

European Stability Mechanism



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Carbon footprint report 2018

September 2019

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Executive summary

As an international financial institution with a public mandate, the European Stability Mechanism (ESM) strives to implement environmental, social, and governance best practices within its internal operations.

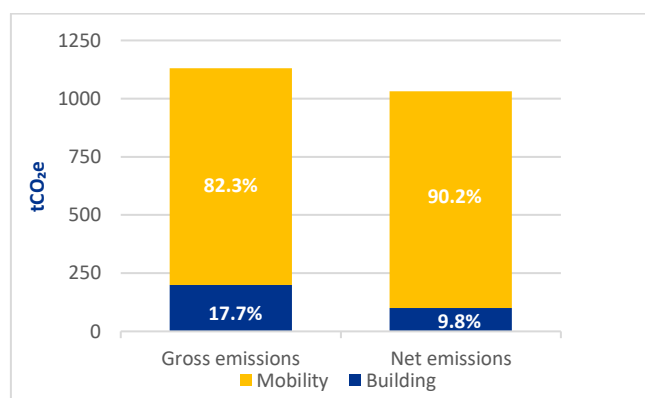
This is the ESM's first carbon footprint report. It provides a comprehensive account of the ESM's carbon footprint arising from its internal operations at the ESM headquarters in Luxembourg City in 2018. The ESM's carbon footprint was calculated following an extensive review of internal and external documentation and data.

The report identifies the main ESM emission sources as well as measures to enhance the ESM's environmental performance.

The ESM's total greenhouse gas emissions in 2018 amounted to 1,130.9 metric tonnes of CO₂e¹ (tCO₂e) on a gross basis (1,031.7 tCO₂e on a net basis)².

Figure 1

Breakdown between mobility- and building-related emissions – 2018 (gross and net)



Source: ESM

¹ CO₂e is the shorthand for carbon dioxide equivalents. It is the standard unit in carbon accounting to quantify greenhouse gas emissions. It converts the impact of each of the six greenhouse gases covered by the Kyoto Protocol — carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆) — into a common unit of tonnes of CO₂e based on their Global Warming Potential (GWP). CO₂e is calculated by multiplying the emissions of each of the six greenhouse gases by its 100 year GWP.

² In line with reporting best practices, two emissions totals are disclosed — gross emissions and net emissions. “Net” emissions: classify consumption from renewable energy or purchased services that were directly offset as zero emitting. “Gross” emissions: include emissions from these sources, calculated on the basis of national averages.

The main source of emissions is linked to **staff mobility**, including both business travel and staff commuting. In 2018, staff mobility accounted for 82.3% of the total gross emissions (90.2% of the total net emissions). Among the staff mobility emissions, air travel makes up the largest share with emissions amounting to 70% of the total gross emissions (76.7% of the total net emissions).

This volume can be explained by the nature of the ESM mandate, which makes business travel an unavoidable activity. Missions to ESM Members, as well as regular exchanges with financial counterparties such as issuers and investors, are key to the effective fulfilment of the ESM mandate.

Building-related emissions amounted to 17.7% of the total gross emissions (9.8% of the total net emissions). In this context, urban heating is the largest source of emissions, representing 8.5% of the total gross emissions (8.7% of the total net emissions).

This difference between gross and net emissions is linked to the usage of renewable/low-emitting sources for heating and electricity. The ESM draws 55% of its urban heating from biomass, which is considered a renewable/low-emitting source of energy and hence counts as a zero emission source in the net calculations. Furthermore, 46% of the building-related gross emissions stem from the consumption of electricity. Given that 100% of the electricity purchased by the ESM is derived from renewable energy sources, its electricity consumption is considered as zero emission on a net basis. Other sources of emissions such as the paper, water, and waste represent a less significant share of the ESM's carbon footprint.

As this is the ESM's first carbon footprint report, data for the calculation of trends over time was only available for building-related emissions. Going forward, 2018 will be used as the baseline year to identify trends in the ESM's carbon footprint and to assess the effects of implemented measures over time.

1. Methodology

Methodology used to calculate ESM's carbon footprint

A number of methodologies exist to calculate and report an entity's carbon footprint. The ESM chose the *International Greenhouse Gas Protocol - a Corporate Accounting and Reporting Standard*,³ revised edition (GHG Protocol) as a guideline to calculate its internal footprint.

The GHG Protocol was developed in a partnership between the World Resources Institute and the World Business Council for Sustainable Development (WBCSD) and is the most commonly used international standard to quantify and communicate greenhouse gas emissions.

Reporting scope

According to the GHG protocol, the first step in a carbon footprint assessment is the definition of **organisational boundaries** for reporting purposes. This is based on the understanding that organisations can be set up as various legal entities and, as a result, can exercise different types and degrees of control over their operations. As such, organisations need to select an approach for consolidating GHG emissions i.e. define organisational boundaries.

Two approaches can be used to determine such organisational boundaries: 1) reporting entities can choose to report the emissions from operations over which they have financial or operational control (i.e. the control approach); or 2) the emissions from operations according to their share of equity within the operation (i.e. the equity share approach).

