

European Stability Mechanism



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Carbon footprint report
2019

September 2020

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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 operations.

The ESM published its first carbon footprint report in September 2019 covering the period from 1 January 2018 to 31 December 2018. This 2020 publication is the second in a continuing series. The report provides a comprehensive account of the ESM carbon footprint arising from its operations in Luxembourg city covering the full year 2019. It also compares the 2019 performance against the 2018 base year performance.

The ESM carbon footprint calculations follow an extensive review of internal and external documentation and activity data, as well as exchanges with external data providers. The report is prepared in accordance with the *International Greenhouse Gas Protocol – a Corporate Accounting and Reporting Standard*. In the spirit of transparency, the report is also made available to the public.

The report identifies the ESM's main emission sources as well as appropriate measures to enhance its environmental performance with a view to greenhouse gas (GHG) emissions. The ESM is committed to producing a carbon footprint report on an annual basis to monitor its progress in decreasing its carbon footprint.

Overall 2019 carbon footprint performance

ESM's total GHG emissions for 2019 amounted to 1,091.2 metric tonnes of CO₂e¹ (tCO₂e) on a gross basis and 1,015.5 tCO₂e on a net basis,² which, despite a 4% increase in ESM staff numbers, represented an emissions decrease of 7.3% on a gross basis and 6.3% on a net basis over 2018.

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. Thus greenhouse gas emissions can be converted and summarised.

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 offset as zero emitting. "Gross" emissions include emissions from these sources, calculated on the basis of national averages.

Table 1
ESM carbon footprint evolution, 2018–2019
 (gross and net)

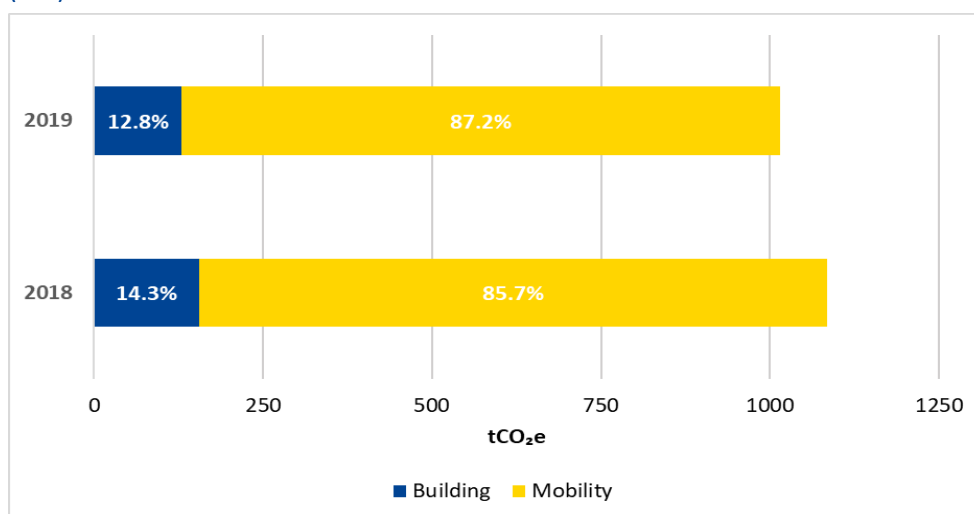
	2018	2019	Variation
Total gross emissions (tCO ₂ e)	1,176.6	1,091.2	↓ 7.3%
Total net emissions (tCO ₂ e)	1,084.1	1,015.5	↓ 6.3%
Staff	179	186	↑ 3.9%
Carbon intensity per staff member³ (tCO ₂ e/staff member)	6.1	5.5	↓ 9.9%

Source: ESM

These results demonstrated that the measures taken in 2019 to reduce the institutional carbon footprint have started to bear fruit. GHG emissions fell in 2019 over 2018, with building-related emissions in particular declining by 17.2% on a gross basis and 16.6% on a net basis. Mobility-related emissions decreased by 4.6% on a gross/net basis.

The breakdown of emissions between mobility- and building-related activities was largely aligned with the 2018 results both on a gross and net basis. In 2019, 81.2% of gross emissions related to staff mobility (2018: 78.9%), while 18.8% (2018: 21.1%) related to building usage. On a net basis, emissions relating to mobility accounted for 87.2% (2018: 85.7%), while emissions relating to building usage for 12.8% (2018: 14.3%).

Figure 1
ESM emissions evolution, 2018–2019
 (net)



Source: ESM

³Carbon intensity is calculated by dividing the total net emissions per total number of ESM staff members.

In 2019, the main contributors to emissions were again linked to **staff mobility**, which included both business travel and staff commutes to work. Business travel by air amounted to 67.4% of total gross emissions (2018: 67.2%) and 72.5% of total net emissions (2018: 73%), followed by staff commuting, which represented 10.6% of ESM's total emissions on a gross basis (2018: 9.1%) and 11.4% on a net basis (2018: 9.9%).

Other mobility-related activities represented a smaller share. The usage of ESM-leased vehicles in 2019 amounted to 3.1% (2018: 2.5%) and 3.3% (2018: 2.7) of total emissions on a gross and net basis respectively, while business travel by train accounted for less than 1% of emissions both on a gross and net basis (2018: <1%).

In terms of **building-related** emissions, the heating of the ESM premises again contributed the most to ESM's total emissions, amounting to 11% of emissions on a gross basis (2018: 12.3%) and 11.8% on a net basis (2018: 13.3%). Electricity-related emissions accounted for 11% of total ESM emissions on a gross basis (2018: 7.9%), but for zero on a net basis since the ESM purchased electricity entirely from renewable sources. Other sources of emissions such as the consumption of paper, water, and waste represented a far less significant share of the ESM carbon footprint, collectively producing 0.92% of total gross emissions (2018: 0.92%) and 0.99% of total net emissions (2018: 1%).

1. Methodology

1.1 Methodology used to calculate ESM's carbon footprint

The ESM reports its GHG emissions in accordance with the *International Greenhouse Gas Protocol - a Corporate Accounting and Reporting Standard*⁴ revised edition.

The International GHG Protocol was developed through a partnership between the World Resources Institute and the World Business Council for Sustainable Development and is the most widely recognised international standard in the accounting, reporting, and quantifying of GHG emissions.

The data used to evaluate the impact of ESM activities is collected in an environmental inventory that is updated annually to reflect changes in staff numbers, office space, internal activities, as well as best practices and standards. Maintaining and assessing this information is crucial to identifying and planning relevant measures in line with the ESM's environmental, social and governance priorities.

The present report uses the terms "carbon footprint", "GHG emissions" and "carbon accounting" synonymously and interchangeably as they refer to the greenhouse gas inventory of the ESM.

1.2 Reporting scope

According to the International GHG Protocol, the first step for a carbon footprint assessment is for an organisation to select one of two approaches for consolidating GHG emissions, by defining the **organisational boundaries** for reporting purposes. Given that organisations can be set up as various legal entities, they can exercise different types and degrees of control over their operations.

Two distinct approaches can, therefore, be used to determine such organisational boundaries:

1. the reporting entities can choose to report either the emissions from operations over which they have financial or operational control (control approach) or
2. the emissions from operations according to their share of equity within the operation (equity share approach).

For its carbon footprint report, the ESM uses the operational control approach. Under this approach, the ESM accounts for the GHG emissions of the operations over which it has operational control (see

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

Figure 2). This covers the ESM operations in Luxembourg city. The office space in Brussels and the disaster recovery site are excluded; the impact of these facilities is expected to be non-material given their relatively small size and infrequent usage in 2019.

For the calculation of certain ratios, the ESM factors in the number of permanent staff members employed in 2019 – an average of 186 persons (2018: 179, 2017: 174). In 2019, the office space rented by the ESM remains the same as at the end of 2018.

According to the International 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 from sources owned or controlled by another entity. Emissions generated by air transport where planes are owned by other entities would fall into this category.

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 entities;
- **Scope 2:** Indirect GHG emissions from the purchase of electricity, heat, steam, or cooling;
- **Scope 3:** Other indirect emissions.

