

European Stability Mechanism



European Stability Mechanism

Carbon footprint report
2018

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Executive summary

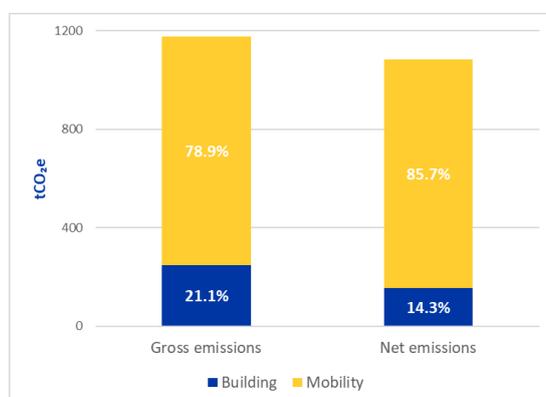
As an international financial institution with a public mandate, the European Stability Mechanism (ESM) strives to implement environmental, social, and governance best practices within its internal operations.

This is the ESM's first carbon footprint report. It provides a comprehensive account of the ESM's carbon footprint arising from its 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.¹

The ESM's total greenhouse gas emissions in 2018 amounted to 1,176.6 metric tonnes of CO₂e² (tCO₂e) on a gross basis (1,084.1 tCO₂e on a net basis)³.

Figure 1
Breakdown between mobility- and building-related emissions – 2018 (gross and net)



Source: ESM

¹ Please note, in September 2019 the ESM prepared its first carbon footprint Report for the year 2018. To ensure the highest level of confidence in its carbon footprint data, a second round of data checks was performed during the calculations of the 2019 carbon footprint report given that 2018 will be used as a baseline year for future reports. To allow for comparability of results from one year to another and to ensure consistency in the methodologies used, it was decided to update several 2018 carbon footprint figures. This resulted in changes in the overall results, as well as some underlying calculations and methodologies throughout the report. A comparison table with all changed figures and detailed explanations is available in Annex 5. This report contains the reviewed 2018 carbon footprint figures and results and replaces the report published in September 2019.

² 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.

³ 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 78.9% of the total gross emissions (85.7% of the total net emissions) as presented in Figure 1. Among the staff mobility emissions, air travel makes up the largest share with emissions amounting to 67.2% of the total gross emissions (73% 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 21.1% of the total gross emissions (13.3% of the total net emissions). In this context, heating is the largest source of emissions, representing 12.3% of the total gross emissions (13.3% of the total net emissions). Other sources of emissions such as the paper, water, and waste represent a less significant share of the ESM's carbon footprint.

The difference between gross and net emissions is linked to the fact that the electricity purchased for the ESM building is derived entirely from renewable sources. As such, the electricity consumption is considered as zero emission on a net basis.

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

1.1 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*,⁴ 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.

1.2 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.

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

⁴ World Business Council for Sustainable Development & World Resources Institute, [The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard](#), revised edition, 2004.

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.

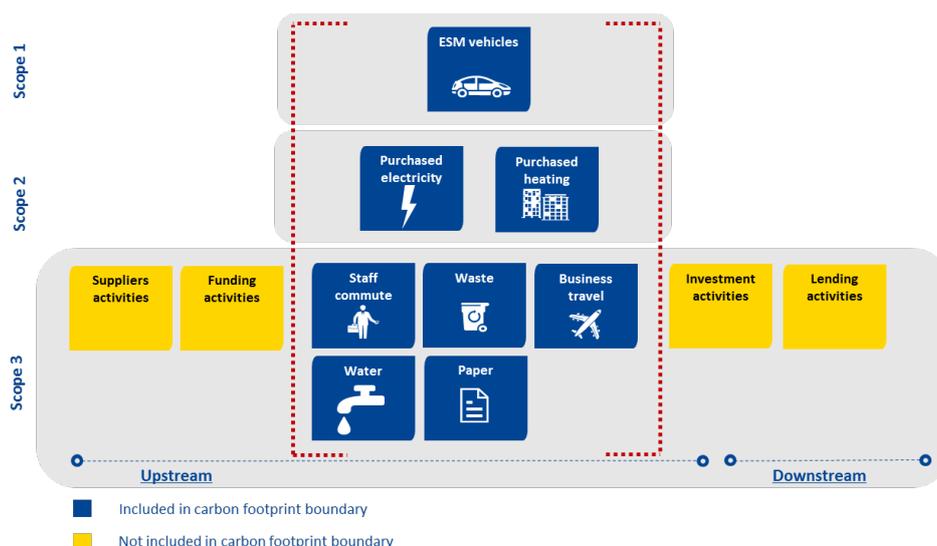
The direct and indirect emissions are split into three scopes:

