



Climate accounting AstaReal 2021

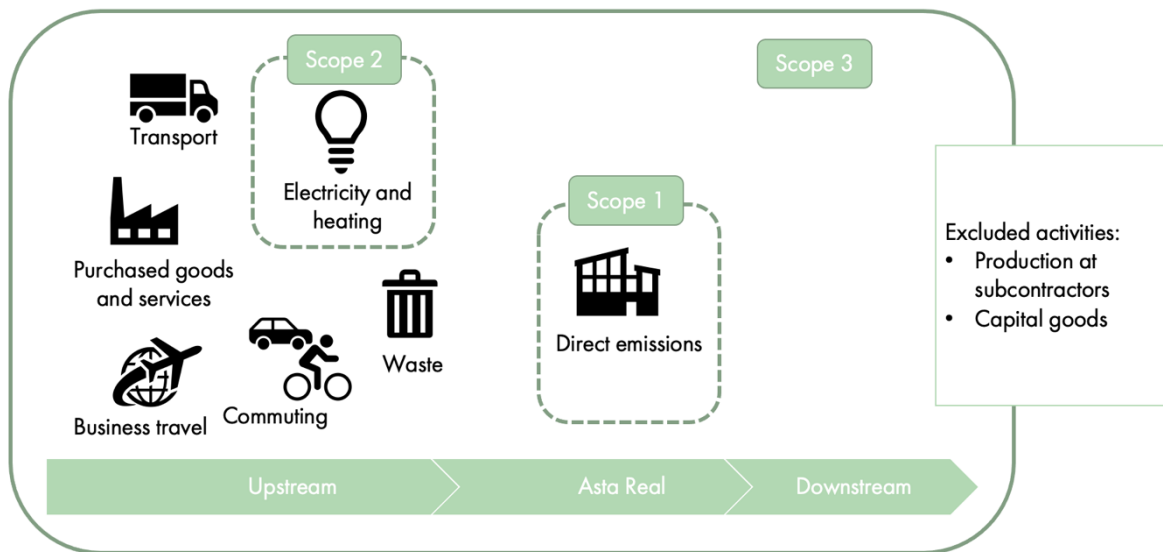
September 2022



zero mission

Introduction and method

AstaReal has set a goal of climate-neutral operations in 2026. As a first step the operations' climate footprint has been calculated. The climate accounting in this report refers to AstaReal's climate impact in 2021. The calculation is carried out according to the standard GHG Protocol – Corporate standard and included categories are illustrated below. The aim is to increase the calculation year by year so that at least 95% of the emissions are included when the climate neutrality statement is made. This is a requirement in PAS 2060, which is one of the standards available for climate neutrality.



Data for electricity, waste, purchases (material for production, packaging and IT equipment), refrigerants and outbound transports come from supplier reports or invoices. Transport between subcontractors has been calculated based on distance between subcontractors and total weight of processed product. Data for business travel has been reported by staff and data for commuting comes from a digital survey with a response rate of 54%. The emission factors used in the calculation come from authorities, EPDs and life cycle databases.

Assumptions and uncertainties

Certain purchased goods were reported in quantity and for these a weight per piece has been assumed. However, the majority of purchases in terms of volume were reported in kg or liters and are therefore not affected by this. Purchases that made up less than 0.5% of purchases, based on weight, were excluded from the calculation. For some products, there were already identified emission factors that were also applicable to products below the 0.5% limit, and then they were included in the calculation anyway. Over 98 % of the reported purchases were included in the calculation.

One of AstaReal 's biggest purchase category is cleaning chemicals. During the work on the 2019/2020 climate accounting, the supplier Ecolab was contacted for product-specific emission factors. As they could not provide an emission factor for the full life cycle of the chemicals, but only AstaReal's share of Ecolab's scope 1 and 2 emissions for each product, we chose not to use

it. Instead, values from the EPD (environmental product declaration) 'Detergents and cleaning products' are used. In this EDP there are several different cleaning chemicals and to be conservative, the calculation has been based on the product with the highest emission factor. However, the emission factor is lower than that used last year, which together with the lower purchase volume compared to last year results in a significant reduction in emissions from cleaning chemicals. The new emission factor is considered more representative as it also includes the water involved in the products. The factor used last year included only the active substance.