The International GHG Protocol requires entities to report a minimum of Scope 1 and 2 emissions, while reporting on Scope 3 emissions is optional.

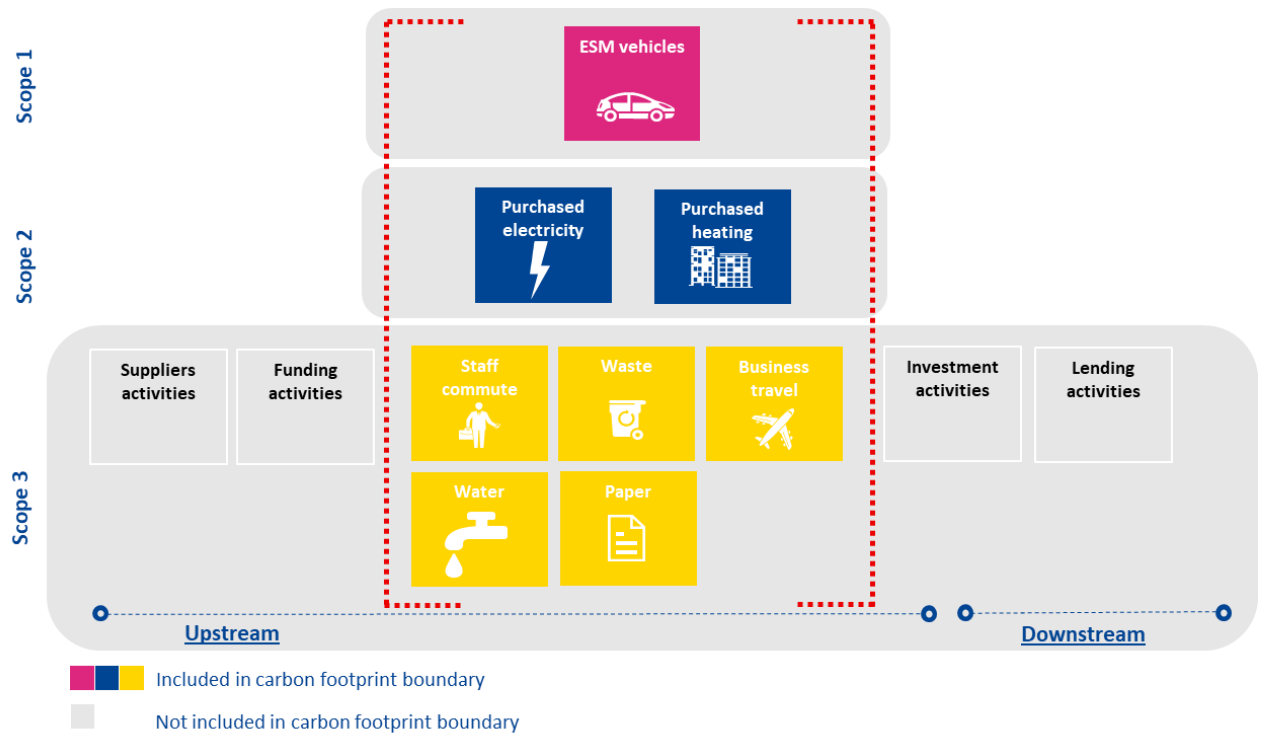
After a mapping exercise, the ESM has decided to include the following activities under the ESM carbon footprint:

- **Scope 1:** ESM-leased vehicles;
- **Scope 2:** Electricity and heating purchased for the ESM premises;
- **Scope 3:** Business travel of ESM staff, commuting of staff to work, paper and water consumption, and waste generated at ESM premises.

The sources of GHG emissions are also categorised from the life cycle perspective into: upstream emissions (resulting from the processing and production of a product up to the point of sale), or downstream emissions (occurring after the sale of a product, through its distribution, storage, use and end-of-life). See Figure 2 for a diagram of what ESM activities are included in the 2019 ESM carbon footprint report. From a life-cycle perspective, the emissions the ESM includes in the scope its carbon

footprint are all upstream, as at this point in time, the institution does not assess the carbon footprint of its lending or investment activities.

Figure 2
ESM activities included in the ESM carbon footprint report



Source: ESM

1.3 Reporting period

The reporting period covers 1 January 2019 to 31 December 2019. With regard to the analysis of trends, the base year is set at 2018 given that is the earliest year for which all required data is available and validated. Going forward, the emissions calculated for the base year will serve as benchmark for further reports.

1.4 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 uses primary activity data, which is interpreted in light of documented evidence (e.g. the source of energy or heating, invoices). However, distance travelled by staff

commuting to work and resulting emissions are estimated based on several underlying assumptions, such as the type of cars or fuel used, as described in Annex 4.

This information helps determine the emission factor to be applied to convert the activity data into GHG emissions. For the purposes of this report, the emission factors are derived from established sources, such as the UK government's Department for Environment, Food & Rural Affairs (Defra) and the International Energy Agency (IEA).⁵

The calculations are performed and verified with the assistance of KPMG Luxembourg Société Coopérative.

As per reporting best practice, two emissions totals are disclosed – gross emissions and net emissions.

- “Net” emissions: classify consumption from renewable energy or purchased services that are directly offset as zero emissions and are considered carbon neutral.
- “Gross” emissions: include emissions from these sources, calculated on the basis of national averages.

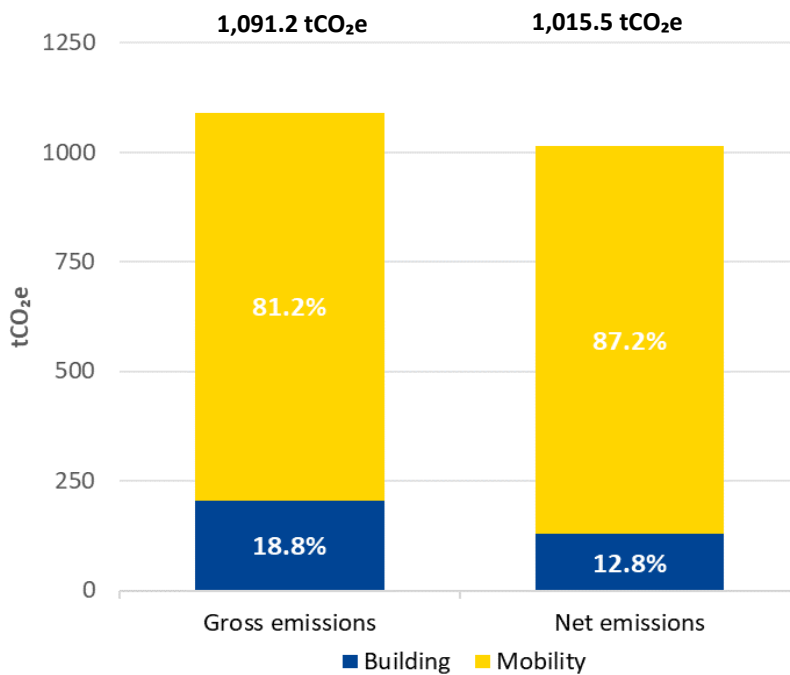
⁵ Please refer to the Annex 3 for further information on emission factors.

2. Carbon footprint results

- ➔ *The total GHG emissions generated by the ESM in 2019 amounted to 1,091.2 tCO₂e on a gross basis (2018: 1,176.6 tCO₂e) and 1,015.5 tCO₂e on a net basis (2018: 1,084.1 tCO₂e).*
- ➔ *These results represented a decrease of 7.3% on a gross basis and 6.3% on a net basis versus 2018.*

The analysis of emission sources confirmed that both on a gross and net basis, staff mobility-related emissions were the largest contributor to total emissions. They amounted to 81.2% of the total gross emissions (2018: 78.9%) and 87.2% of the total net emissions (2018: 85.7). Building-related emissions accounted for 18.8% of the ESM’s overall emissions on a gross basis (2018: 21.1%) and 12.8% on a net basis (2018: 14.3%).

