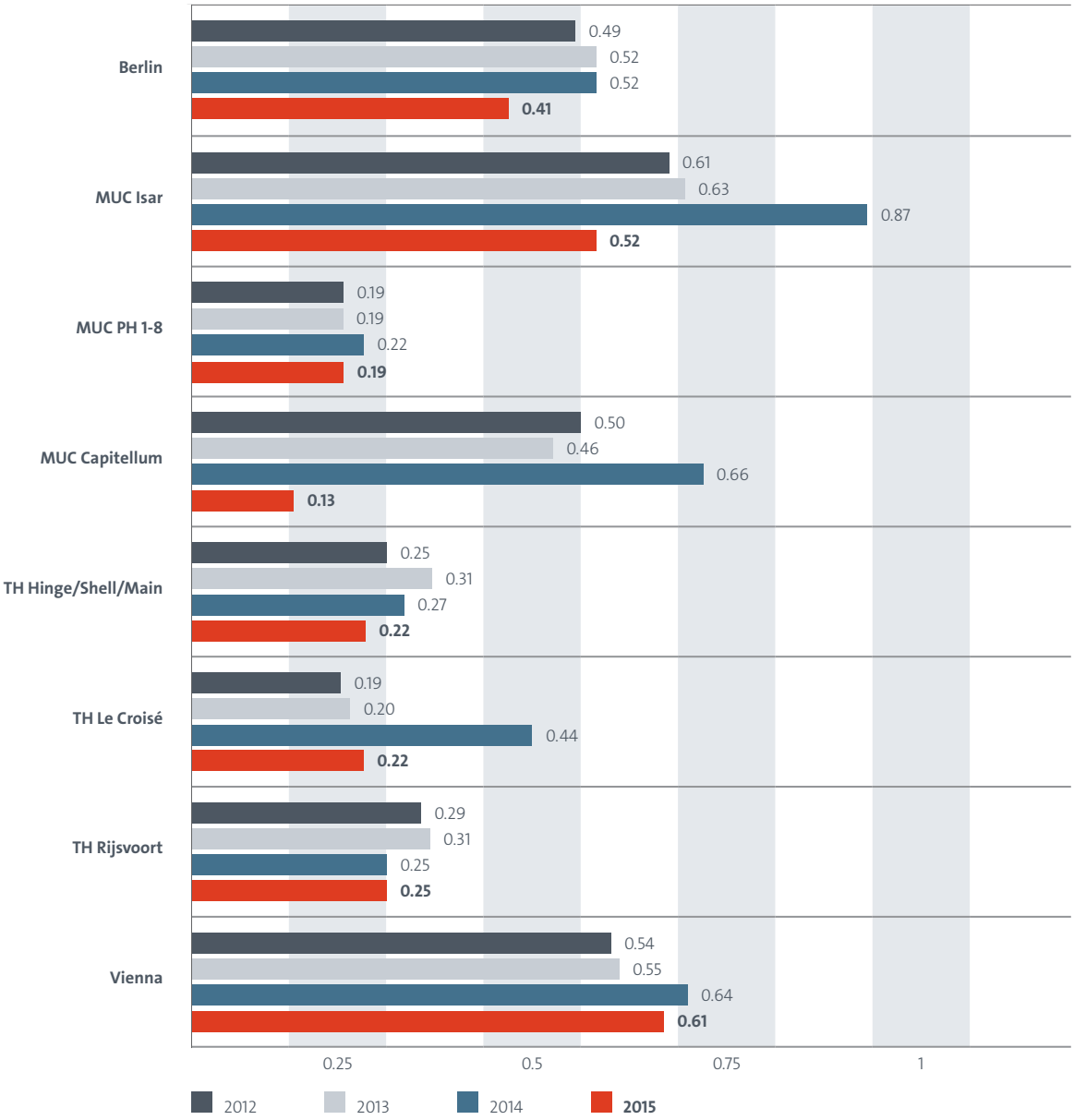


Fig. 16: Residual waste per employee and day (in kg)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