- **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



Source: ESM

1.3 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 Annex 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 Annex 3 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.

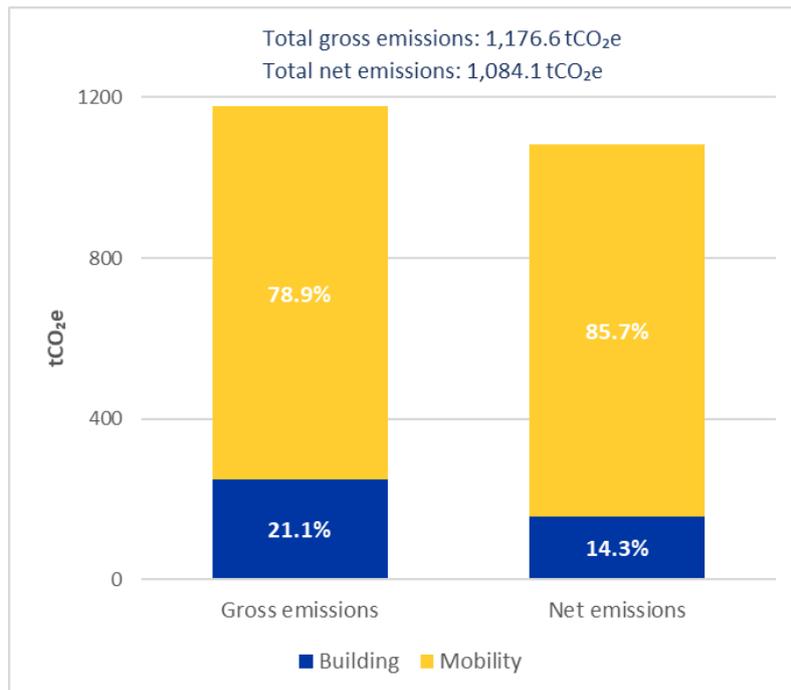
- “Net” emissions: classify consumption from renewable energy or purchased services which were directly offset as zero emitting.
- “Gross” emissions: include emissions from these sources, calculated on the basis of national averages.

2. Carbon footprint results

➔ *The total GHG emissions generated by the ESM in 2018 amount to 1,176.6 tCO₂e on a gross basis and 1,084.1 tCO₂e on a net basis.*

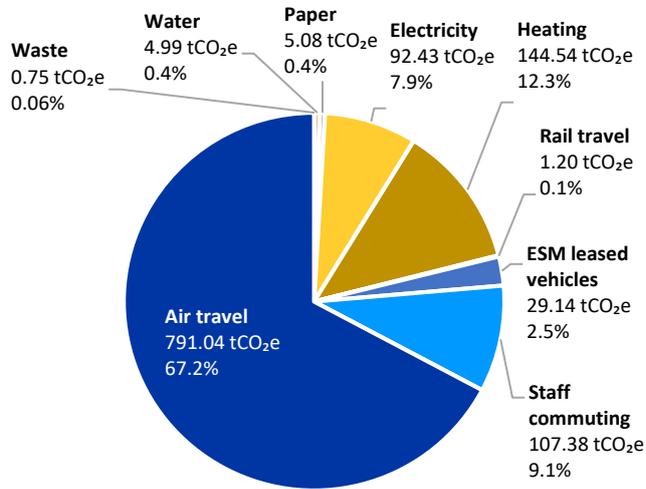
The analysis of emission sources confirms that both on a gross and net basis, staff mobility-related emissions, which contribute 78.9% on a gross basis and 85.7% to total emissions on a net basis, are the largest contributor to total emissions. Building-related emissions, on the other hand, account for 21% of ESM overall emissions on a gross basis and 14.3% on a net basis.