For the large suppliers Ecolab and Antalis, data for distance and total weight was available, which was used to calculate ton.km of transported goods. Other incoming transports are based on the weight of the remaining purchases and an assumption that they have been transported 700 km (roughly equivalent to the distance between Malmö and Gustavsberg).

District heating use in Uppsala and Nacka is based on a template as actual data was missing. District heating is not used in Gustavsberg.

There is a risk that some business trips are missing from the calculation, as the employees have reported their trips themselves.

Results

The results are presented below and in accordance with GHG Protocol according to two methods: market- based and location-based. This is two methods for calculating emissions from electricity. Briefly, market-based is based on guarantees of origin and location-based is based on an emission factor that reflects the average emission per kWh of the electricity grid.

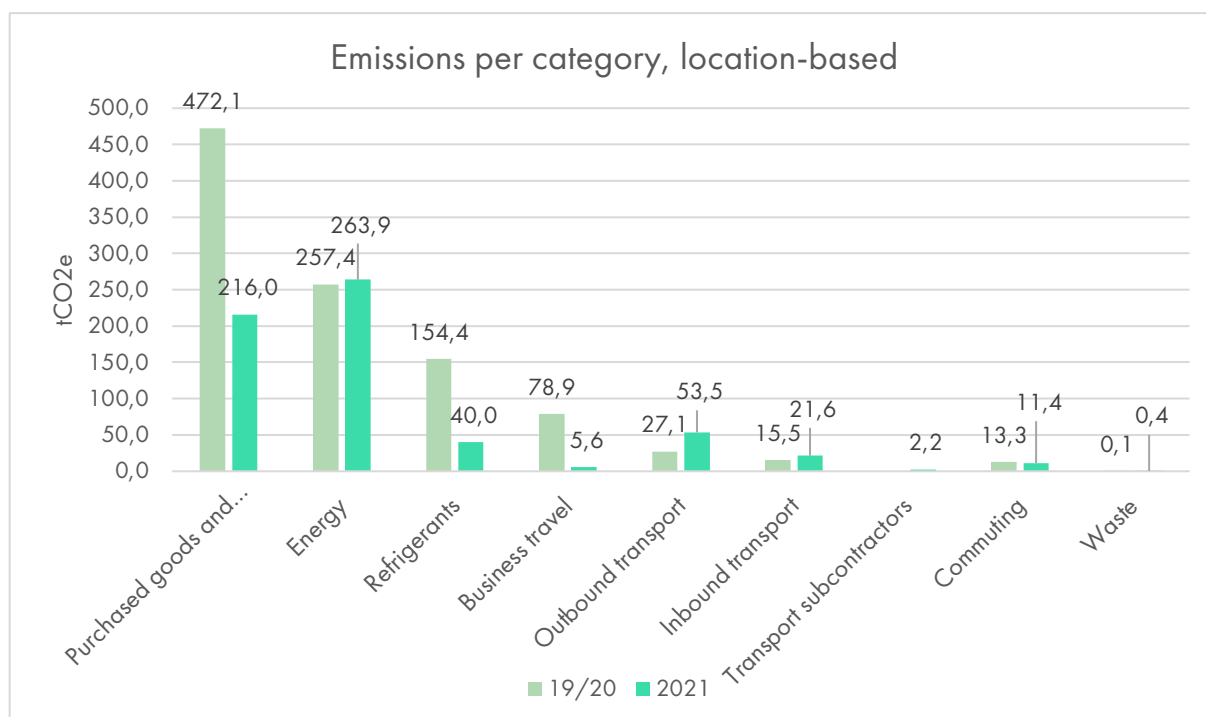
Throughout the report the results are presented using the location-based method, unless otherwise stated.