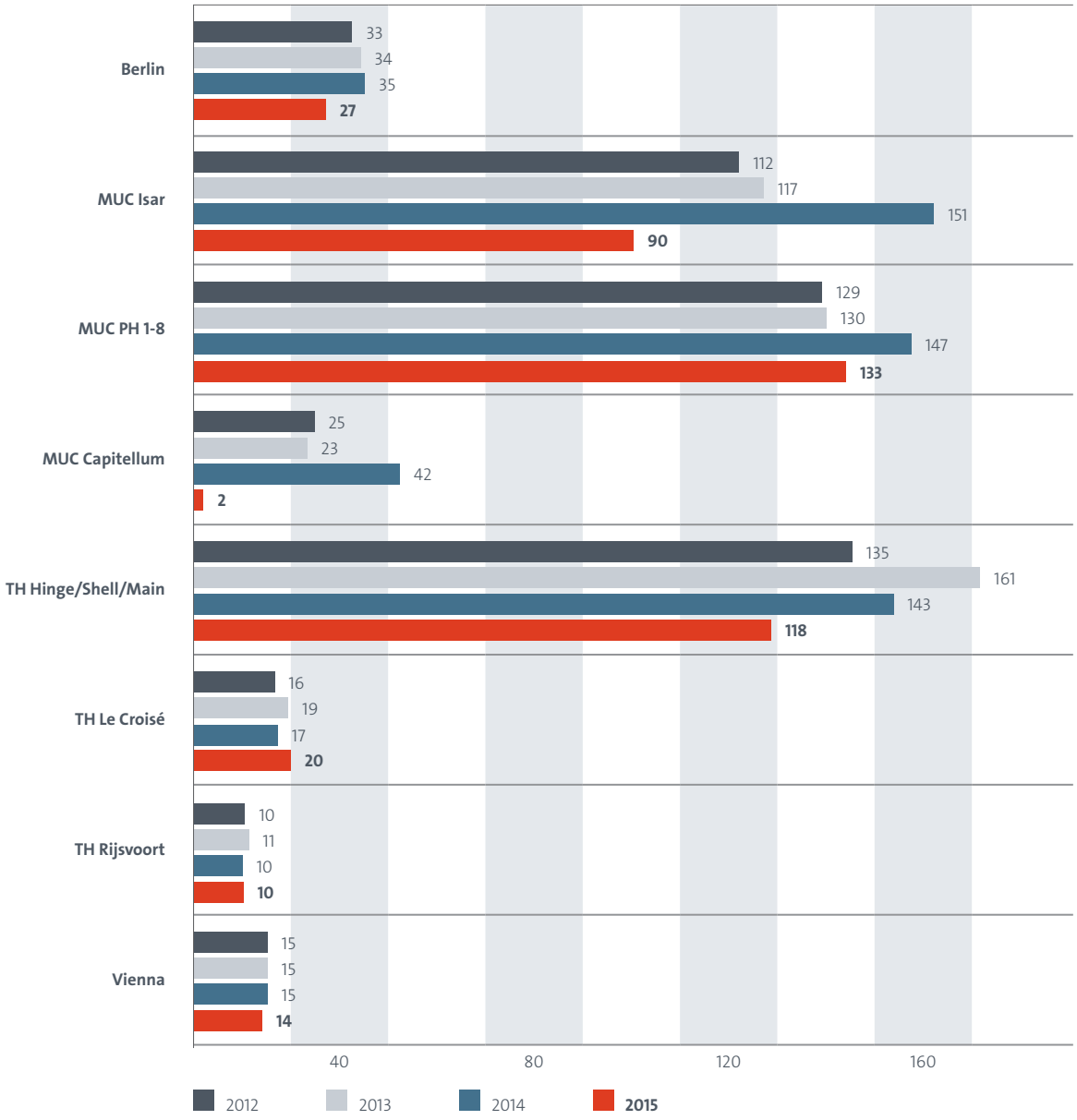


Fig. 17: Total residual waste generation (t per year)
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

5.4 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. 18 shows a 13.1% fall in emissions from air travel (measured in CO_2 equivalent) on average for all sites in 2015. At the same time, use of the videoconference rooms fell from 13,660 hours in 2014 to 10,700 in 2015 (-22.7%). A contributory factor in this is probably the installation of the Lync system in 2014, which allows staff to conduct videoconferences from their own PCs, without using the videoconference rooms.