Figure 3
Breakdown between mobility- and building-related emissions – 2018 (gross and net)



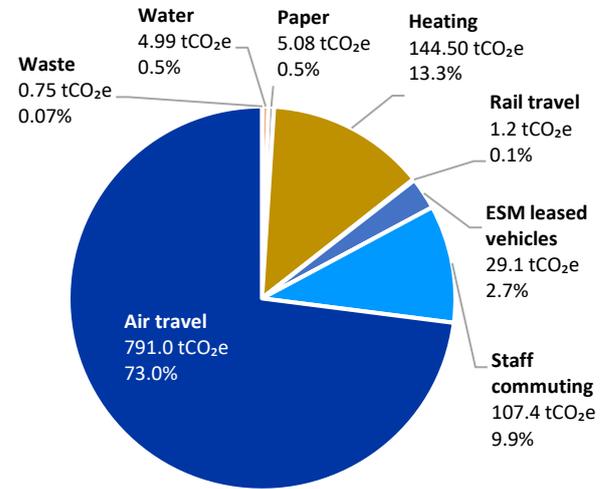
Source: ESM

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



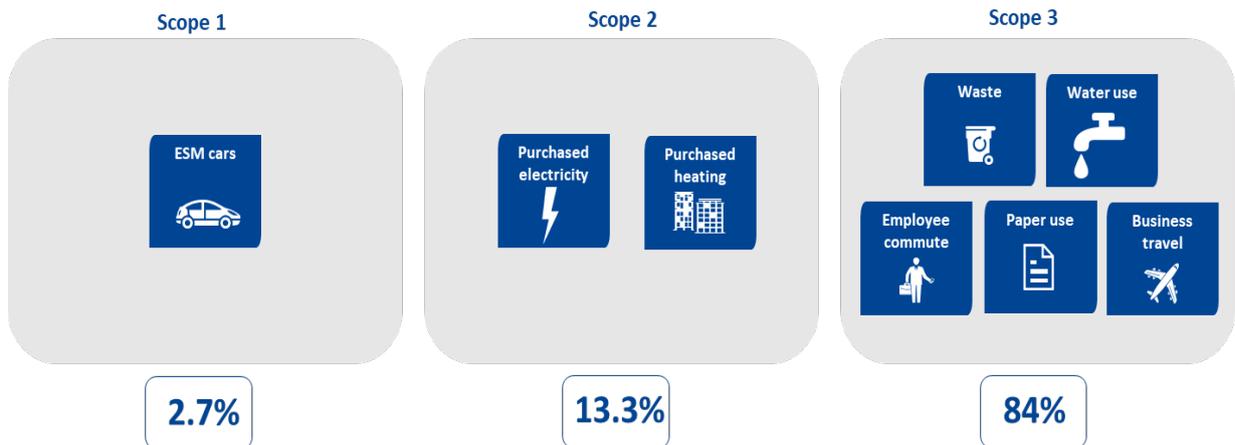
Source: ESM

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



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 84% 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

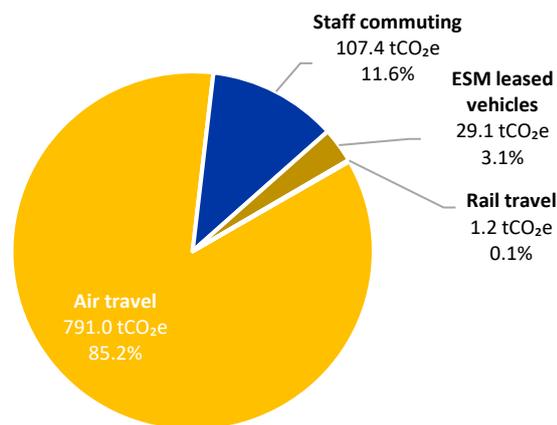


Source: ESM

2.1 Mobility-related emissions

→ *Mobility-related emissions represent by far the largest share of the ESM's carbon footprint, accounting for 78.9% of the total gross emissions and 85.7% of the net emissions.*

Figure 7
Breakdown of mobility-related emissions by source – 2018
 (gross and net⁵)



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 78.9% of the total gross emissions and 85.7% 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 travel⁶.