For its carbon footprint report, the ESM chose the operational control approach. Under this approach, the ESM accounts for the GHG emissions of the operations over which it has operational control (see Figure 1). This covers ESM operations at ESM's headquarters in Luxembourg City. The office space in Brussels and the disaster recovery site were excluded, given their relatively small size and infrequent usage.

³ World Business Council for Sustainable Development & World Resources Institute, [*The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard*](#), revised edition, 2004.

Furthermore, it is useful to note that during the second half of 2018, the ESM undertook an office extension which increased rented office space by 32% affecting some of the building-related emissions. For the calculation of certain ratios, the ESM factored in the number of permanent staff members employed during 2017 (i.e. an average of 174) and 2018 (i.e. an average of 179).

According to the GHG Protocol, the second step consists of setting up **operational boundaries** to distinguish between direct and indirect emissions. Direct emissions are defined as emissions originating from sources owned or controlled by the reporting entity. Indirect emissions are generated as a consequence of the reporting entities' activities but originate at sources owned or controlled by another entity. This would for instance be the case of emissions generated by air transport where planes are owned by another entity.

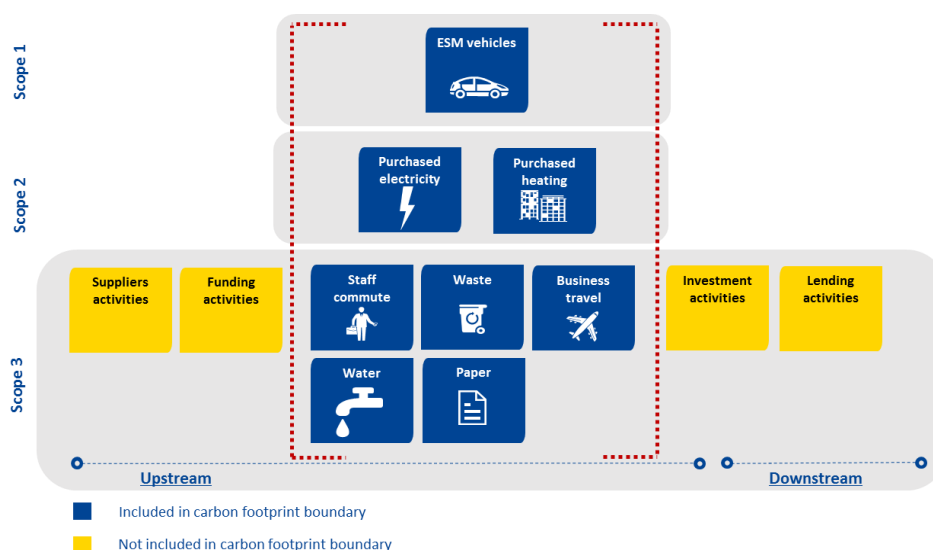
The direct and indirect emissions are split into three scopes:

- **Scope 1:** All direct GHG emissions from sources that are owned or controlled by the reporting entity;
- **Scope 2:** Indirect GHG emissions from the purchase of electricity, heat, steam, or cooling;
- **Scope 3:** Other indirect emissions.

The GHG Protocol requires entities to report a minimum of scope 1 and 2 emissions. Reporting on scope 3 emissions is optional.

After a mapping exercise, the ESM has decided to include the following activities under the ESM carbon footprint:

Figure 2
ESM activities included in the ESM carbon footprint report



Data collection and calculation

To estimate GHG emissions, organisations need to collect activity data, which quantifies activities resulting in GHG emissions. Activity data can, for instance, include kilowatt hours of electricity consumed or kilometres travelled by employees.

For most of the report, the ESM used primary activity data. However, some data, for instance staff commuting data, was derived from a number of estimates as described in Appendix 1.

Once activity data is collected, emission factors need to be applied to convert this data into GHG emissions. For the purposes of this report they were derived from established sources such as the UK government's Department for Environment, Food & Rural Affairs (DEFRA) and the International Energy Agency (IEA). Please refer to the section Emission Factors in Appendix 1 for further information.

The calculations were performed with the assistance of KPMG Luxembourg Societe Cooperative.

Taking into account reporting best practices, two emissions totals are calculated – gross emissions and net emissions.

- “Net” emissions: classify consumption from renewable energy or purchased services which were directly offset as zero emitting.
- “Gross” emissions: include emissions from these sources, calculated on the basis of national averages.