Fig. 19 shows CO_2 emissions from train travel. There has been a fall in the use of trains for business travel: having already fallen by 14% the previous year, in 2015 the distance travelled by train fell by a further 11%, from 310,519 km to 277,160 km. Consequently the resultant CO_2 emissions also fell by 11%.

To a minor extent, private cars too are used for business trips, but no data is recorded for this component.

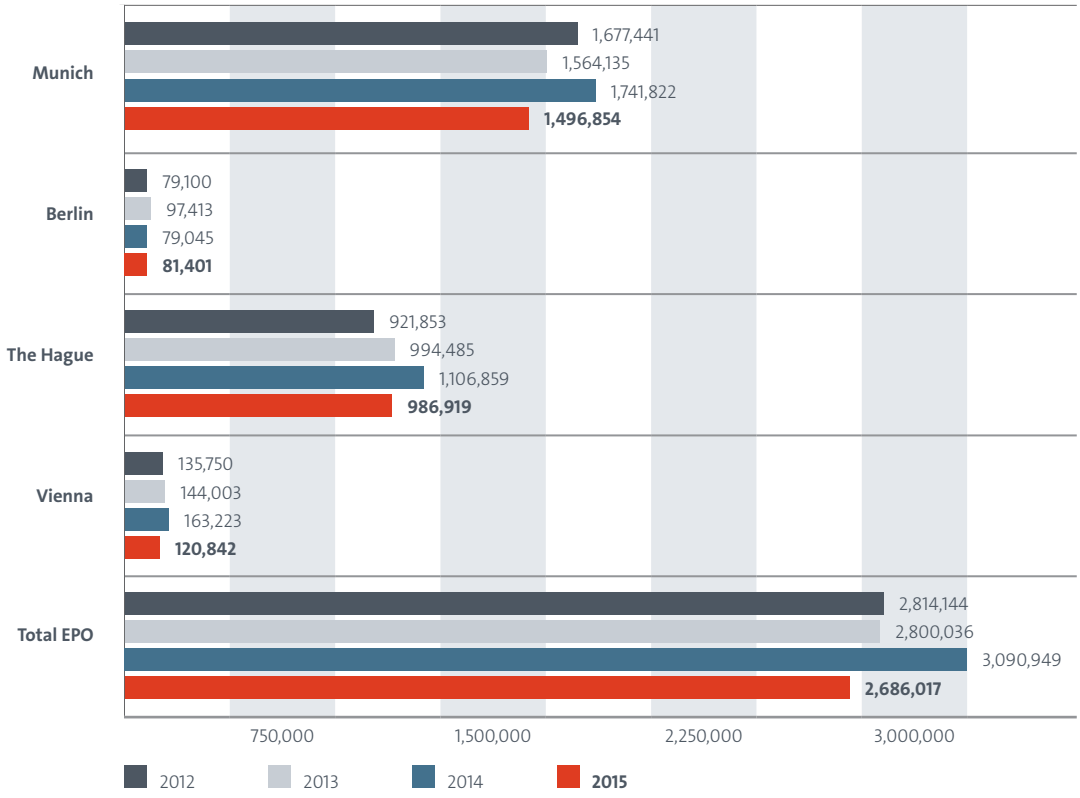


Fig. 18: CO_2 emissions from air travel (in kg CO_2e)
Source: BCD Travel data manager/DEFRA 2015.
Note: Emissions allocated to place of departure.