	Location-based (tCO ₂ e)	Market-based (tCO ₂ e)
Scope 1	40	40
Scope 2	211	4
Scope 3	363	417
Total	615	462

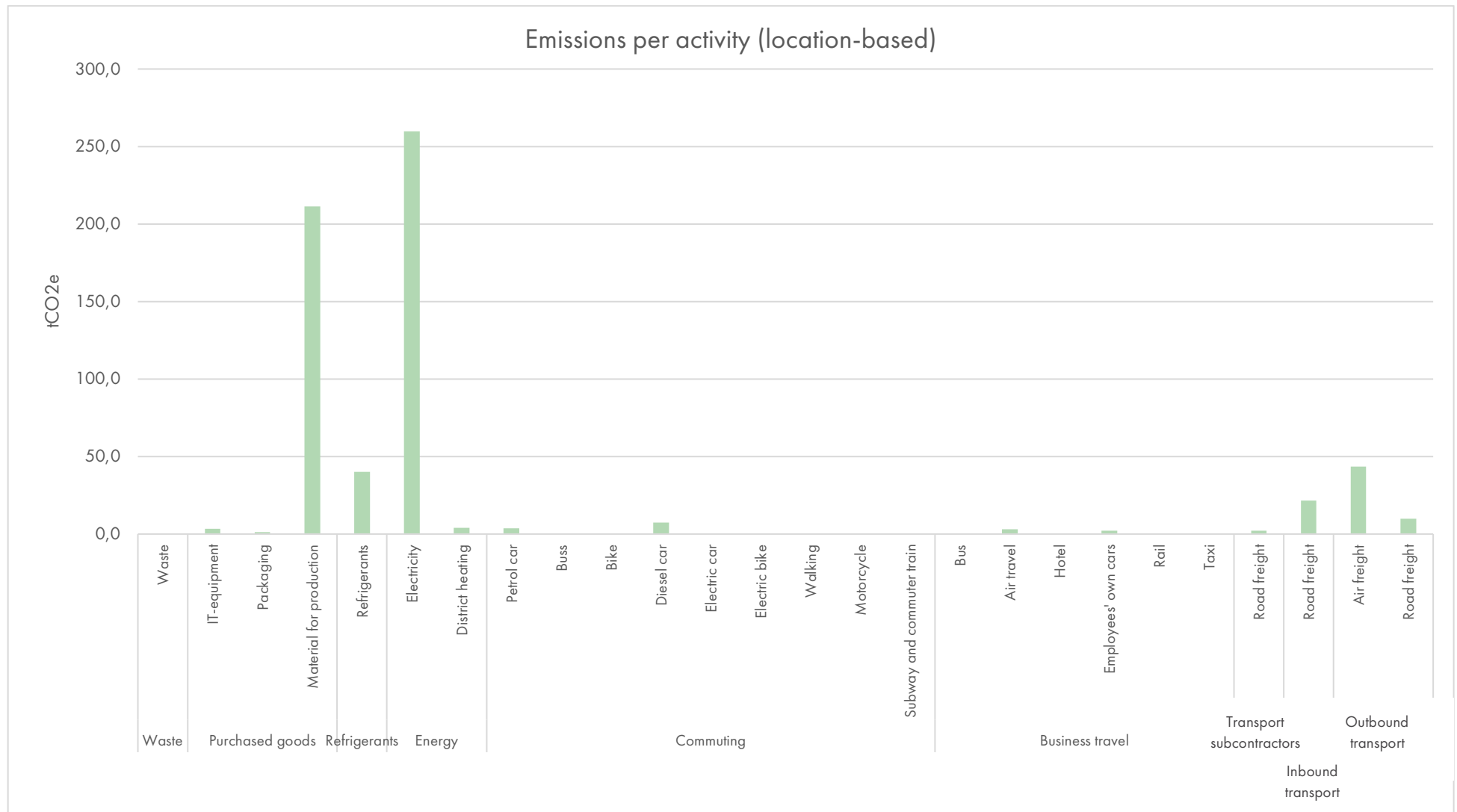
The table below shows the KPIs electricity use, tCO₂ e per employee (33) and tCO₂e per MSEK turnover.