Figure 3
Breakdown between mobility- and building-related emissions, 2019
 (gross and net)

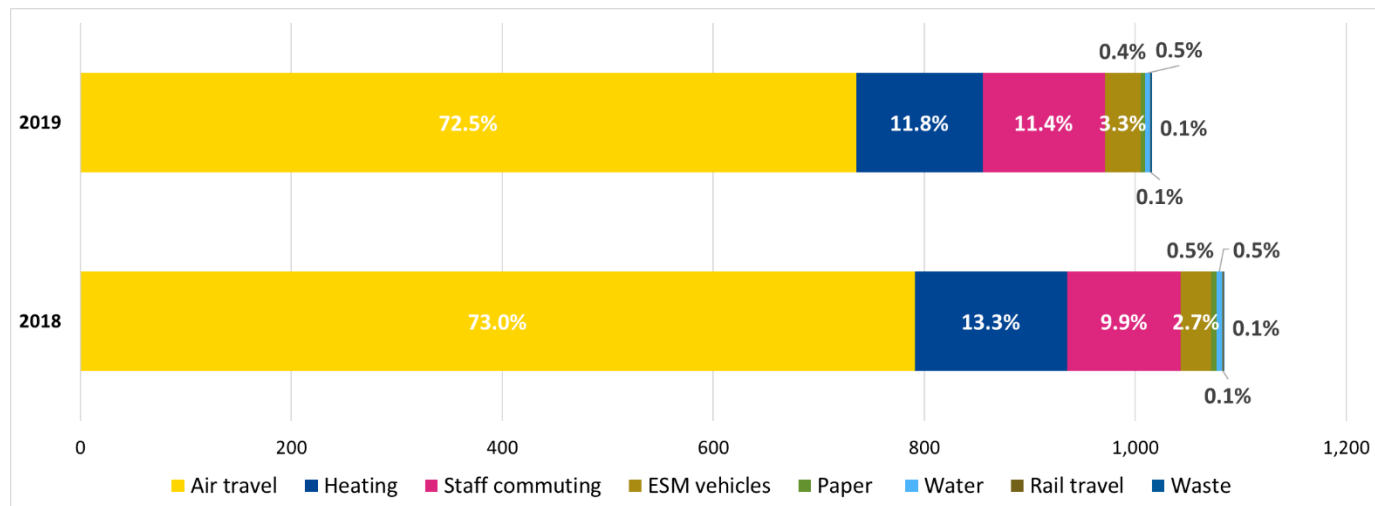


Source: ESM

The key contributors based on emission source for 2019 followed the same trend observed in the previous year. Business **travel by air remained the main emitting activity**, contributing 72.5% to total net emissions, an 0.5 percentage point decrease from 2018 (2018: 73%).

The second-largest contributor was linked to the heating of the ESM premises, representing 11.8%. A decrease in heating consumption meant heating-related emissions decreased by 1.5 percentage points from 2018 (2018: 13.3%).

Figure 4
Evolution of total emissions by source, 2018–2019
 (net)



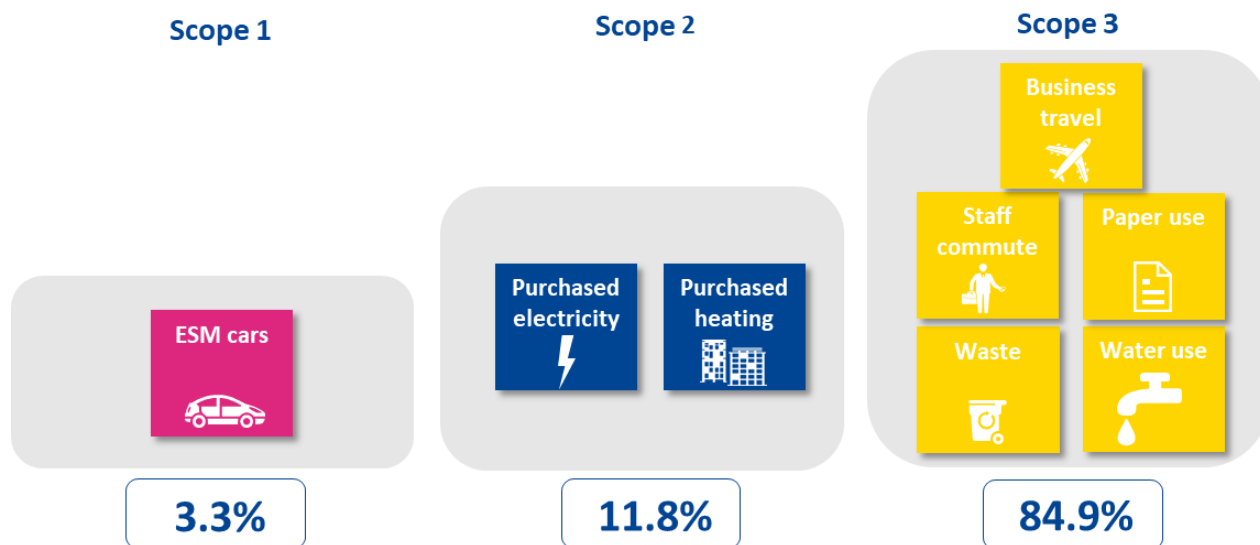
Source: ESM

Emissions generated by the daily staff commute to work contributed 11.4 % to total net emissions, an increase of 1.5 percentage points. This resulted from a rise in the distances travelled in 2019 and a slight increase in staff numbers, which made staff commuting the third-largest contributor to overall emissions.

Since the electricity delivered to the ESM premises was derived entirely from renewable sources, confirmed by a green Guarantee of Origin, it was reported as zero emissions on a net basis and hence not displayed in Figure 4.

Looking at the breakdown between Scopes 1, 2, and 3 as defined by the International GHG Protocol, the ESM’s 2019 carbon footprint results revealed that Scope 3 accounted for the largest part of emissions with 84.9% of total net emissions (2018: 84.0%). This result was common for entities within the financial sector, where the largest source of emissions usually derived from business travel, staff commuting, paper and water usage, and waste generated.

Figure 5
Breakdown of ESM emissions per scope
 (net)



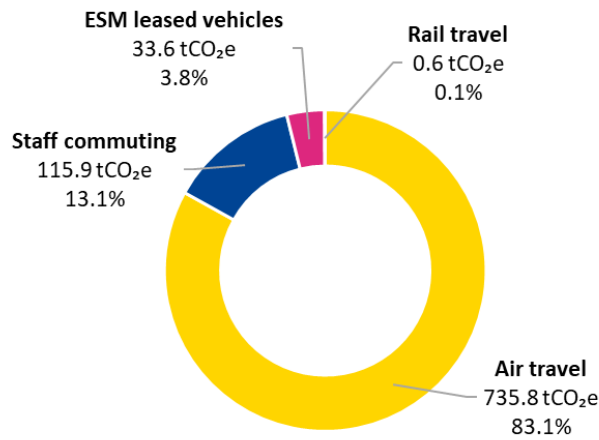
Source: ESM

2.1 Mobility-related emissions

- ➔ *Mobility-related emissions represented by far the largest share of the ESM carbon footprint in 2019.*
- ➔ *They amounted to 885.9 tCO₂e on a gross/net basis (2018: 928.8 tCO₂e), accounting for 81.2% of the total gross emissions (2018: 78.9%) and 87.2% of the total net emissions (2018: 85.7%).*
- ➔ *Mobility-related emissions decreased by 4.6% on a gross/net basis versus 2018.*

Staff mobility, including both business travel and staff commute, represented the largest share of total emissions. Air travel was responsible for the major portion of staff mobility-related emissions, accounting for 83.1% of mobility-related gross/net emissions; followed with a significant gap by staff commutes representing 13.1% of mobility-related gross/net emissions. The remaining share was related to the use of ESM-leased vehicles (including the ESM minivan used for group travel), accounting for 3.8% of gross/net emissions, while business travel by rail represented a share of less than 1%.