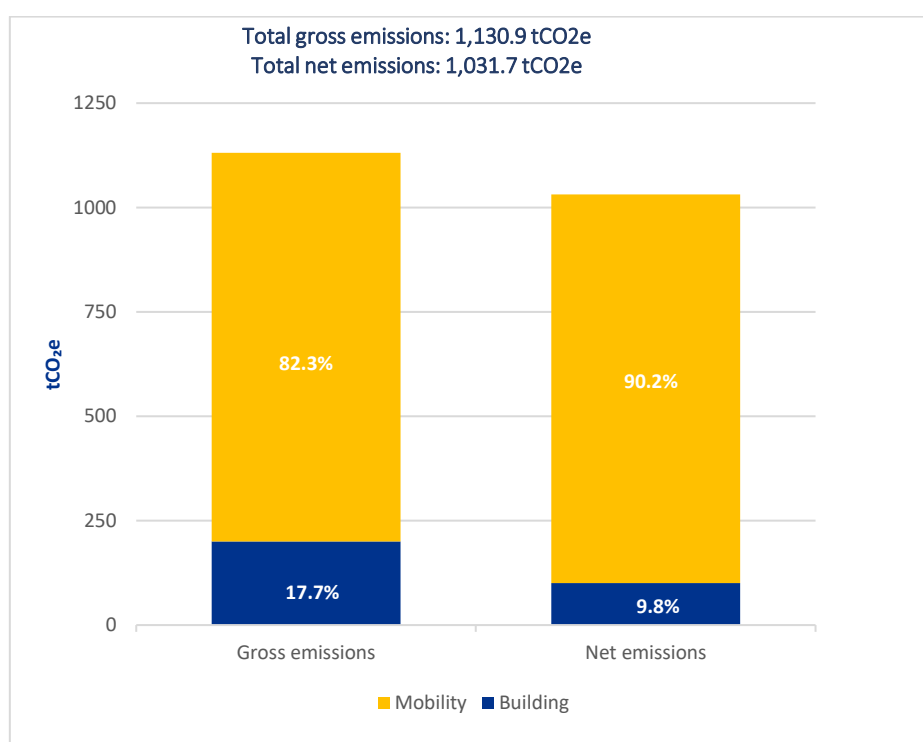
2. Carbon footprint results

➔ *The total GHG emissions generated by the ESM in 2018 amount to 1,130.9 tCO₂e on a gross basis and 1,031.7 tCO₂e on a net basis.*

The analysis of emission sources confirms that both on a gross and net basis, staff mobility-related emissions, which contribute 82.3% on a gross basis and 90.2% of total emissions on a net basis, are the largest contributor to total emissions. Building-related emissions, on the other hand, account for 17.7% of ESM overall emissions on a gross basis and 9.8% on a net basis.

Figure 3

**Breakdown between mobility- and building-related emissions – 2018
(gross and net)**



Source: ESM

Figure 4
Breakdown of total emissions by source – 2018
(gross)

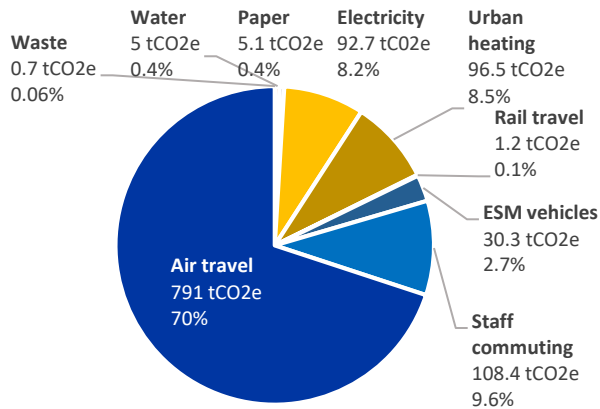
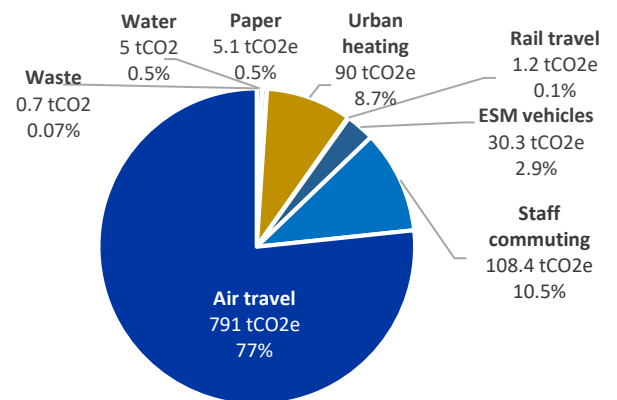


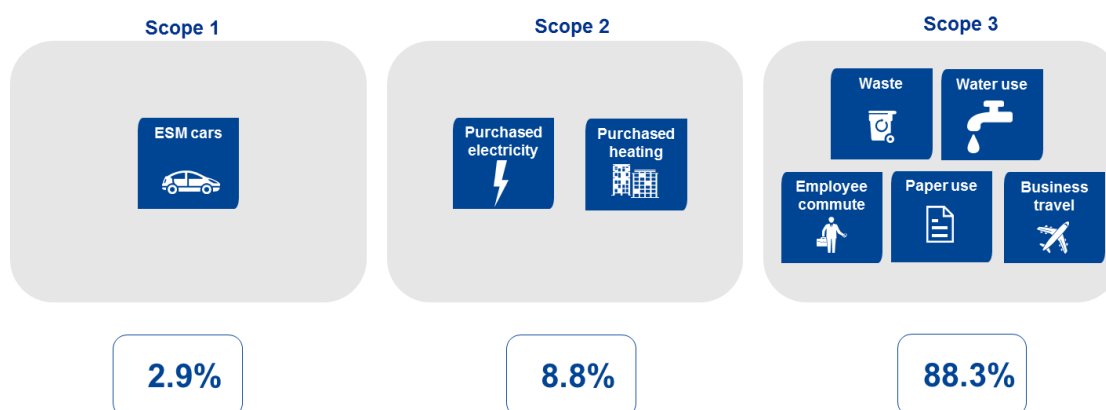
Figure 5
Breakdown of total emissions by source – 2018 (net)



Source: ESM

Looking at the breakdown between the scopes 1,2, and 3 as defined by the GHG protocol, the ESM's carbon footprint results for 2018 reveal that scope 3 accounts for the largest part of emissions with 88.3% of total net emissions. This is not an unusual finding as the largest emissions for entities within the financial sector usually relate to scope 3.