KPI	Location-based (tCO ₂ e)	Market- based (tCO ₂ e)
Electricity consumption	14 809 MWh	
Emissions per employee	18,6	14,0
Emissions per turnover (MSEK)	6.1	4.6

Purchased energy is the largest emission category. In scope 3, purchases are the largest emission category. In Appendix A, the emissions per category and activity are reported in detail.

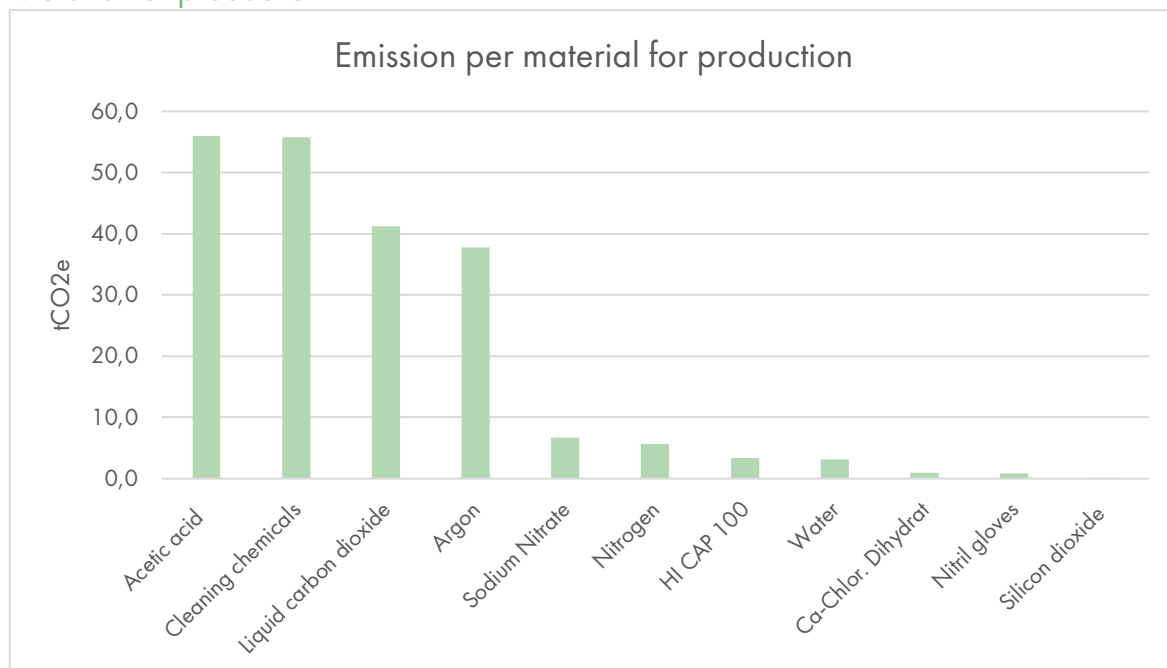


In the diagram below, the emissions are presented by activity. It is then clear that material for production is the largest part of emissions from purchases and that air freight account for the majority of emissions from transport.



Important observations

Material for production



The largest emissions come from acetic acid (56 tCO₂e), cleaning chemicals (56 tCO₂e), liquid carbon dioxide (41 tCO₂e) and argon (38 tCO₂e). These products also account for 81% of purchases, based on weight (excluding water and electronics).

Emissions from materials for production have reduced significantly compared to 2019/2020. This is due to a change in the emission factor and reduced purchase volume for cleaning chemicals. This is described more in detail in *Assumptions and uncertainties*.