Figure 6
Breakdown of mobility-related emissions by source, 2019
 (gross/net)

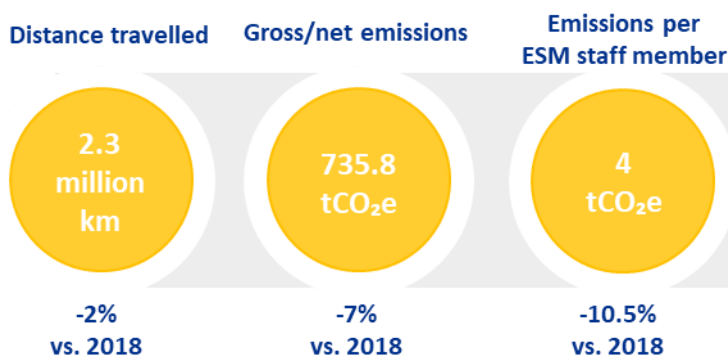


Source: ESM

Given the nature of the ESM mandate, business travel remained an unavoidable activity. Missions to ESM Members, as well as regular exchanges with financial counterparties such as issuers and investors, were key for the effective fulfilment of the ESM mandate. Nevertheless, the ESM has increased its efforts in the area of digital communications and conference meetings. The ESM Travel Policy maintained provisions regulating travel classes for air travel and encouraging the use of public transport during business trips whenever the travel requirements and security situation allowed. Further measures in this context were under consideration.

2.1.1 Air travel

- ➔ *ESM staff travelled approximately 2.3 million kilometres by air (2018: 2.4 million kilometres) in 2019.*
- ➔ *Air travel represented the largest source of gross/net emissions of the ESM, accounting for 67.4% of the overall gross emissions (2018: 67.2%) and 72.5% of the overall net emissions (2018: 73%). Air travel also amounted to 83.1% of mobility-related emissions on a gross/net basis (2018: 85.2%).*
- ➔ *Gross/net emissions resulting from air travel decreased by 7% versus 2018.*

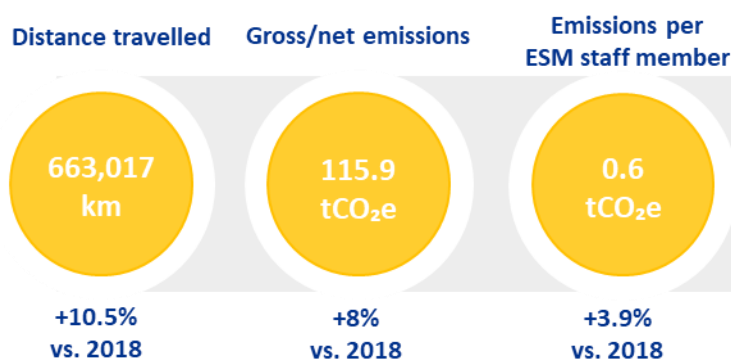


Distance travelled by air amounted to a total of around 2.3 million kilometres, a 2% reduction from the 2.37 million kilometres registered in 2018. The resulting emissions amounted to 735.8 tCO₂e, i.e. 4 tCO₂e per ESM staff member in 2019. Overall, business travel by air amounted to 83.1% of gross/net mobility-related emissions (2018: 85.2%), a reduction of 7% over 2018 air travel emissions of 791.04 tCO₂e. This fall reflected a decrease of distance travelled as well as Defra’s revision of the conversion factors applied to business travel by air.

In 2019, the ESM maintained the same calculation methodology as the one used in 2018, in which the emissions associated with each leg of an individual flight are calculated based on the business class and distance travelled.

2.1.2 Staff commuting

- ➔ *ESM staff commuted approximately 660,000 km by car (2018: 600,000 km) in 2019.*
- ➔ *Emissions amounted to 10.6% of the total ESM gross emissions (2018: 9.1%) and 11.4% of the total net emissions (2018: 9.9%). With a view to mobility-related emissions, staff commuting totalled 13.1% on a gross/net basis (2018: 11.6%).*
- ➔ *Gross/net emissions associated with staff commuting decreased by 8% versus 2018.*



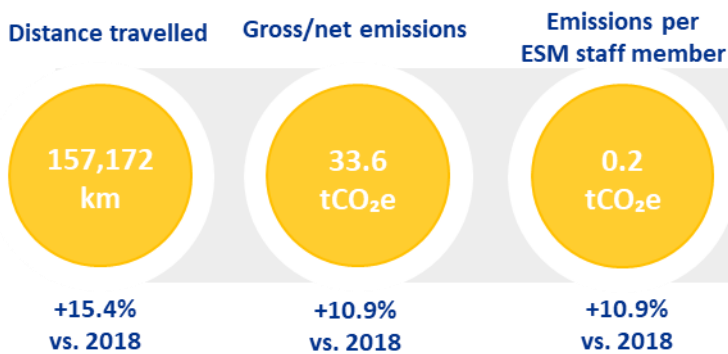
In 2019, ESM staff commuted around 660,000 km by car, representing an average 3,565 km per ESM staff member. The commute of ESM staff to work represented 13.1% of mobility-related emissions (2018: 11.6%). The total distance commuted by staff rose 10.5% over 2018, leading to an 8% increase in related emissions, or 115.9 tCO₂e (2018: 107.4 tCO₂e) on a gross/net basis (i.e. 0.6 tCO₂e per staff member). A slight increase in the number of ESM staff (4%) could explain this result.

The local context influenced this result: 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.

In 2019, the ESM consolidated its methodology for the calculation of emissions resulting from staff commutes, relying on a conservative approach assuming most ESM staff commute by car. As such, the distances from the respective home addresses to the office were calibrated by the average occupancy rate of ESM parking spaces and number of business days.⁶ In addition, the ESM leveraged national statistics on vehicles in use in Luxembourg broken down by type of fuel. In the future, the ESM plans to improve the estimate of its staff commute to work, using, for example, mobility surveys.

2.1.3 ESM-leased vehicles

- ➔ *The vehicles operated by the ESM travelled more than 157,000 km (2018: 136,000 km) in 2019.*
- ➔ *The related emissions represented 3.1% of total ESM gross emissions (2018: 2.5%) and 3.3% of total net emissions (2018: 2.7%). ESM-leased vehicles represented 3.8% of mobility-related emissions on a gross/net basis.*
- ➔ *Gross/net emissions resulting from the use of ESM-leased vehicles increased by 10.9% versus 2018.*



The ESM leased and operated eight vehicles including a minivan used to drive staff members to business events in and outside of Luxembourg.

The aggregated distance travelled by the ESM-leased vehicles in 2019 amounted to 157,172 kilometres, or 15.4% more than in 2018 (2018: 136,177 km). The ESM added one vehicle to its fleet of leased vehicles for the last three months of the year, which translated into an increase in the distance travelled and the related emissions.

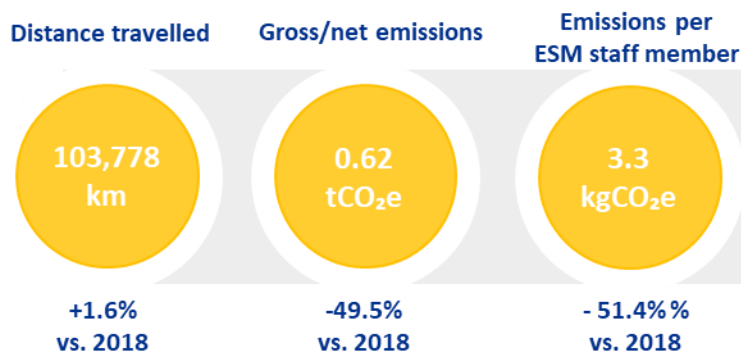
⁶ Annex 1 lists the measurements taken into account for the estimate of distance travelled by staff to commute to work and for the calculation of related carbon emissions.

The emissions generated by the use of ESM-leased vehicles amounted to 33.6 tCO₂e 2: 10.9% more than the previous year (2018: 29.1 tCO₂e). The share of emissions associated with the use of ESM-leased cars out of total mobility-related emissions amounted to 3.8% (2018: 3.1%).