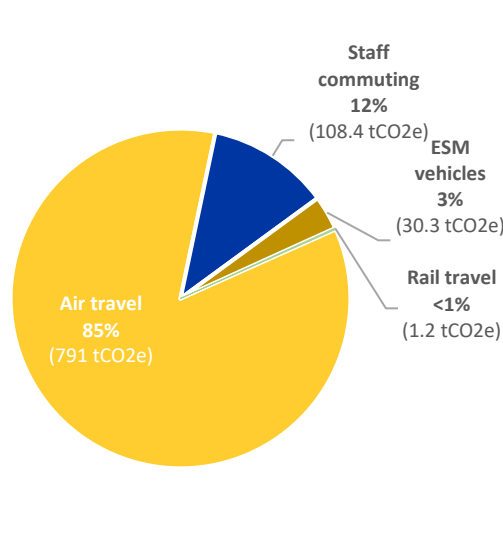
Figure 6
Breakdown of ESM emissions per scope



Mobility-related emissions

➔ *Mobility-related emissions represent by far the largest share of the ESM's carbon footprint, accounting for 82.3% of the total gross emissions and 90.2% of the net emissions.*

Figure 7
Breakdown of mobility-related emissions by source – 2018
(gross and net⁴)



Source: ESM

The main source of emissions is linked to staff mobility which includes both business travel and staff commuting. In 2018, staff mobility accounted for 82.3% of the total gross emissions and 90.2% of the total net emissions.

Amongst the staff mobility emissions, air travel holds the largest share with emissions amounting to 85% of mobility-related gross/net emissions, followed by staff commuting which represents 12% of the mobility-related gross/net emissions. The remaining mobility emissions relate to the ESM leased vehicles (including the ESM minivan used for group travel) and rail travel⁵.

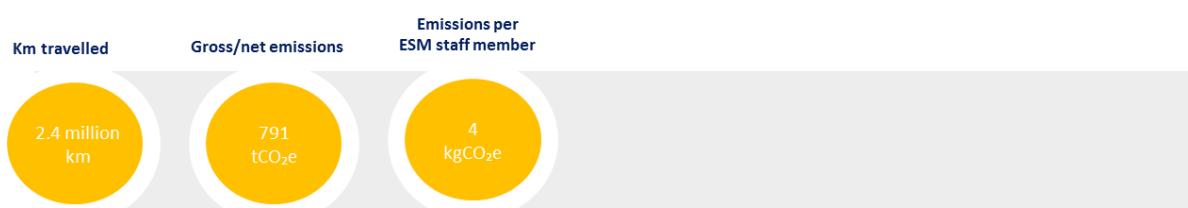
⁴ Given that there is no consumption from renewable energy sources or offsetting services in place, gross and net figures related to staff mobility are the same.

⁵ Due to a change in travel agency in April 2018, mobility-related data required for the calculation of the carbon footprint could only be calculated for 2018. Furthermore, for air and rail travel, it should be noted that the data from January to April 2018 has been estimated on a pro-rata basis.

Given the nature of the ESM mandate, business travel is an unavoidable activity. Missions to ESM Members, as well as regular exchanges with financial counterparties such as issuers and investors, are key for the effective fulfilment of the ESM mandate.

Air travel

➔ *ESM staff travelled approximately 2.4 million kilometres by air in 2018. Air travel gross emissions are the ESM's largest source of emissions. Air travel represents 85% of the overall gross/net mobility-related emissions.*



In absolute terms the gross and net emissions related to air travel in 2018 amounted to 791 tCO₂e i.e. 4 tCO₂e respectively per ESM staff member.

➔ The ESM already has policy requirements in place regarding air travel classes which reduce emissions and related costs.

Staff commuting

➔ *ESM staff commuted approximately 0.9 million kilometres by car during 2018. The related emissions represent 12% of the mobility-related gross/net emissions.*



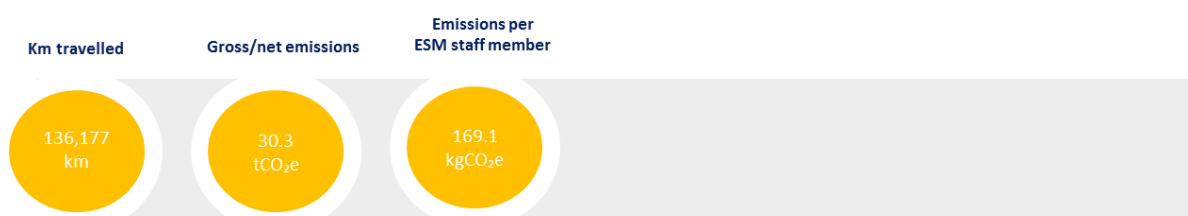
In 2018, ESM staff travelled an average of around 5,047 kilometres each. In absolute terms, the total gross/net emissions related to car commuting amounted to approximately 108.4 tCO₂e. These figures are based on the availability of ESM parking spaces and several estimations described in Appendix 1.