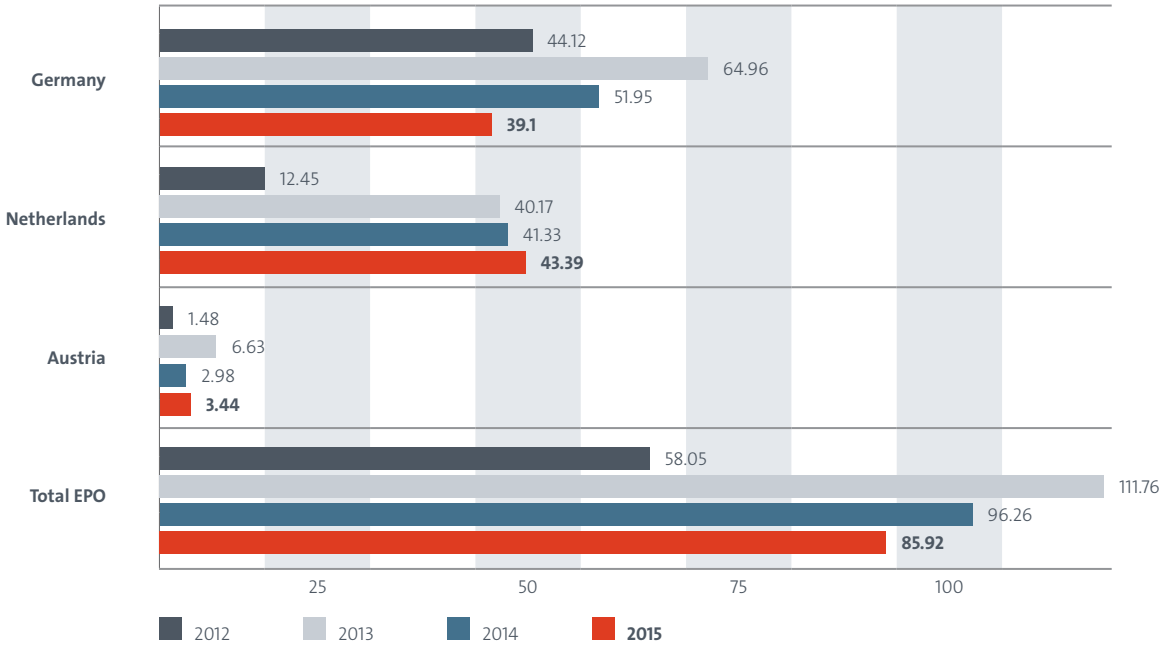


Fig. 19: CO_2 emissions from train travel (in kg CO_2)
Source: BCD Travel data manager/DEFRA 2015.
Note: Emissions allocated to place of departure.

5.5 Other emissions

Electricity and heating energy consumption gives rise primarily to CO_2 emissions. SO_2 (sulphur dioxide), NO_x (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.

All the Munich sites were converted to green electricity in 2013, and in 2014 Berlin followed suit. So there have since been no emissions from electricity consumption at the Munich and Berlin sites. Consumption at the Vienna site rose by 7.1% in 2015, but the switch to a provider with 100% green electricity meant that CO_2 emissions from electricity consumption fell by 85%. Office-wide, emissions from electricity consumption fell by 22%, while those from heating energy consumption rose by 17%.