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.

⁵ 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.

⁶ 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.

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. 4.4 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 0.6 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 3,350.9 kilometres each. In absolute terms, the total gross/net emissions related to car commuting amounted to approximately 107.4 tCO₂e. These figures are based on the availability of ESM parking spaces and several estimations described in Annex 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

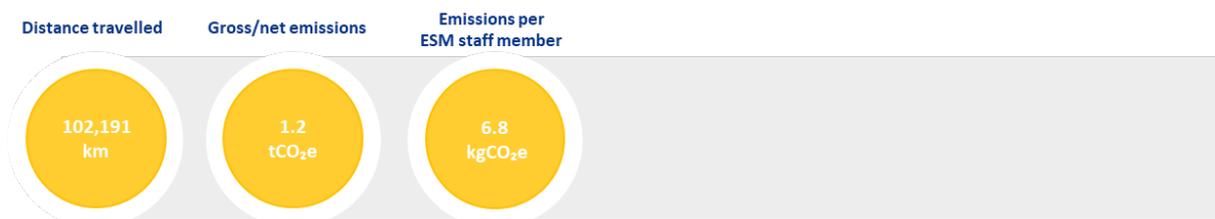
- *The vehicles operated by the ESM contribute to 3.1% of the mobility-related gross/net emissions.*



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 29.1 tCO₂e⁷.

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 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

⁷ Kilometres were calculated using the total distance driven pro-rated by the number of months leased.

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.

2.2 Building-related emissions

➔ *Building-related gross emissions represent 21.1% of the total ESM carbon footprint with 247.8 tCO₂e and less than 14.3% on a net basis with 155.3 tCO₂e.*

Heating is the largest source of building-related emissions, representing 58.3% (2017: 53%) of the total building-related emissions on a gross basis and 93% (2017: 94%) on a net basis.

On a gross basis, electricity consumption represents 37.3% of the building-related emissions (2017: 43.5%). 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 8
Breakdown of building-related emissions – 2018 (gross)

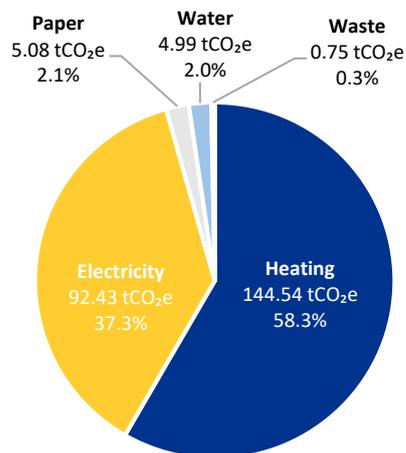
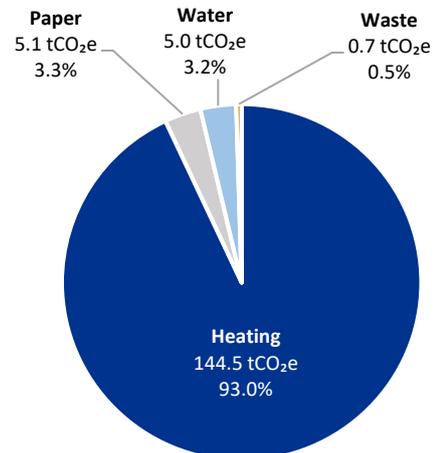