In 2019, ESM maintained the same methodology for calculating emissions resulting from the use of leased cars: the mileage travelled by each car was multiplied by the appropriate emission factor for the car’s type of fuel to obtain the total CO₂ equivalent for the year.

2.1.4 Rail travel

- ➔ *ESM business travel by rail amounted to almost 104,000 km (2018: 102,000 km) in 2019.*
- ➔ *This represented less than 1% of total ESM gross and net emissions (2018: less than 1%) and less than 1% of the mobility-related emissions (2018: less than 1%).*
- ➔ *Gross/net emissions generated by rail travel decreased by 49.5% versus 2018.*



Business travel by rail represented a marginal share of staff mobility in 2019, close to 0.1% (2018: 0.1%). The year 2019 saw a 1.6% increase in the total distance travelled by train (2018: 102,191 km). Nonetheless, the associated emissions dropped by almost 50% from 2018 to 0.6 tCO₂e (2018: 1.2 tCO₂e), 3.3 kgCO₂e, respectively, per staff member. This drop reflects Defra’s review of international rail conversion factors in the light of newly available scientific data.⁷

Given the limitation of the rail connections in Luxembourg to frequent business travel destinations in neighbouring countries such as Belgium and Germany, there were limitations on the extent to which ESM staff could effectively leverage rail travel. As such, rail travel from and to Paris, a destination with high-speed direct rail links, made up 47.6% of all rail travel reflecting the well-developed rail connections to this destination. These results are similar to those of 2018 (2018: 47%).

⁷ Please refer to the Annex 3 for further information on emission factors.

The ESM used the same methodology to estimate emissions resulting from rail travel as that used for business travel by air or by ESM-leased vehicles: distance travelled was multiplied by the appropriate conversion factor to obtain the total greenhouse gas emissions for the year.

2.2 Building-related emissions

- *Building-related emissions amounted to 205.3 tCO₂e on a gross basis (2018: 247.8 tCO₂e) and 129.6 tCO₂e on a net basis (2018: 155.3 tCO₂e) in 2019.*
- *This represented 18.8% of the total ESM carbon footprint emissions on a gross basis (2018: 21.1%) and 12.8% on a net basis (2018: 14.3%).*
- *Gross and net building-related emissions decreased by 7.3% and 6.3%, respectively, versus 2018.*

The main source of building-related emissions remained heating, which contributed 58.2% of total gross building-related emissions (2018: 58.3%) and 92.2% of total net building-related emissions (2018: 93%).

On a gross basis, electricity represented the second-largest source of building-related emissions with a share of 37%, the same share as in the previous year. The ESM purchased 100% of its electricity from renewable energy sources (hydropower) covered by green Guarantees of Origin. Therefore, electricity consumption was reported as zero emissions on a net basis.

The remaining sources of emissions represented a less significant share for the ESM carbon footprint of 4.9% of total gross building-related emissions and 7.8% on a net basis. The method of calculation of all building-related emissions followed the same approach as in 2018, in other words consumption data was multiplied by the appropriate emission factor to obtain the annual carbon footprint.

Figure 7
Breakdown of building-related emissions by source, 2019
 (gross)

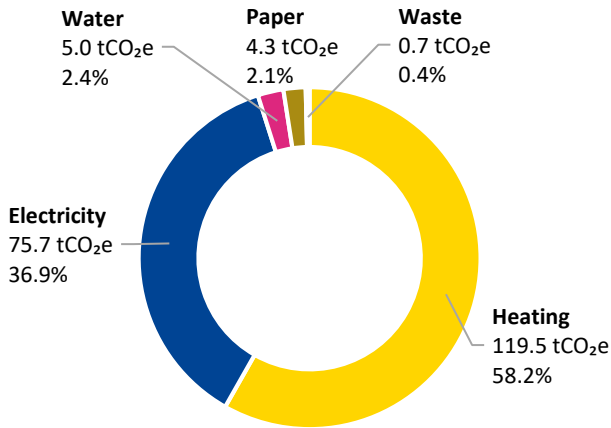
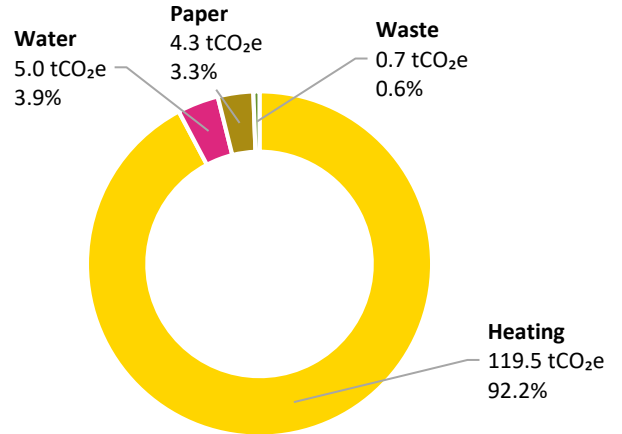


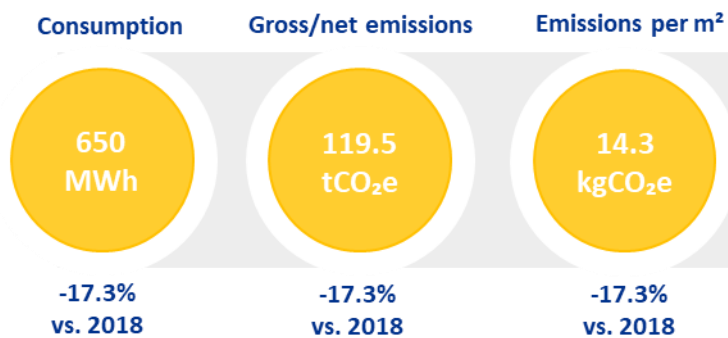
Figure 8
Breakdown of building-related emissions by source, 2019
 (net)



Source: ESM

2.2.1 Heating

- ➔ Heating represented the second-largest emitting ESM activity overall in 2019 with an 11% share of the total gross emissions (2018: 12.3%) and 11.8% of the total net emissions (2018: 13.3%). Heating accounted for 58.2% of ESM gross building-related emissions (2018: 93%) and 92.2% of net building-related emissions (2018: 93%).
- ➔ The ESM used more than 650 MWh in heating (2018: 785.7 MWh) in 2019.
- ➔ Heating-related gross/net emissions decreased by 17.3% versus 2018.



In 2019, heating the ESM premises remained the most emitting building-related activity and the second-largest contributor to total ESM emissions. The premises were heated by natural gas.

The ESM consumed in 2019 650 MWh of heating, exhibiting a 17.3% reduction compared with the previous year (2018: 785.7 MWh). The emissions generated followed a similar trend, declining to 119.5 tCO₂e in 2019, a 17.3% decrease over 2018 (2018: 144.5 tCO₂e).