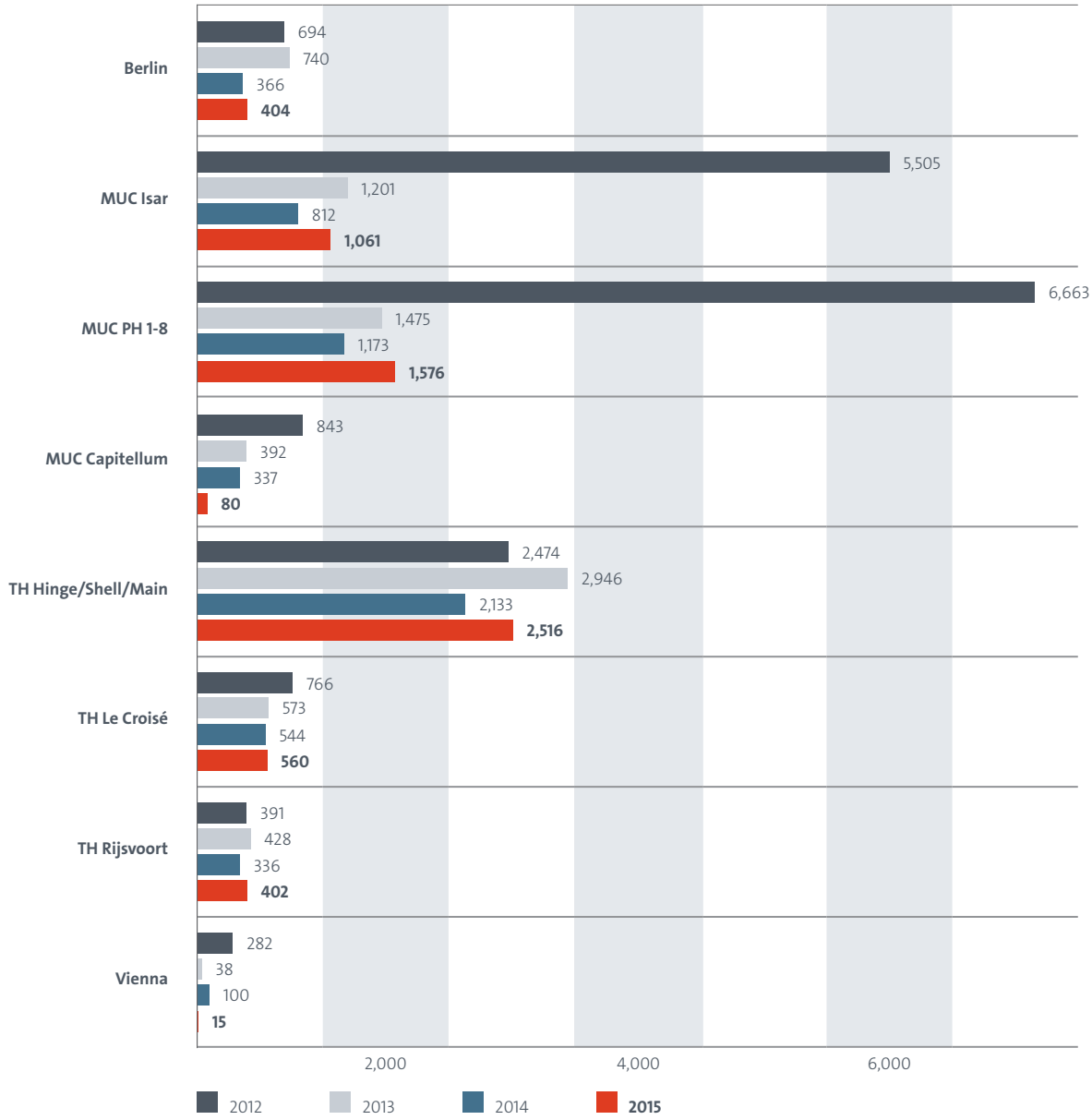


Fig. 20: Total CO_2 emissions from electricity and heating (t per year)
2013: The sharp fall in emissions in Munich is primarily attributable to the switch to green electricity.
MUC Capitellum 2015: Sharp fall attributable to vacation of building on 31 March 2015.

5.6 Paper consumption

Large amounts of paper (green and white) are consumed at the Office. In 2015 paper consumption grew by 3.8% from around 120 million sheets to around 125 million. For Munich and The Hague, paper consumption can be indicated only for the entire duty station, not for the individual buildings.

Paper consumption in Berlin rose by 57.9% in 2015; but as it must be assumed that the value established for 2014 was too low, the real rise in 2015 was probably less, and was due in particular to a higher workload in the Patent Administration Department.

Paper consumption in The Hague rose by 6.5% in 2015, due to the increase in staff numbers and in archiving operations, which entails more printing.