It is useful to bear in mind that while public transport in the core of Luxembourg city is well developed, there are practical limitations on the extent to which ESM staff can effectively leverage public transport in their commutes to areas outside of Luxembourg city due to availability and frequency.

- ➔ The ESM encourages staff to use public transport by providing a free public transport card (jobKaart), and supports green mobility by, for example, providing electric car charging stations within its facilities.

ESM leased vehicles

- ➔ *The vehicles operated by the ESM contribute to 3% of the mobility-related gross/net emissions.*



The ESM leases and operates seven vehicles including a minivan used to drive staff members to business events in and outside of Luxembourg. The aggregated distance travelled by these vehicles amounted to 136,117 kilometres and represented estimated gross/net emissions of 30.3 tCO₂e⁶.

Rail travel

- ➔ *Rail travel represents less than 1% of ESM mobility-related gross/net emissions.*



Business travel by rail amounted to 102,191 kilometres in 2018. This resulted in a total of 1.2 tCO₂e in gross/net emissions i.e. 6.8 kg CO₂e per ESM staff member. Given the limitation of the rail

⁶ Kilometres were calculated using the total distance driven pro-rated by the number of months leased.

connections in Luxembourg to frequent business travel destinations in neighbouring countries such as Belgium and Germany, there are limitations on the extent to which ESM staff can effectively leverage rail travel. As such, rail travel from and to Paris (i.e. a destination with high-speed direct rail links) made up 47% of all rail travel reflecting the well-developed rail connections to this destination.

2.1 Building-related emissions

➔ **Building-related gross emissions represent 17.7% of the total ESM carbon footprint with 200.1 tCO₂e and less than 9.8% on a net basis with 100.8 tCO₂e.**

Urban heating is the largest source of building-related emissions, representing 48% (2017: 43%) of the total building-related emissions on a gross basis and 89% (2017: 91%) on a net basis. Of the ESM's urban heating needs, 55% is derived from biomass which is considered a renewable/low-emitting source of energy and hence counts as a zero emission source in the net calculations⁷.

On a gross basis, electricity consumption represents 46% of the building-related emissions (2017: 53%). Given that the ESM purchases 100% of its electricity from renewable energy sources, its electricity consumption is considered as zero emitting on a net basis. Other sources of emissions such as paper, water consumption, and waste represent a less significant share of the ESM's carbon footprint.

Figure 9
Breakdown of building-related emissions – 2018 (gross)

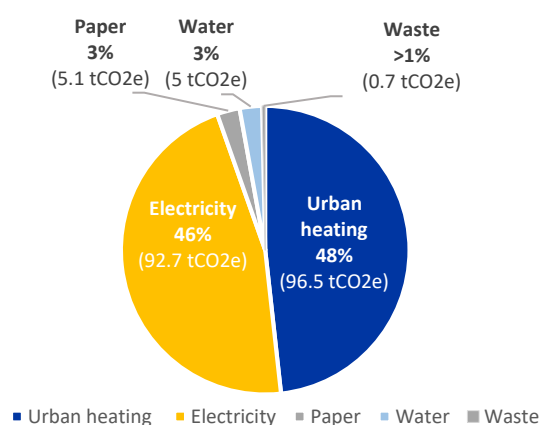
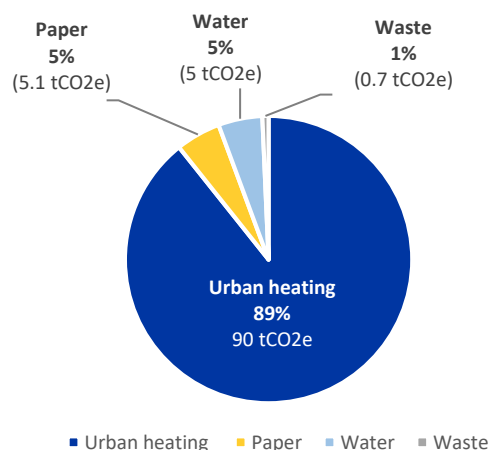


Figure 10
Breakdown of building-related emissions – 2018 (net)



Source: ESM

⁷ Please note biomass is classified as low emitting, hence the emission factors assigned to the share of urban heating derived from this source are significantly lower on a gross basis than for the fossil fuel and natural gas. On a net basis biomass can be classified as zero-emitting. See Appendix 1 for applied emission factors.

Urban heating

➔ *Urban heating represents the largest share of building-related emissions with 48% of the building-related gross emissions and 89% of the net emissions.*



In 2018, the ESM consumed 785.7 MWh of heating (2017: 803.0 MWh). Despite the increase in office space, a decrease in consumption of 2.1% can be noted compared to 2017.

In absolute terms, the gross emissions related to urban heating represent 96.5 tCO₂e (2017: 97.1 tCO₂e). The net emissions related to urban heating amount to 90 tCO₂e (2017: 91.5 tCO₂e). This lower amount of net emissions relates to the fact that the urban heating purchased by the ESM is partially derived from biomass which is considered renewable/low-emitting.

The urban heating purchased by the ESM is derived from the following sources: 55% biomass (wood pellets), 20% from natural gas, and 25% from fossil fuel sources. Given that the use of biomass is classified as a renewable/low-emitting source of energy, it can be reported as zero emitting on a net basis.