Figure 9
Heating consumption, 2017–2019
 (MWh)

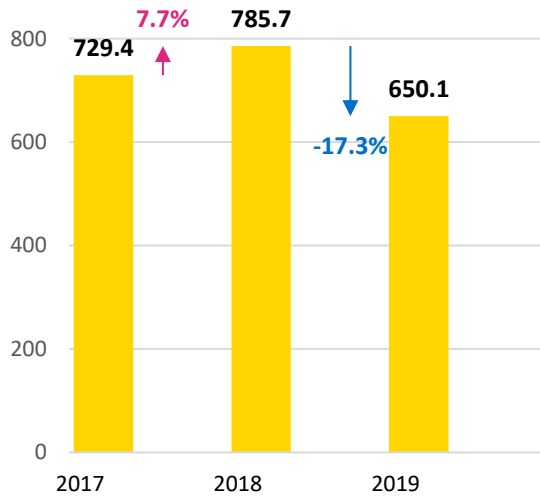
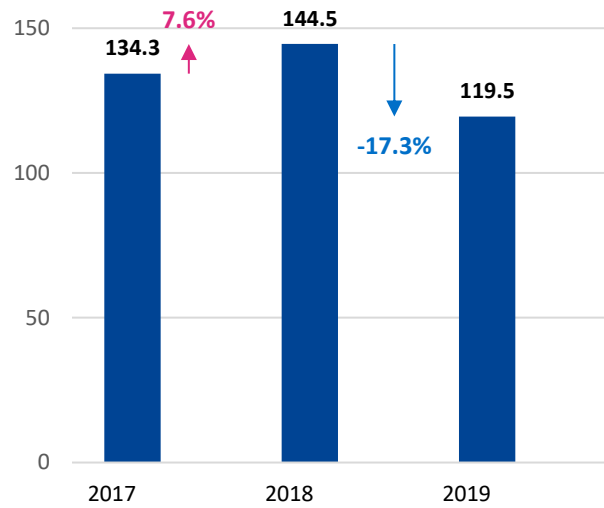


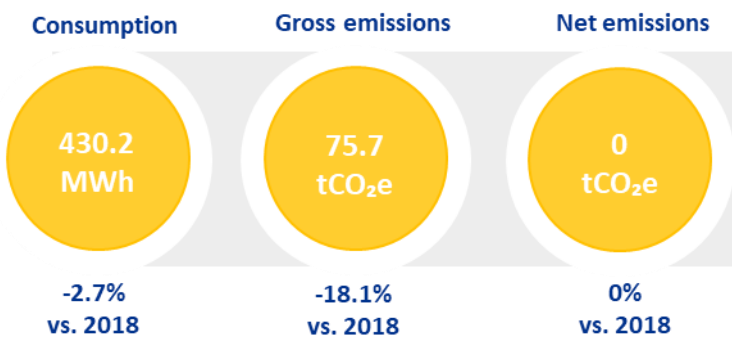
Figure 10
Emissions from heating consumption, 2017–2019
 (gross/net tCO₂e)



Source: ESM

2.2.2 Electricity consumption

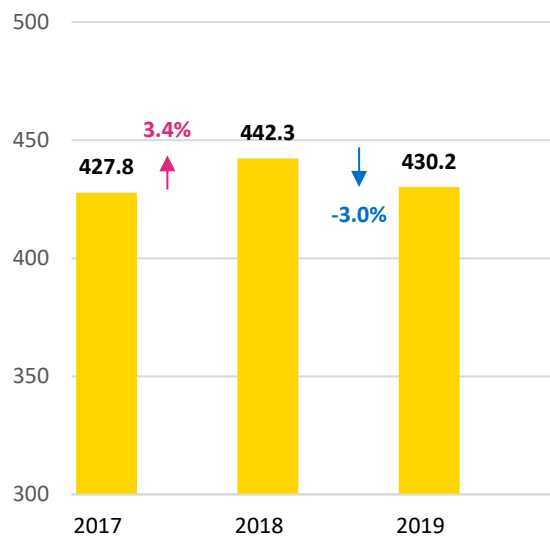
- ➔ *The ESM consumed 430.2 MWh of electricity (2018: 442.3 MWh) in 2019.*
- ➔ *The resulting emissions represented 6.9% (2018: 7.9%) of the total ESM gross emissions and 0% on a net basis, as electricity was derived entirely from renewable sources. Electricity-related emissions accounted for 37% of the building-related gross emissions (2018: 37.3%) and were null on a net basis.*
- ➔ *Electricity-related gross emissions decreased by 18.1% versus 2018.*



In 2019, ESM's electricity consumption amounted to 430.2 MWh, decreasing 2.7% in comparison to the previous year (2018: 442.3 MWh). The reasons behind this reduction in electricity consumption were two-fold: during the extension of the ESM building, only LED lighting was installed in the newly occupied area, and at a later stage the corridor lighting of the entire building was set to a shorter interval with motion activation. These measures led to an overall reduction that offset the 3.4% 2018 increase in energy consumption caused by the expansion of the ESM office space.

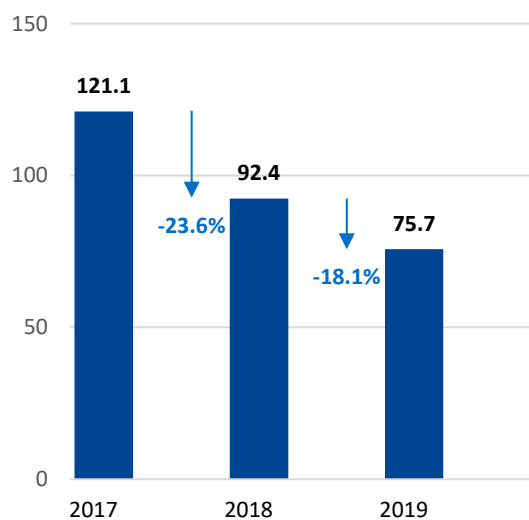
In addition, the gross emissions deriving from electricity consumption registered a consistent decrease since 2017, due to the IEA's revision of conversion factors applied to Luxembourg's electricity grid. In 2019, the gross electricity-related emissions amounted to 75.7 tCO₂e, dropping 18.1% from 2018 (2018: 92.4 tCO₂e). This represented 36.9% of the gross ESM building-related emissions (2018: 37.3%). Given that the electricity purchased for the ESM premises was derived entirely from renewable sources, the net emissions were considered to be zero.

Figure 11
Electricity consumption, 2017–2019 (MWh)



Source: ESM

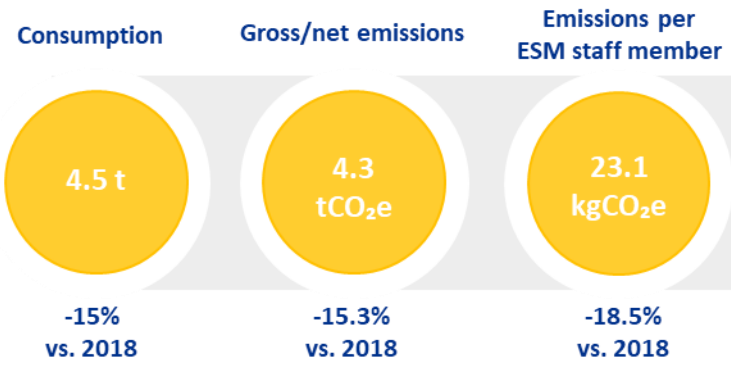
Figure 12
Emissions from electricity consumption, 2017–2019 (gross tCO₂e)



2.2.3 Paper consumption

- ➔ Paper consumption of the ESM amounted to 4.5 t (2018: 5.3 t) in 2019.
- ➔ The emissions amounted to 0.4 % of the total ESM gross emissions (2018: 0.4%) and 0.4% of the total net emissions (2018: 0.5%). Their share in the total building-related emissions represented 2.1% on a gross basis (2018 2.1%) and 3.3% on a net basis (2018: 3.3%).

➔ Paper-related gross/net emissions decreased by 15.3% versus 2018.



In 2019, the ESM consumed around 4.5 tonnes of paper, 15% less than in 2018 (2018: 5.3 tonnes). This resulted in a 15.3% reduction in paper-related emissions – 4.3 tCO₂e (2018: 5.1 tCO₂e) in the year, driven by a decrease in the volume of paper used and in the related emission factors. Overall, emissions resulting from paper consumption represented 2.1% of total building-related gross emissions (2018: 2.1%) and 3.3% of total building-related net emissions (2018: 3.3%).

This decrease in paper consumption was due to measures implemented over recent years: the ESM maintained the “follow-me” on-demand printing approach where documents were deleted if not printed within 12 hours. Moreover, all printing was by default duplex and black and white. The digitalisation of communications, and the availability of free Wi-Fi for guests and employees at ESM premises, coupled with awareness-raising, also contributed to decreasing office paper consumption.