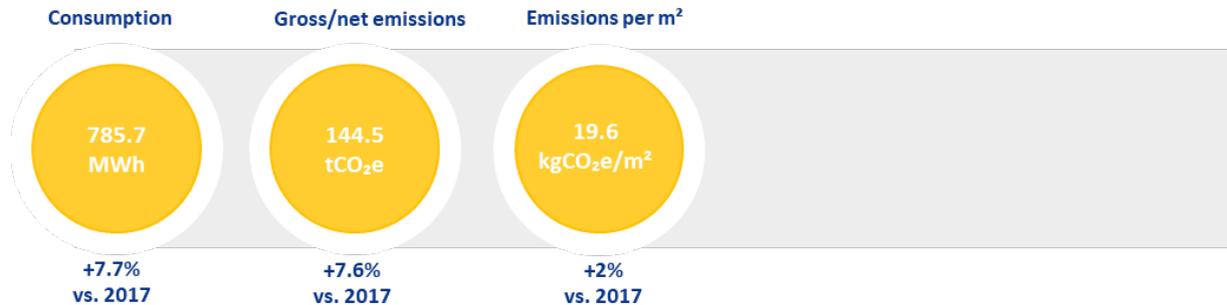
Figure 9
Breakdown of building-related emissions -2018 (net)



Source: ESM

Heating

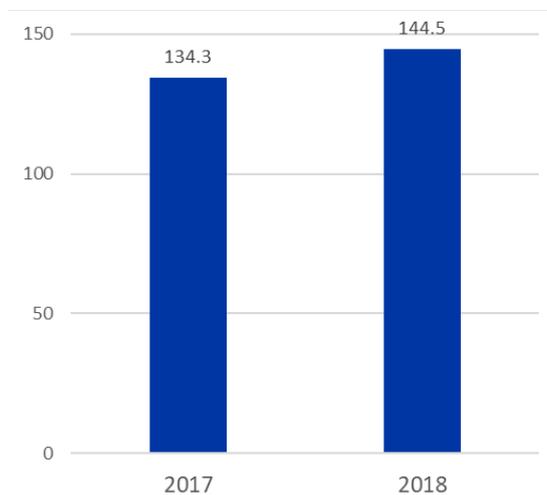
→ Heating represents the largest share of building-related emissions with 58.3% of the building-related gross emissions and 93% of the net emissions.



In 2018, the ESM consumed 785.7 MWh of heating (2017: 729.4 MWh). Due to the increase in office space, an increase in consumption of 7.7% can be noted compared to 2017.

In absolute terms, the gross/net emissions related to heating represent 144.5 tCO₂e (2017: 134.3 tCO₂e). Given that the heating plan operates entirely on natural gas, there is no difference between gross and net emissions derived from heating.

Figure 10
Heating-related emissions – 2017 and 2018
 (gross/net tCO₂e)



Source: ESM

Electricity consumption

➔ *Electricity consumption represents the second-largest source of building-related emissions on a gross basis, accounting for 37.3% of the building-related gross emissions and 0% on a net basis.*

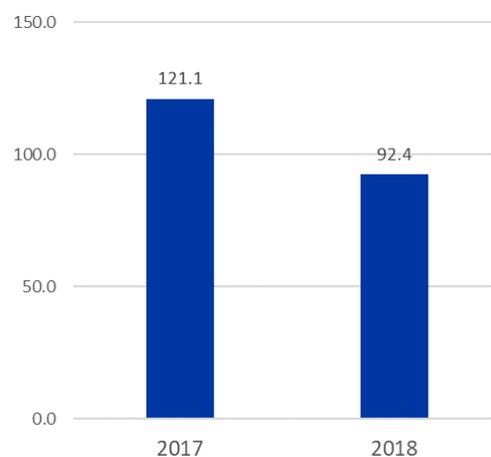


In 2018, the ESM consumed 442.3 MWh of electricity (2017: 427.8 MWh). This is a fairly small increase of 3.4% in consumption compared to the previous year, bearing in mind the extension of rented office space in 2018.

Considering the emission factor derived from the Luxembourg grid, gross emissions amount to 92.4 tCO₂e (2017: 121.1 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.