Figure 11
Urban heating-related emissions – 2017 and 2018 (gross and net tCO₂e)

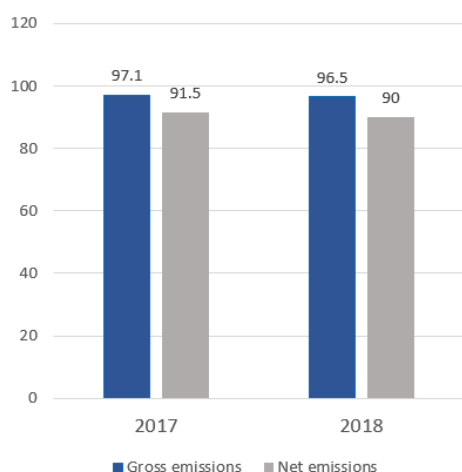
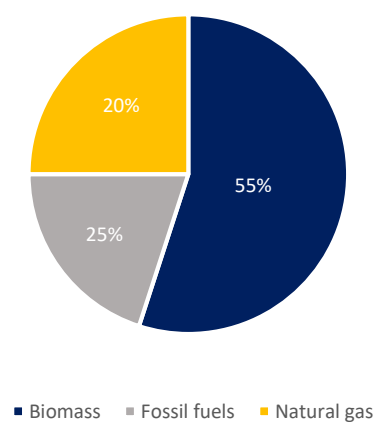


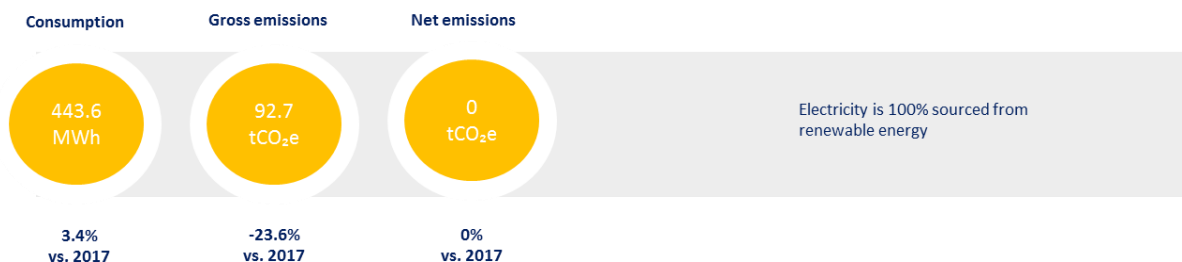
Figure 12
Urban heating energy mix



Source: ESM

Electricity consumption

➔ *Electricity consumption represents the second-largest source of building-related emissions on a gross basis, accounting for 46% of the building-related gross emissions and 0% on a net basis.*

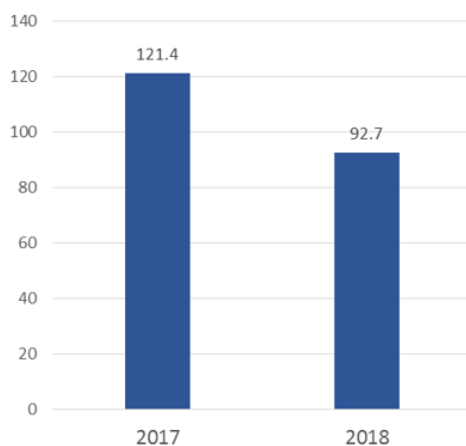


In 2018, the ESM consumed 443.6 MWh of electricity (2017: 428.9 MWh). This is a fairly small increase of 3.4% in consumption compared to the previous year, bearing in mind the extension of rented office space in 2018.

Considering the emission factor derived from the Luxembourg grid, gross emissions amount to 92.7 tCO₂e (2017: 121.4 tCO₂e) in absolute terms. As 100% of the electricity purchased by the ESM is covered by green Guarantees of Origin, the net emissions related to electricity consumption can be reported as zero.

Despite the slight increase in electricity consumption, gross emissions decreased by 23.6%. This can largely be explained by the decarbonisation of the Luxembourg grid and the subsequent lowering of emission factors.

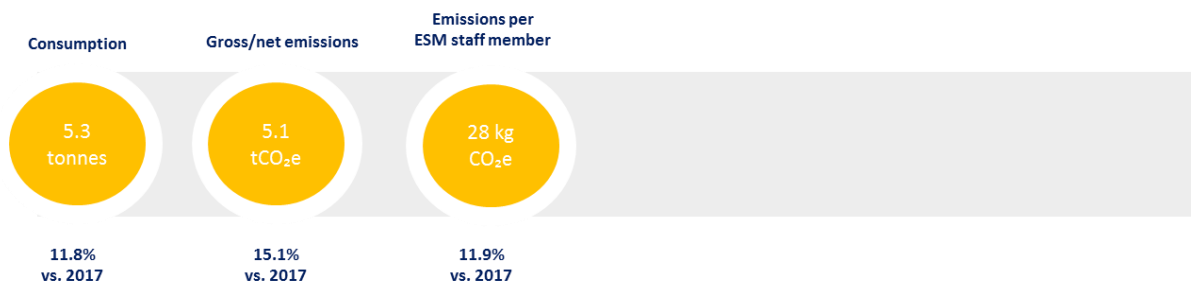
Figure 13
Electricity-related emissions – 2017 and 2018
 (gross tCO₂e)