Figure 13
Paper consumption, 2017–2019 (tonnes)

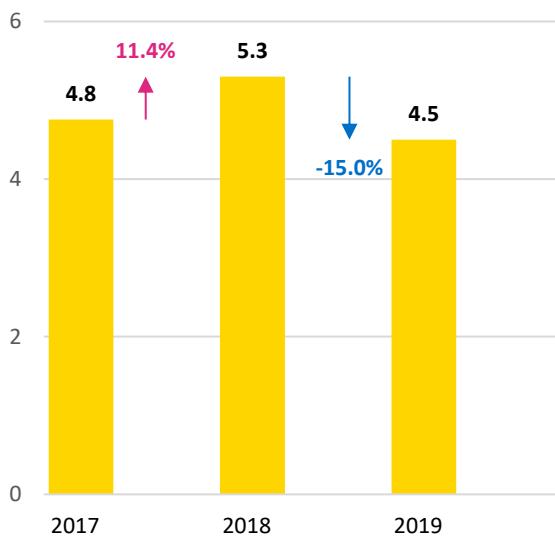
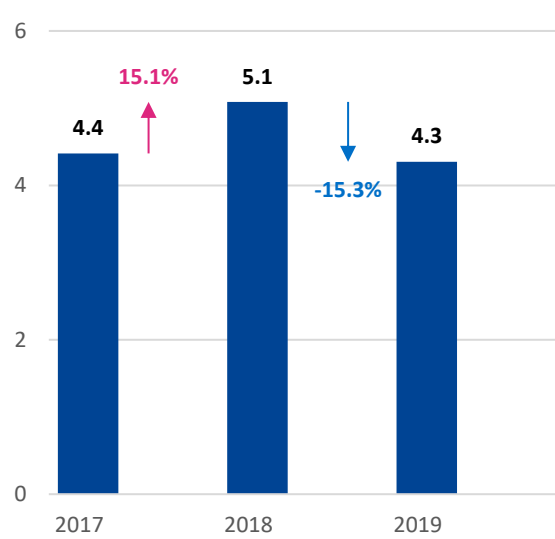


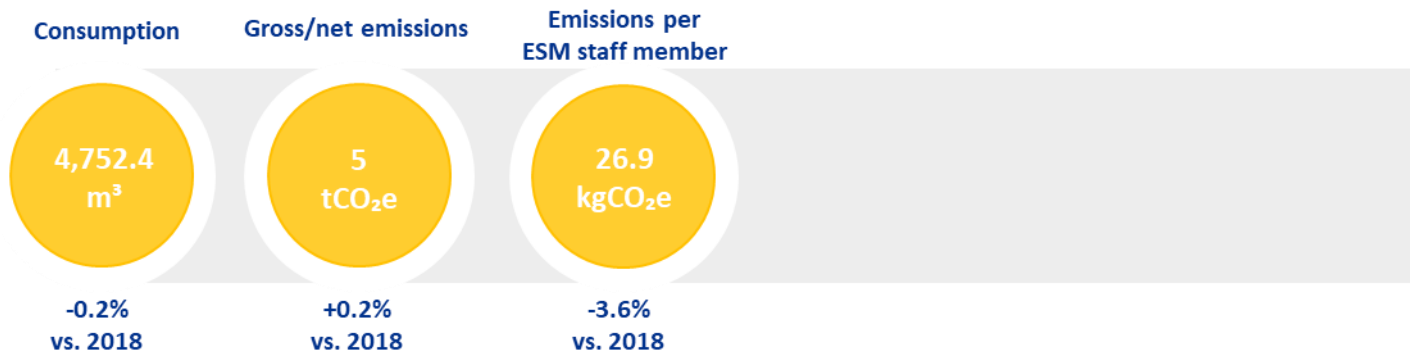
Figure 14
Emissions from paper consumption, 2017–2019 (gross/net tCO₂e)



Source: ESM

2.2.4 Water consumption

- ➔ *ESM water consumption exceeded 4,700 m³ in 2019.*
- ➔ *The resulting emissions amounted in 2019 to 0.5% of total gross emissions (2018: 0.4% %) and 0.5% of total net emissions (2018: 0.5%). Their share in the total building-related emissions represented 2.4% on a gross basis (2018 2%) and 3.9% on a net basis (2018: 3.2%).*
- ➔ *Water-related gross/net emissions increased by 0.2% versus 2018.*



The amount of water consumed by the ESM in 2019 amounted to 4,752 m³, a slight 0.2% decrease from the previous year (2018: 4,762.7 m³), explained by the implementation of water-saving measures.

The gross/net emissions amounted in 2019 to 5 tCO₂e and 26.9 kgCO₂e per ESM staff member, a slight increase of 0.2% over the previous year’s results (2018: 4.99 tCO₂e). This increase stemmed from Defra’s review of conversion factors, which increased by 0.4% over the previous year.⁸

Figure 15
Water consumption, 2017–2019
 (m³)

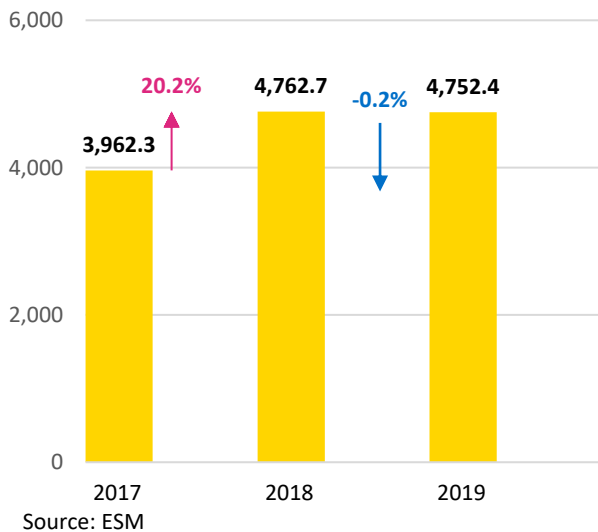
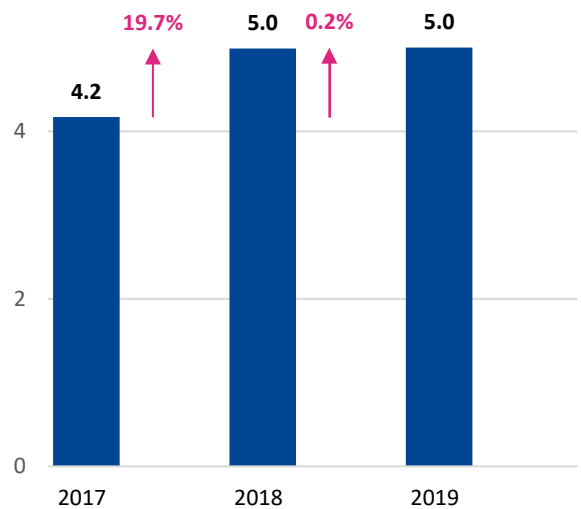


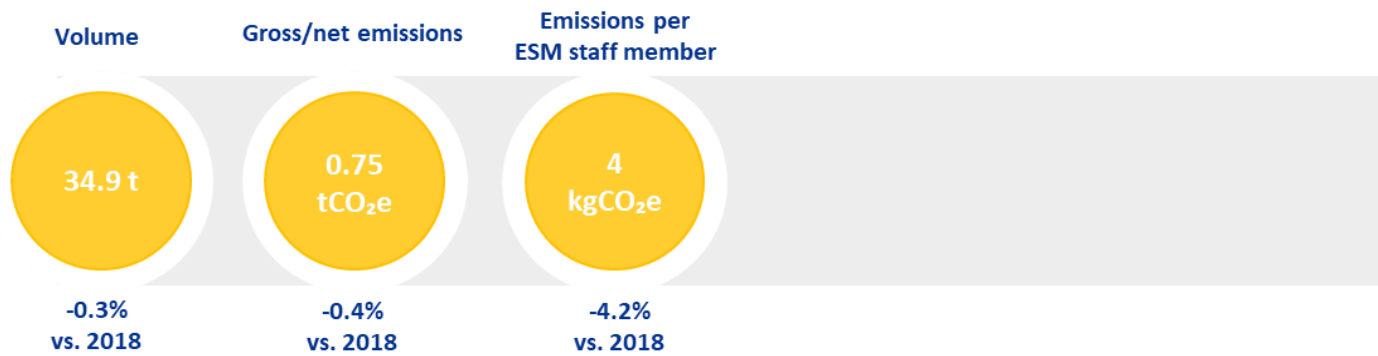
Figure 16
Emissions from water consumption, 2017–2019
 (gross/net tCO₂e)



⁸ Please refer to the Annex 3 for further information on emission factors.