Paper consumption in Vienna fell by 62.3% owing to lower demand for printing from other sites.

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.

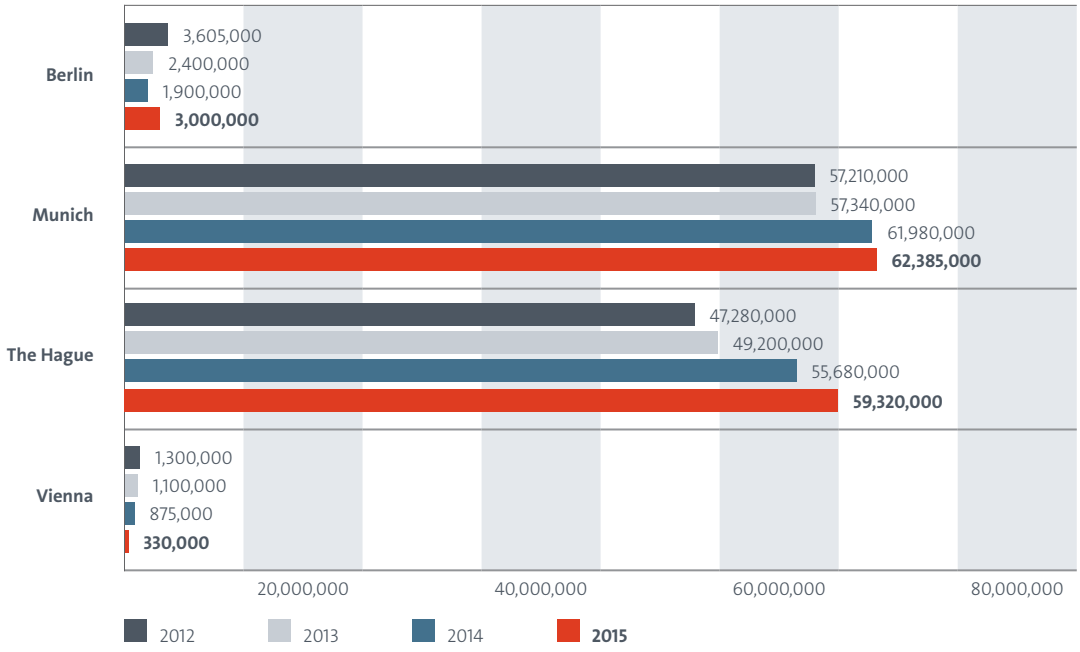


Fig. 21: Paper consumption per site (sheets)