Source: ESM

Paper consumption

➔ *Paper consumption represents 2.5% of the building-related gross emissions and 5% of the net emissions.*



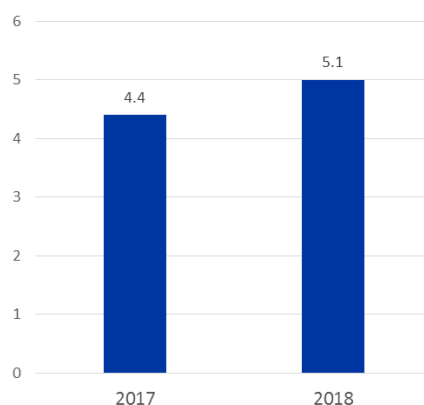
The ESM used approximately 5.3 tonnes of paper in 2018. This represents an increase of 11.8% compared to the previous year's 4.8 tonnes.

The gross and net emissions related to paper consumption amount to 5.1 tCO₂e in absolute terms, an increase of 15.1% from the previous year's consumption of 4.4 tCO₂e.

The rise in the emission factors during the period can partially explain the increase in emissions. Factoring in this increase would lead to an 11.9% increase in gross/net emissions.

➔ The ESM has implemented several measures to reduce paper consumption in recent years, including the implementation of the "follow-me" printing system which requires badges to release print jobs. Furthermore, the default setting for printers is "black and white printing" and double-sided.

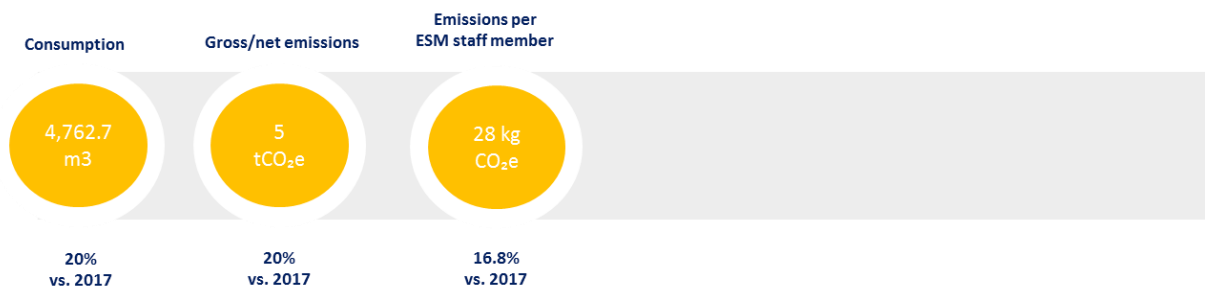
Figure 14
Paper-related emissions – 2018
 (gross tCO₂e)



Source: ESM

Water consumption

➔ *Water consumption represents 2.5% of building-related gross emissions and 5% of building-related net emissions.*

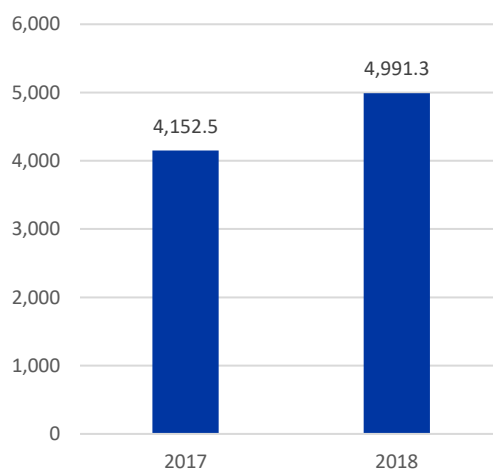


In 2018 the ESM consumed 4,762.7 m³ (2017: 3,962.3 m³), an overall 20% increase that was driven by factors such as the increased need for additional water required during the construction works related to the ESM office extension in 2018.

The gross and net emissions related to water consumption amount to 5.0 tCO₂e (2017: 4.2 tCO₂e) in absolute terms.

➔ The ESM already has several water-reducing measures in place, such as water-saving taps and toilet flushes. Further measures will be assessed going forward.

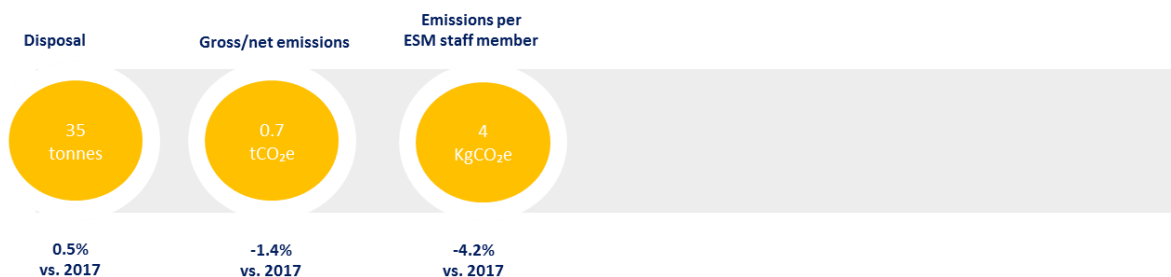
Figure 15
Water-related emissions – 2018
(gross kgCO₂e)



Source: ESM

Waste generated

➔ *Waste generation represents a minor share of the ESM's building-related emissions, accounting for 0.4% of building-related gross emissions and 0.7% of building-related net emissions.*



The ESM generated 35 tonnes of waste in 2018. Despite the increase in rented office space, the amount of waste generated only increased by 0.5% compared to the 34.8 tonnes of 2017.