2.2.5 Waste generated

- ➔ *The ESM generated 34.9 t of waste (2018: 35 t) in 2019.*
- ➔ *Emissions related to waste generation represented a minor share of the ESM total carbon footprint at 0.1% of total gross emissions (2018: 0.1%) and 0.1% of total net emissions (2018: 0.1%). The share of waste-related emissions stood at 0.4% of total building-related emissions on a gross basis (2018: 0.5%) and 0.6% on a net basis (2018: 0.5%).*
- ➔ *Waste-related gross/net emissions decreased by 0.4% versus 2018.*



The waste generated by ESM activities continued to represent only a minor source of ESM building-related emissions, accounting for 0.745 tCO₂e gross/net emissions (4 kgCO₂e per ESM staff member), or 0.4% less than the previous year (2018: 0.749 tCO₂e). This decrease in emissions stemmed both from a slight decrease in the volume of waste generated (34.9 t) in 2019 over the previous year (2018: 35 t) and the Defra review of conversion factors, which applied to different types of waste.⁹ A closer look at the sources of waste revealed that the main sources of ESM-generated waste remained organic waste (17.3 tonnes), followed by paper (10.5 tonnes), glass (3.9 tonnes), and finally plastics and metal (2.2 tonnes). In 2019, the ESM generated less organic waste than the previous year, however, glass and plastic metal waste increased slightly. The volumes of paper waste remained unchanged.

⁹ Please refer to the Annex 3 for further information on emission factors.

Figure 17
Waste produced, 2017–2019
 (tonnes)

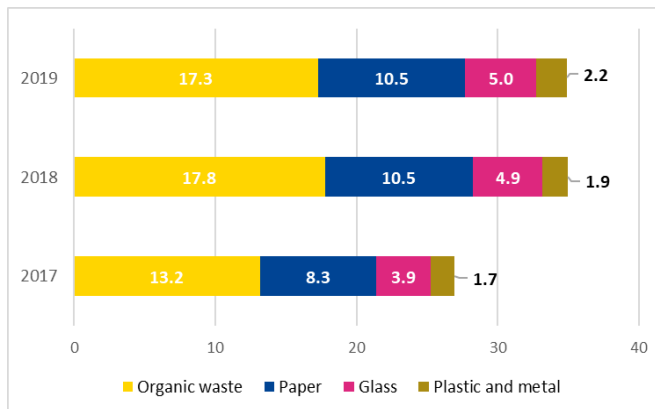
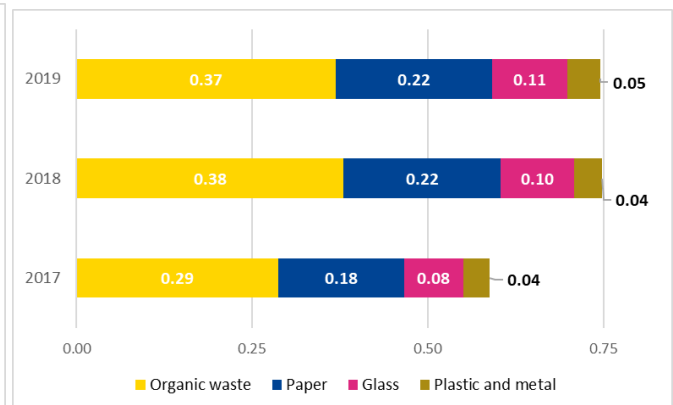


Figure 18
Emissions from waste generation, 2017–2019
 (gross/net tCO₂e)



Source: ESM

The ESM obtained the Luxembourg SuperDrecksKëscht® fir Betriber green label for its internal waste recycling practices for the seventh straight year in 2019. Waste was separated in-house in line with these requirements.¹⁰

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

Furthermore, the ESM held its annual auction among employees of decommissioned information technology (IT) equipment, including laptops, mobile phones, and related accessories. This activity effectively complied with the “three Rs of waste management”; it *recycled* IT equipment by *reusing* and extending the lifecycle of IT equipment, thus *reducing* the purchase of new accessories with hazardous waste such as batteries and cabling.

The ESM has committed itself to finding sustainable solutions to disposable plastics. As such, the ESM signed the Zero-Single Use Plastic Manifesto initiative of the Inspiring More Sustainability organisation under which it has pledged to eliminate single-use plastics throughout the institution by the end of 2020.

¹⁰ For further information on the conditions required in order to obtain the label SuperDrecksKëscht® fir Betriber, please refer to the official website: <https://superdreckskescht.com/index.php/en/environmental-policy>

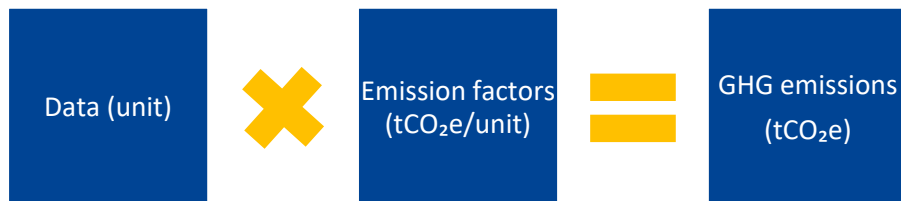
3.APPENDIX I

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
	Staff 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	Variation vs. 2018	Source of emission factors
ESM-leased vehicles	From 0.18101 to 0.33566	kgCO ₂ e/km per type of car and fuel type	-	Defra 2019
Electricity	0.176	kgCO ₂ e/kWh	-15.8%	IEA
Heating	0.18385	kgCO ₂ e /kWh (gross CV)	-0.1%	Defra 2019
Business travel – Air	0.14981 to 0.43446	kgCO ₂ e/passenger km	-5.85%	Defra 2019
Business travel – Rail	0.00597	kgCO ₂ e/passenger km	-57.4%	Defra 2019
Staff commuting	From 0.07075 to 0.18084	kgCO ₂ e/km per type of car and fuel type	-8.9%	Defra 2019
Water	1.052	kgCO ₂ e/m ³	+0.4%	Defra 2019, the emission factor is a sum of the water supply and the water treatment emission factors
Waste	21.35	kgCO ₂ e/t	-0.1%	Defra 2019
Paper consumption	952.7	kgCO ₂ e/t	-0.3%	Defra 2019

Annex 4. Data quality and completeness

Scope	Source of GHG emissions	Activity	Data quality	Underlying assumptions
Scope 1	ESM-leased vehicles	Inferred from estimated km per vehicles	■	Total distance travelled per year pro-rated using the primary data collected on 15 January 2020
Scope 2	Purchased electricity	Primary data	■	
	Purchased heating	Primary data	■	
Scope 3	Business travel – Air	Primary data	■	
	Business travel – Rail	Primary data	■	
	Staff commuting	Inferred from number of business days and parking occupational rate, average distance travelled, and staff residential address	■	Share of cars per fuel type in use in Luxembourg in the given year, based on Statec information Parking occupancy rate registered by the ESM security check
	Paper	Primary data	■	Number of sheets printed
	Water	Primary data	■	
	Waste	Primary data	■	

■ Priority for improvement

■ Could be improved

■ No change required

Annex 5. Exclusions

The ESM 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 contributions.

The ESM uses the number of permanent staff members to calculate certain ratios. In some instances, adding the trainees and contractors could have resulted in lower ratios, such as for paper and water consumption and waste disposal. The ESM has, however, decided to use only the number of ESM permanent staff members for consistency.