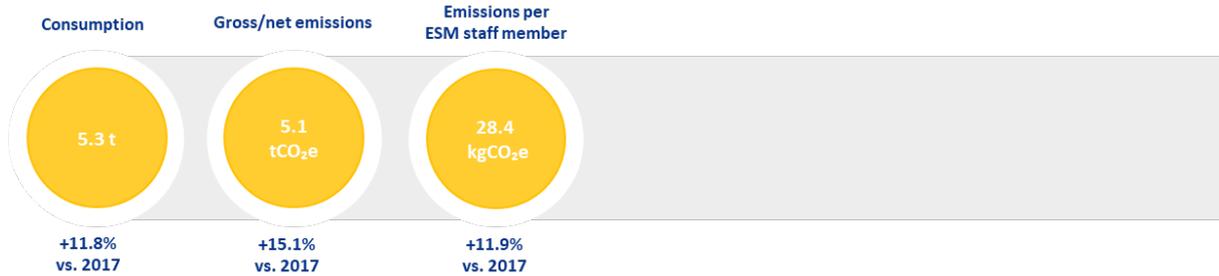
Figure 11
Electricity-related emissions - 2017 and 2018
 (gross tCO₂e)



Source: ESM

Paper consumption

➔ Paper consumption represents 2.1% of the building-related gross emissions and 3.3% of the net emissions.



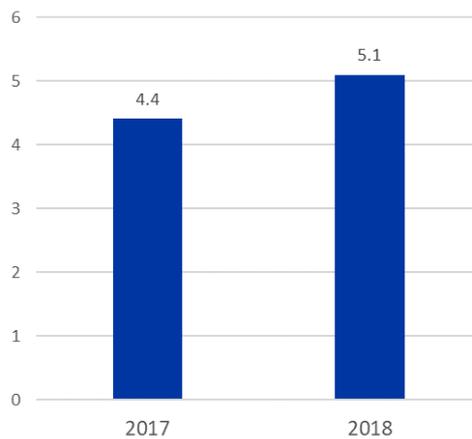
The ESM used approximately 5.3 tonnes of paper in 2018. This represents an increase of 11.8% compared to the previous year’s 4.8 tonnes.

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 12
Paper-related emissions – 2017 and 2018
 (gross tCO₂e)



Source: ESM

Water consumption

➔ *Water consumption represents 2% of building-related gross emissions and 3.2% of building-related net emissions.*

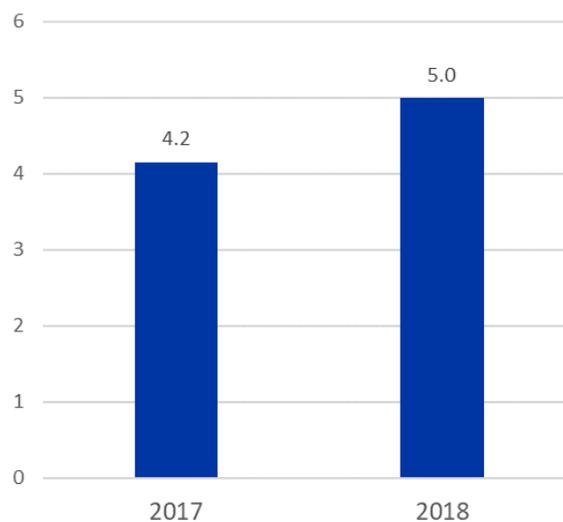


In 2018 the ESM consumed 4,762.7 m³ (2017: 3,962.3 m³), an overall 20% increase that was driven by factors such as the increased need for additional water required during the construction works related to the ESM office extension in 2018.

The gross and net emissions related to water consumption amount to 5 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.