Refrigerants

Refilled refrigerant accounts for just over 6% of emissions, which is a large reduction compared to 2019/2020.

Outbound transport

The increased emissions are due to a change in emissions factor, from 'long-haul air freight' to 'average air freight'. This is likely to be more accurate since most cargo planes make stopovers for transshipment en route to the destination. It has also been ensured that an RFI of 2.0 is included in the emission factor to include the effect emissions have on high altitudes.

Purchased energy

Purchased energy is the largest emission category (according to the location-based method) and it is the use of electricity that accounts for most of these emissions. Since AstaReal buys electricity from hydropower, emissions from electricity are lower when calculated according to the market-based method.

AstaReal buys electricity which has been carbon offset by the supplier. This does not mean the climate impact is zero, but that the supplier has bought carbon offsets equivalent to the emissions from the electricity generation. When making calculations according to GHG Protocol, a company cannot exclude emissions that has been offset by one's supplier. Therefore, AstaReal's emissions from electricity is not 0 in the market-based approach. However, if AstsReal decides to offset their emissions based on the market-based result, they can choose to exclude the emissions from electricity, as they have been offset by the supplier.

Business travel

Emissions from business travel have decreased due to the pandemic related travel restrictions. Air travel accounts for 55% of the emissions from business travel. The employee's own cars account for 37% of the emissions from business travel.

Future calculations

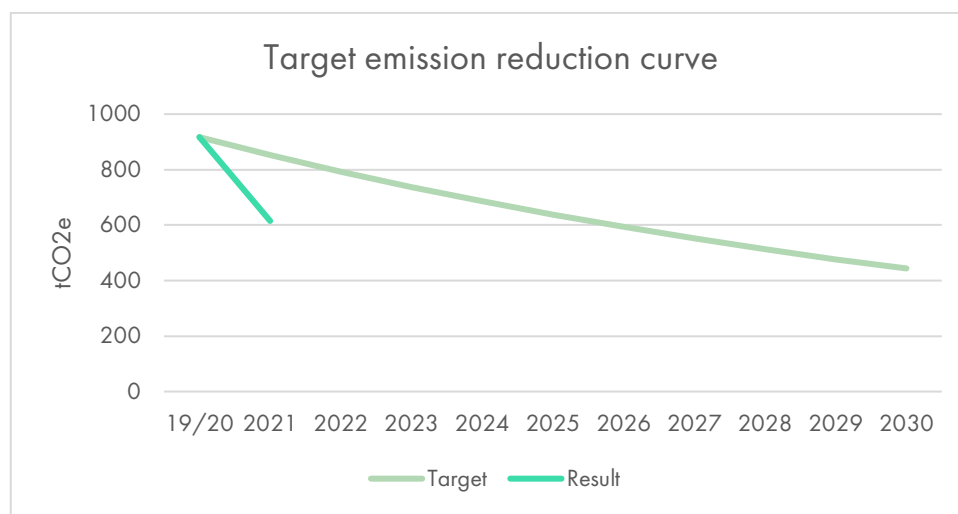
In order for the calculation to be complete, which is required when the climate neutrality statement is made, the calculation needs to be supplemented with the following areas:

- Production with subcontractors
- Capital goods
- All consumables
- End-of-life treatment of sold products
- Leased assets (if any)

