



Carbon footprint of Studio Anneloes

Reporting year: 2024

Reporting Company

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STUDIO
ANNELOES

Executive summary

This document reports on the quantification of the CO₂ footprint of Studio Anneloes. The scope of this CO₂ footprint covers the emissions from Studio Anneloes operational activities in order to identify opportunities to reduce the carbon footprint of the business activities. By carefully considering the organizational and operational boundaries, the components in Table 1 have been included in this study:

Table 1. GHG scopes and impact categories

GHG scopes	Impact categories
Scope 1 - Direct emissions	Company facilities, Company vehicles
Scope 2 - Indirect emissions	Purchased electricity, steam, heating and cooling for own use
Scope 3 - Indirect emissions	Purchased goods and services, Fuel and energy related emissions, Upstream transportation & distribution, Waste generated in operations, Business travel, and Employee commuting

The input data in these categories is linked to environmental data from various databases. Emissions are expressed in CO₂ equivalents, a unit used to measure the degree to which greenhouse gases contribute to climate change. The effect of one kg of methane, for example, is equivalent to that of 28 kg of CO₂.

The total CO₂ footprint of Studio Anneloes is 5.492 ton CO₂-eq. Scope 3 contributes to more than 99% of total emissions. Within this scope, the category 'Purchased goods and services' and 'Upstream transportation' are responsible for 87% and 11% of carbon emissions respectively. Scope 1 and 2 contribute less than 1% to the overall carbon footprint of Studio Anneloes.

Table of contents

Executive summary	1
1 Introduction	3
1.1 Background research	3
1.2 Goal and scope definition	3
2 Studio Anneloes	4
2.1 Company description	4
2.2 Organisational boundaries	4
2.3 Operational boundaries: Greenhouse Gas Protocol Scopes	4
2.4 GHG-scopes	4
2.4.1 Scope 1 & 2	4
2.4.2 Scope 3, cat. 1 'Purchased goods and services'	5
2.4.3 Scope 3, cat. 3 'Fuel and energy related activities'	5
2.4.4 Scope 3, cat. 4 'Upstream transport and distribution'	5
2.4.5 Scope 3, cat. 5 'Waste generated in operations'	5
2.4.7 Scope 3, cat. 6 'Business travel'	5
2.4.8 Scope 3, cat. 7 'Employee Commuting'	5
3 Data and methodology	8
3.1 Data collection	8
3.1.1 Scope 1 & 2	8
3.1.2 Scope 3, Category 1 'Purchased goods and services'	8
3.1.3 Scope 3, Category 4 'Upstream transportation and distribution'	9
3.1.4 Scope 3, Category 5 'Waste generated in operations'	9
3.1.5 Scope 3, Category 6 'Business travel'	10
3.1.6 Scope 3, Category 7 'Employee commuting'	10
3.3 Impact Assessment Method	10
4 Results	11
4.1 Overview	11
4.2 Scope 1 - Direct emissions	12
4.3 Scope 2 - Indirect emissions	12
4.4 Scope 3 - indirect emissions	13
4.4.1 Scope 3, cat. 1 'Purchased goods and services'	13
4.4.3 Scope 3, cat. 3 'Fuel and energy related activities'	15
4.4.4 Scope 3, cat. 4 'Upstream transport and distribution'	15
4.4.5 Scope 3, cat. 5 'Waste generated in operations'	16
4.4.6 Scope 3, cat. 6 'Business travel'	17
4.4.7 Scope 3, cat. 7 'Employee Commuting'	18
5 Conclusion	18
6 Comparison with carbon emissions in 2023	20
7 Reduction steps	21
8 References	22
9 Appendix	23

1 Introduction

1.1 Background research

Studio Anneloes is a women's fashion brand from the Netherlands. All designs are made in the Netherlands, and the production of all items takes place predominantly in Europe. The main office of Studio Anneloes is located in Amsterdam, the Netherlands.

This Greenhouse Gas (GHG) report has been carried out by Hedgehog Company B.V. on behalf of Studio Anneloes. It concerns an analysis of the greenhouse gas emissions in scope 1 and 2, and part of scope 3. The relevant emission sources have been determined using the Greenhouse Gas protocol. This report covers the emissions in 2024 and describes the delineation of emission sources, the analysis of the relevant sources, and the final results of the calculation.

1.2 Goal and scope definition

The objective of this analysis is to determine the CO₂ footprint of Studio Anneloes in a transparent manner, based on reliable, quantitative environmental data. This study calculates direct and indirect upstream emissions. This report follows the GHG Protocol [1] to improve readability, structure, and comprehension for the readers. The results of this study enable Studio Anneloes to gain insight into the magnitude and composition of their CO₂ footprint. The environmental data from the year 2024 serves as a baseline for an annual analysis of the organizational CO₂ footprint.

2 Studio Anneloes

2.1 Company description

Studio Anneloes is a Dutch women's fashion brand founded in 2006 in Amsterdam. Studio Anneloes manufactures primarily in Europe and is committed to minimise overproduction, monitor carbon and water footprints, adhere to international labour and environmental standards, and maintain transparent, ongoing engagement with suppliers to ensure ethical practices.