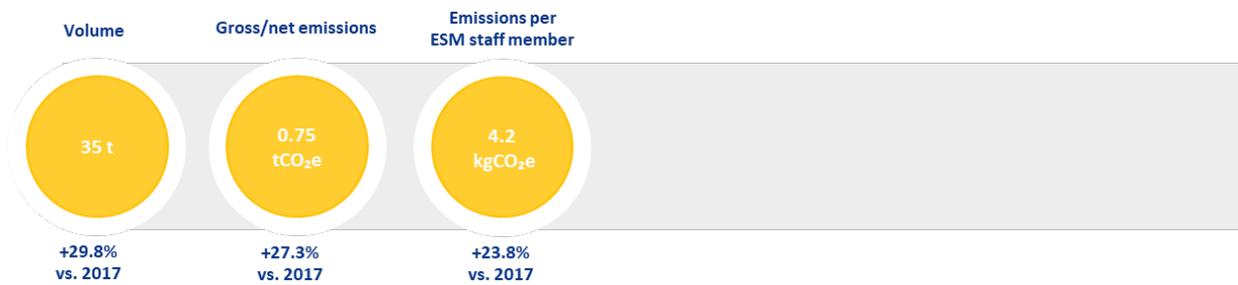
Figure 13
Water-related emissions – 2017 and 2018
 (gross tCO₂e)



Source: ESM

Waste generated

➔ *Waste generation represents a minor share of the ESM’s building-related emissions, accounting for 0.3% of building-related gross emissions and 0.5% of building-related net emissions.*



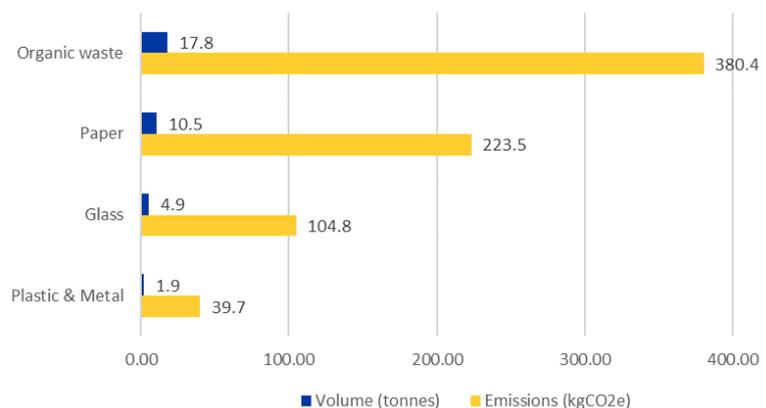
The ESM generated 35 tonnes of waste in 2018. Due to the increase in rented office space and increased number of ESM staff, the amount of waste generated increased by 29.8% compared to the 27 tonnes of 2017.

The gross and net emissions related to waste generation amount to 0.75 tCO₂e (2017: 0.6 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 14
Waste volumes and related gross emissions - 2018



Source: ESM

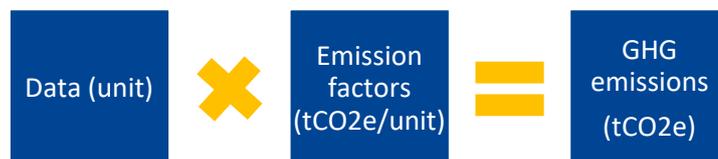
APPENDIX

Annex 1: Emission sources and activity data

Scope	Source of GHG emissions	Units	Measurement
Scope 1	ESM leased vehicles	km	Annual by vehicle
Scope 2	Purchased electricity	kWh	Monthly
	Purchased heating	kWh	Annual/monthly
Scope 3	Business travel – air	km	By flight leg including class and distance
	Business travel – rail	km	By journey
	Employee commuting	km	By share of cars per fuel type in use in Luxembourg; 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	m ³	Annual
	Waste	tonnes	Annual by waste type and volume

Annex 2: 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.