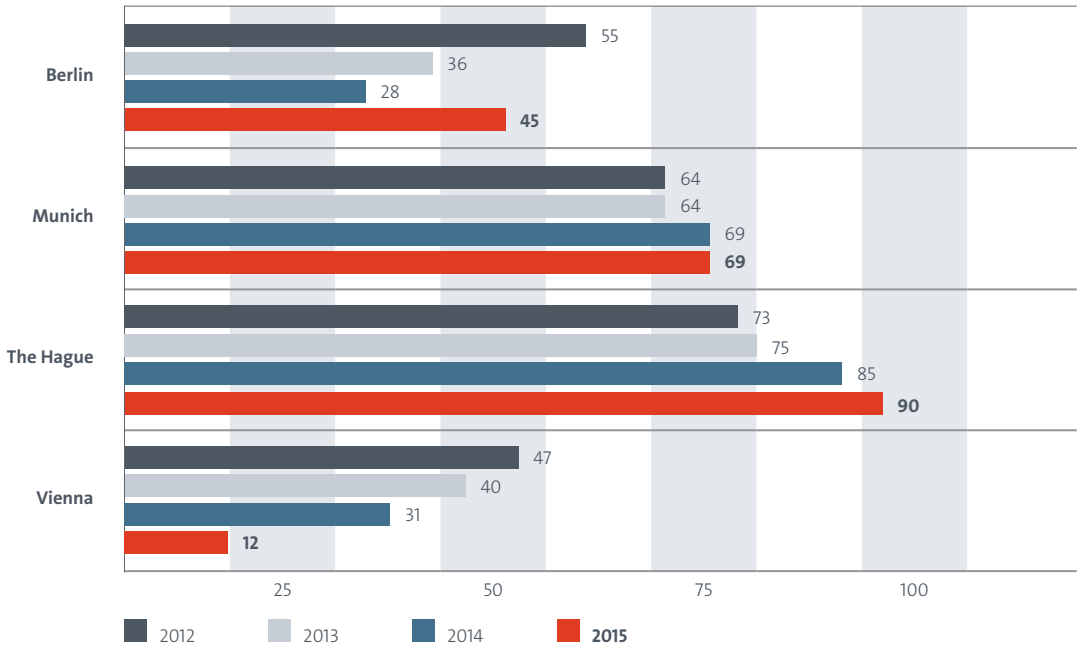


Fig. 22: Paper consumption per employee and day (sheets)

6. Indirect environmental aspects

Indirect environmental aspects are negative or positive environmental consequences of our activities which we cannot fully control or directly influence. For instance, they result from the behaviour of our suppliers and contractors or our employees' journeys to and from the office. The table below provides an overview of our indirect environmental aspects and the priorities we have set in respect of them (for assessment categories see section 5, "Direct environmental aspects").

The EPO considers the patent grant procedure to be a significant indirect environmental aspect. Its free public patent document database can be viewed as a lever to promote the development of environment-friendly technologies, but also to stimulate political action. Within this database the EPO has developed a classification scheme which makes it easier to find environment-related patents. Continuous updates will ensure comprehensive information for inventors, scientists and politicians.

We are focusing on long-term co-operation with contractors and suppliers, such as cleaning and canteen services. In doing so, we are aiming in particular to achieve the following objectives:

- supplying regular information on the EPO's environmental activities to contractors and suppliers to encourage them to improve their environmental performance
- promoting local/regional food in canteens

In goods and services procurement, all departments are encouraged to consider environmental impact as an additional factor in tender procedures and contract award decisions under the EPO's Financial Regulations. Moreover, environmental aspects are specified in procurement guidelines and handbooks and dedicated procurement catalogues. These documents offer guidance for all procurement units.

We are promoting a job ticket for public transport to/from the Office for our staff. We are also supporting teleworking from home.

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.

Indirect environmental aspects		Rating
Services		
	Patent grant procedure	B III
	"Green" patent classification scheme	A I
Environmental performance and conduct of contractors/Procurement		
	Environmental impact of canteen operators/catering companies	A II
	Environmental impact of technical maintenance providers	A II
	Environmental impact of cleaning companies	B II
	Environmental impact of other contractors	B II
	Procurement, e.g. of furniture	B II
	Purchasing of food for canteens	A II
	Use of ecological resources for building/renovation, e.g. paint	A I
Travel		
	To/from work	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 environmental 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. The tables below present an extract including the chief actions from 2015 and for 2016/2017. 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 Action taken in 2015

Action	Savings
Berlin	
Staff awareness campaign on heating (winter), ventilation (summer) and equipment shutdown	Unquantifiable
Guideline introduced prohibiting the use of private electrical devices (e.g. fridges) in offices	Unquantifiable
Munich	
HVAC systems optimised in first-floor conference area in Isar	Approx. 168,000 kWh heat, Approx. 75,000 kWh electricity
PschorrHöfe HVAC systems optimised after energy audit	Approx. 158,000 kWh
The Hague	
Main cooling water pipes in P9 re-insulated	Approx. 55,000 kWh
Boiler in Shell building replaced with HP boiler	Approx. 8,500 kWh
All sites – Information Management	
Sustainability aspects applied and monitored as part of the value chain in IT equipment and service procurement (Green & Monitor Information Management Sustainability Supply Chain)	Unquantifiable
Data centre energy efficiency enhanced by applying the EU Data Centre Code of Conduct (Impact on Data-Centres Project – 2015+)	Unquantifiable
Ecological criteria taken into account in awarding contracts for external services (Managed Services on Storage & Servers – 2015+)	Unquantifiable