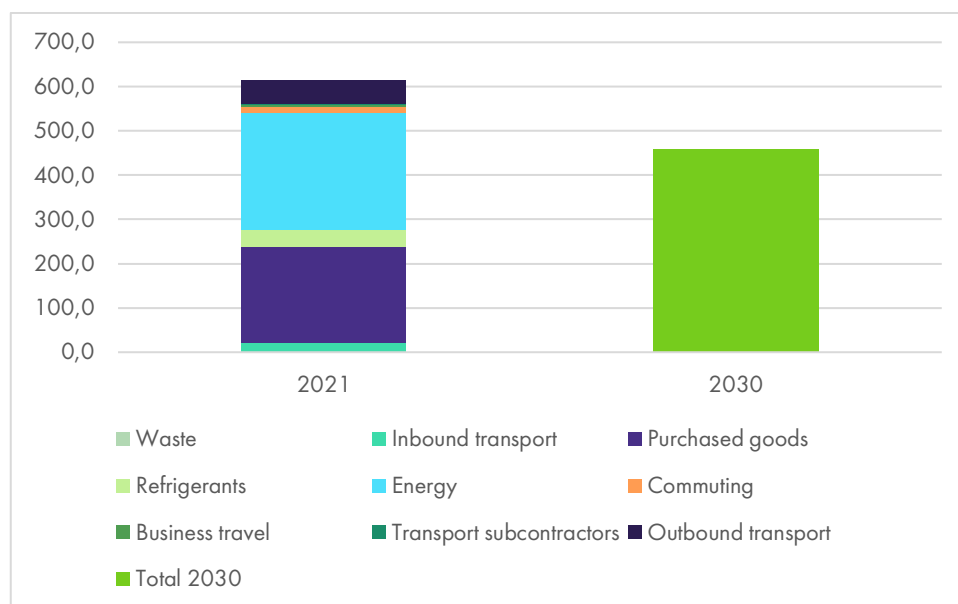
Target

To comply with the Paris Agreement's goals, the absolute emissions must be halved by 2030. Based on AstaReal's emissions in 2019/20, emissions need to be reduced by approximately 7% per year to reach that goal. Reduction targets can also be based on intensity measures, such as per employee or turnover.

The emissions from cleaning consumables and air freight 2019/2020 have been recalculated for this section, based on the new emission factor used in the 2021 assessment. Therefore the 2019/2020 emissions presented below differ from the 2019/2020 report and in the graph on page 4 in this report. The change of emission factor had a significant impact on the result, why as recalculation of the base year was needed. It is still clear AstaReal have decreased their emissions significantly during 2021.



The graph below also shows the level at which emissions should be by 2030. The left bar shows the emissions per category for 2021.



Appendix A – Emissions by category

Market-based

Category	tCO ₂ e
Waste	0.4
Inbound transports	21.6
Road freight	21.6
Purchase	216.0
Electronics	3.3
Packaging	1.2
Material for production	211.4
Refrigerants	40.0
Refrigerants	40.0
Energy	111.1
Electricity	107.1
District heating	4.1
Commuting	11.4
Petrol car	3.6
Bus	0.3
Bicycle	0.0
Diesel car	7.4
Electric car	0.0
Electric bike	0.0
Walk	0.0
Motorcycle	0.0
Commuter train	0.0
Subway	0.0
Business travel	5.6
Flight	3.1
Hotel	0.3
Employee's own cars	2.1
Rail traffic	0.0
City bus	0.0
Taxi	0.1
Transport subcontractors	2.2
Road freight	2.2
Outbound transport	53.5
Air freight	43.7
Road freight	9.9
Grand total	461.8

Location-based

Category	tCO ₂ e
Waste	0.4
Waste	0.4
Purchase	216.0
Electronics	3.3
Packaging	1.2
Material for production	211.4
Refrigerants	40.0
Refrigerants	40.0
Energy	263.9
Electricity	259.8
District heating	4.1
Commuting	11.4
Petrol car	3.6
Bus	0.3
Bicycle	0.0
Diesel car	7.4
Electric car	0.0
Electric bike	0.0
Walk	0.0
Motorcycle	0.0
Commuter train	0.0
Subway	0.0
Business travel	5.6
Flight	3.1
Hotel	0.3
Employee's own cars	2.1
Rail traffic	0.0
City bus	0.0
Taxi	0.1
Transport subcontractors	2.2
Road freight	2.2
Inbound transport	21.6
Road freight	21.6
Outbound transport	53.5
Air freight	43.7
Road freight	9.9
Grand total	614.5