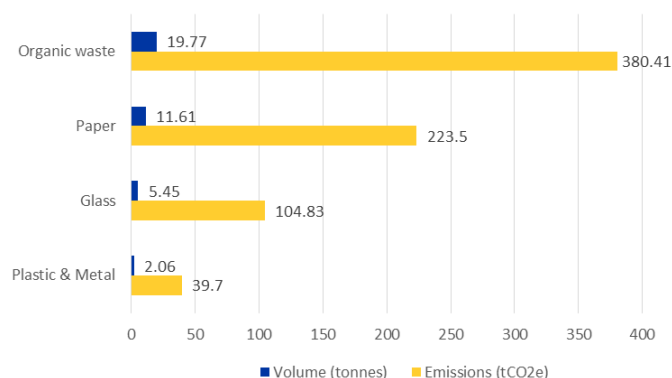
The gross and net emissions related to waste generation amount to 0.7 tCO₂e (2017: 0.8 tCO₂e). Although there was a slight increase in volume compared to the previous year, the net emissions decreased due to an emission factor being marginally reduced between 2017 and 2018.

The ESM obtained the Luxembourg SuperDrecksKëscht® fir Betriber green label for its internal waste recycling practices again in 2018 for the sixth straight year. Waste is separated in-house in line with these requirements.

The SuperDrecksKëscht® fir Betriber label is certified in accordance with the internationally accepted ISO 14024:2000 standard. During annual reviews, the inspectors apply the same control procedures and requirements as the ISO standard. The ESM waste management is therefore in accordance with the requirements for ISO 14024.

Figure 16

Waste volumes and related gross emissions – 2018



Source: ESM

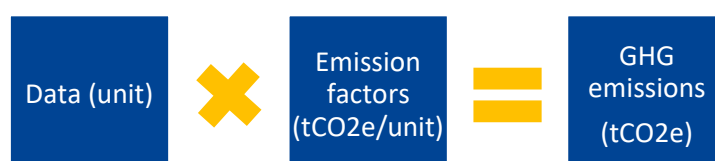
APPENDIX

Emission sources and activity data

Scope	Source of GHG emissions	Units	Measurement
Scope 1	ESM vehicles	km	Annual by vehicle
Scope 2	Purchased electricity	kWh	Monthly
	Purchased heating	kWh	Annual/monthly
Scope 3	Business travel – air	km	By journey including class and distance
	Business travel – rail	km	By journey
	Employee commuting	km	By split between diesel and petrol cars based on Luxembourg average
			By average occupancy of ESM parking spaces
			By average daily distance travelled by ESM staff to home address
			By number of business days
	Paper	Sheets of paper	Annual by paper size and weight
	Water	m3	Annual
	Waste	tonnes	Annual

Calculation method

The absolute GHG emissions from ESM internal operations were calculated by applying the emission factors to the respective activity data, and subsequently aggregating the GHG emissions from various sources.



Emission factors

The emission factors are representative values expressing the GHG emission intensity of an activity. They enable the estimation of emissions from various sources.

	Emission factors	Unit	Source of emission factors
Leased entity vehicles	From 0.18452 to 0.33702	kg CO2e per km per type of car	Defra 2018
Electricity	0.209 (0.283 in 2017)	kg CO2e/kWh	IEA
Urban heating	From 0.01506 to 0.3112	Kg CO2e /kWh (gross CV)	Defra 2018
Business travel – air	0.155 to 0.621 kgCO2e/Passenger km		Defra 2018
Business travel – rail	0.012 (0.012 in 2017)	kgCO2e per km per passenger	Defra 2018
Employee commuting	From 0.17753 to 0.18368	kg CO2e per km per type of car	Defra 2018
Water	0.344	kgCO2e per m3	Defra 2018 - water supply - kg CO2e per cubic meter
Waste	From 39.7 to 380.4	kgCO2e per tonne	Defra 2018 - kg CO2e per tonne
Paper consumption	955.7 (928 in 2017)	kgCO2e per tonnes	Defra 2018 - Material used - primary material production

Exclusions and limitations

The ESM's carbon footprint covers the organisation's internal operations and excludes its funding, investment, and lending activities.

Furthermore, due to limited data availability or usage, this carbon footprint does not include the data centres, the ESM office located in Brussels, nor the disaster recovery site. The impact of these facilities is expected to be non-material. Nevertheless, additional efforts will be allocated in subsequent reporting years to understand their respective emissions contribution.

The ESM used the number of permanent staff members to calculate certain ratios. In some instances, adding the trainees and contractors could have resulted in lower ratios (e.g. for paper and water consumption and waste disposal). It was, however, decided to use only the number of ESM permanent staff members for consistency.