Annex 3: 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
ESM leased vehicles	From 0.18452 to 0. 0.24684	kgCO ₂ e/km per type of car and fuel type	Defra 2018
Electricity	0.209	kgCO ₂ e/kWh	IEA
Heating	0.18416	kgCO ₂ e/kWh (gross CV)	Defra 2018
Business travel – air	0.155 to 0.621	kgCO ₂ e/passenger km	Defra 2018
Business travel – rail	0.014	kgCO ₂ e/passenger km	Defra 2018
Staff commuting	From 0 to 0.18368	kgCO ₂ e/km per type of car and fuel type	Defra 2018
Water	1.048	kgCO ₂ e/m ³	Defra 2018, the emission factor is a sum of the water supply and the water treatment emission factors
Waste	21.4	kgCO ₂ e/t	Defra 2018
Paper consumption	955.7	kgCO ₂ e/t	Defra 2018

Annex 4: Exclusions and limitations

The ESM's carbon footprint covers the organisation's 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.

Annex 5: Update of previously published 2018 figures

In September 2019, the ESM prepared its first carbon footprint Report for the year 2018. To ensure the highest level of confidence in its carbon footprint data, a second round of data checks was performed during the calculations of the 2019 carbon footprint report given that the results of the 2018 carbon footprint report results will serve as a baseline for future reports. To allow for comparability of results from one year to another and to ensure consistency in the methodologies

used, it was decided to update several 2018 carbon footprint figures. This resulted in changes in the overall results, as well as some underlying calculations and methodologies throughout the report. Please find here detailed explanations of the introduced changes with regard to methodology or assumptions underlying the carbon footprint calculations that led to update of 2018 figures. In addition a comparison table was included listing all changed figures.

1. *Emissions related to heating consumption*

In 2020, new information was obtained in relation to the source of heating for the ESM premises. Contrary to what was initially indicated by external providers, the ESM premises was not connected to the district heating of Luxembourg city (sourced from 55% biomass, 20% natural gas, 25% fossil fuel), but rather to a private heating plant fully powered by natural gas.

As a result, gross emissions associated with heating consumption have been reviewed from 96.5 tCO₂e to 144.5 tCO₂e (+49.7%). The net emissions from heating have also changed from 90 tCO₂e to 144.5 tCO₂e (+ 60.6%).

2. *Assumptions underlying the calculations of staff commuting*

In 2020, ESM reviewed the methodology for the calculation of the emissions resulting from staff commuting by fine-tuning the assumptions on the shares of cars in use on the Luxembourg market. For the calculation of the 2019 carbon footprint, ESM leveraged Statec information on cars in use in Luxembourg during 2019 which provided a more granular breakdown by their fuel types. In order to ensure comparability of carbon footprint results over the years, the 2018 calculations were adjusted by KPMG. This resulted in a small change in 2018 gross/net emissions associated with staff commuting changing from 108.4 tCO₂e to 107.4 tCO₂e (-0.9%).

3. *ESM leased cars*

During the review of quality of data used for the calculation of emissions resulting from the use of ESM leased cars, it was revealed that there was a typo on the emission factors used. This resulted in a slight change in the emissions derived from the use of ESM leased cars from 30.3 tCO₂e to 29.1 tCO₂e (-3.8%).

4. Details of the updates to the previously published carbon footprint data

Total gross emissions

	Carbon footprint report 2018 (tCO ₂ e)	Reviewed carbon footprint calculations for 2018 (tCO ₂ e)	Variation
Business travel – Air	791.0	791.0	-
Heating	96.5	144.5	+49.7%
Staff commuting	108.4	107.4	-0.9%
Electricity	92.7	92.4	-0.3%
ESM leased vehicles	30.3	29.1	-3.8%
Paper	5.1	5.1	-
Water	5.0	5.0	-
Business travel – Rail	1.2	1.2	-
Waste	0.7	0.7	-
Total	1,130.9	1,176.6	+4%

Total net emissions

	Carbon footprint report 2018 (tCO ₂ e)	Reviewed carbon footprint calculations for 2018 (tCO ₂ e)	Variation
Business travel – Air	791	791	-
Heating	90	144.5	+60.6%
Staff commuting	108.4	107.4	-0.9%
Electricity	0	0	-
ESM leased vehicles	30.3	29.1	-3.8%
Paper	5.1	5.1	-
Water	5	5	-
Business travel – Rail	1.2	1.2	-
Waste	0.7	0.7	-
Total	1,031.7	1,084.1	+5.1%