Overall, the action taken in 2015 resulted in energy savings of 401,000 kWh, equivalent to 0.55% compared to the previous year. Hence the target of 1.5% was missed, the reason being that some actions originally planned for 2015 were postponed until 2016, including “Adapt 2.20 ventilation switching times to booking system (savings approx. 260,000 kWh)”, “Daylight-dependent lighting control in offices (savings 178,000 kWh)” and “Renew four garage ramp heating systems and associated control cabinets, including central components for the canopy, expansion joint and drain heating systems (savings 300,000 kWh)”. As a result, the planned savings for 2015 were reduced by 738,000 kWh.

7.2 Action planned for 2016/2017

Action	Savings
Munich	
Replace sports hall lighting with LED system	Approx. 100,000 kWh
Adapt 2.20 ventilation switching times to meeting room booking system	Approx. 260,000 kWh
Daylight-dependent lighting control in offices	Approx. 178,000 kWh
Convert escalator lighting in Isar building to LED	Approx. 2,000 kWh
Renew four garage ramp heating systems and associated control cabinets, including central components for the canopy, expansion joint and drain heating systems	Approx. 300,000 kWh
Isar building energy efficiency optimisation project	Not yet quantifiable
The Hague	
Replace staircase lighting with sensor lighting	Approx. 1,150 kWh
Replace existing garage lighting system with LED system	Approx. 270,000 kWh
Improve insulation on first floor of Shell building	Approx. 100,000 kWh
Berlin	
Dismantle HVAC system in one videoconference room	Unquantifiable
Update DG 1 staff on EMAS issues at least twice a year	Unquantifiable

GÜLTIGKEITSERKLÄRUNG

Der Unterzeichnende, Dr. Hans-Peter Wruk, EMAS-Umweltgutachter mit der Registrierungsnummer DE–V-0051, zugelassen für den NACE-Code 841 „Öffentliche Verwaltung", bestätigt, begutachtet zu haben, ob die in dieser Umwelterklärung aufgeführten Standorte

der Organisation
Europäisches Patentamt
Bob-van-Bentheim-Platz 1
80469 München

wie in der Umwelterklärung mit der Registrierungsnummer DE 155-00278 angegeben, alle Anforderungen der

Verordnung (EG) Nr. 1221/2009 (EMAS)

des Europäischen Parlaments und des Rates vom 25. November 2009 über die freiwillige Teilnahme von Organisationen an einem Gemeinschaftssystem für Umweltmanagement und Umweltbetriebsprüfung (EMAS) erfüllen.

Mit der Unterzeichnung dieser Erklärung wird bestätigt, dass

- die Begutachtung und Validierung in voller Übereinstimmung mit den Anforderungen der Verordnung (EG) Nr. 1221/2009 durchgeführt wurden,
- das Ergebnis der Begutachtung und Validierung bestätigt, dass keine Belege für die Nichteinhaltung der geltenden Umweltvorschriften vorliegen,
- die Daten und Angaben der Umwelterklärung der Organisation ein verlässliches, glaubhaftes und wahrheitsgetreues Bild sämtlicher Tätigkeiten der Organisation innerhalb des in der Umwelterklärung angegebenen Bereiches geben.

Diese Erklärung kann nicht mit einer EMAS-Registrierung gleichgesetzt werden. Die EMAS-Registrierung kann nur durch eine zuständige Stelle gemäß der Verordnung (EG) Nr. 1221/2009 erfolgen. Diese Erklärung darf nicht als eigenständige Grundlage für die Unterrichtung der Öffentlichkeit verwendet werden.

München, 1. Juni 2016

Dr.-Ing. Hans-Peter Wruk
Umweltgutachter

Geschäftsstelle: Im Stook 12, 25421 Pinneberg

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Dr. Hans-Peter Wruk
Umweltgutachter

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