2.2 Organisational boundaries

Defining the organisational boundaries is an essential step in analysing an organisational carbon footprint. This step determines which activities fall within the organisational boundaries and are deemed relevant. All inputs and emissions from the relevant activities are calculated in the organisational carbon footprint.

The control approach is used to consolidate greenhouse gas emissions. This means that all emission sources over which Studio Anneloes has direct control and can influence are taken into consideration. The calculation considers the in- and outflows of the Dutch office of Studio Anneloes in 2024 for 73 employees.

2.3 Operational boundaries: Greenhouse Gas Protocol Scopes

After defining the organisational boundaries, the operational boundaries can be determined. The operational boundaries define the scope of direct and indirect emissions from activities that fall within the organisational boundaries. The operational boundaries determine the relevant scopes (1, 2 and 3) and categories (see Figure 1 for a schematic representation).

Table 2 summarises the scopes included in this study, as determined by the GHG protocol. These scopes are described in more detail in section 2.4. In consultation with the company in particular, a relevant demarcation has been made of the scopes to be included. The scopes that are not considered in this study are currently not considered relevant given the organisational structure of the Studio Anneloes.

The worst-case scenario approach is used when the input data is incomplete. However, it is an approximation, which means that the real actual emissions may be lower than in the calculation. The approach prevents the actual impact from being underestimated.

2.4 GHG-scopes

The various scopes and emission sources from Table 2 are explained in the following paragraphs.

2.4.1 Scope 1 & 2

Scope 1 concerns all direct emissions that take place on and from the facilities of Studio Anneloes. These are emissions that follow from the use of gas and refrigerants. The emissions from company owned vehicles are also included in this scope, as prescribed by the GHG protocol. Thus, the emissions from fuel consumption fall under the direct emissions in scope 1 of Studio Anneloes.

Scope 2 concerns the indirect emissions caused by the purchased electricity and heat. The electricity for the company owned cars also falls under this scope. Specific emission factors are applied, as specific information from energy suppliers was available.

2.4.2 Scope 3, cat. 1 'Purchased goods and services'

Scope 3 emissions are also indirect emissions, as in scope 2. However, scope 3 includes emissions caused by business activities of organizations in the chain. These scope 3 emission sources are not directly owned by Studio Anneloes, but Studio Anneloes can influence them.

The scope 3 category 'Purchased goods and services' contains various products and services purchased by Studio Anneloes in the measurement year. These goods are either non-product (office supplies and operational equipment) or product (e.g. textile manufacturing) related. For non-product related purchased goods and services, the annual expenses for the office is collected. Based on these expenses, specific emission factors are applied per type of expense to calculate the carbon emissions.

Note that the waste generated by the confection partners of Studio Anneloes is included in this scope because it is not part of the waste generated by Studio Anneloes during operations (scope 3.3), but during one of the procured services that take place for them in different factories.

The calculation of the carbon footprint of purchased goods in scope 3.1 does not take into account the transport of these goods. It is expected that if this is included, the emissions will be higher. The transport of purchased goods is included in scope 3.4 instead.

2.4.3 Scope 3, cat. 3 'Fuel and energy related activities'

Scope 3.3 includes the indirect emissions associated with the production and distribution of fuels and energy purchased or consumed by the reporting company, but not directly emitted or used on-site. This typically covers emissions from upstream activities like extraction, refining, and transportation of fuels (e.g., natural gas or electricity). Scope 3.3 helps organizations capture a more complete picture of the carbon footprint related to their energy consumption.

2.4.4 Scope 3, cat. 4 'Upstream transport and distribution'

This category includes indirect GHG emissions related to purchased or acquired goods and services. For Studio Anneloes, upstream emissions include all transportation-related emissions for which the company bears the cost. Data for upstream transportation related to non-products was not available and is not considered in this report.

2.4.5 Scope 3, cat. 5 'Waste generated in operations'

This category includes emissions from the disposal and treatment of waste generated in the reporting company's owned or controlled operations in the reporting year. Studio Anneloes has collected all data regarding their waste streams for all Studio Anneloes facilities, and provided the respective treatment methods. Based on these data, the emissions originating from the treatment of these waste streams are quantified.

2.4.7 Scope 3, cat. 6 'Business travel'

Scope 3, Category 6 includes indirect GHG emissions from the transportation of employees for business-related activities in vehicles not owned or operated by the company. This typically covers air travel, rail travel, bus and coach travel, taxi, etc. These emissions occur outside the direct control of the reporting company, but are a consequence of its operations.

2.4.8 Scope 3, cat. 7 'Employee Commuting'

Studio Anneloes provided data on its employees' means of transport, total travel distance to the office and number of working days from the office. This data was used to calculate the total emissions of commuting due to the use of electric and fuel cars, either private or owned by Studio Anneloes, bike and public transport.

Employees that use a company owned car are not represented in this category. Their daily commute is included in either scope 1 or scope 2 emissions for company vehicles, depending on the car being fuel-powered or electric.

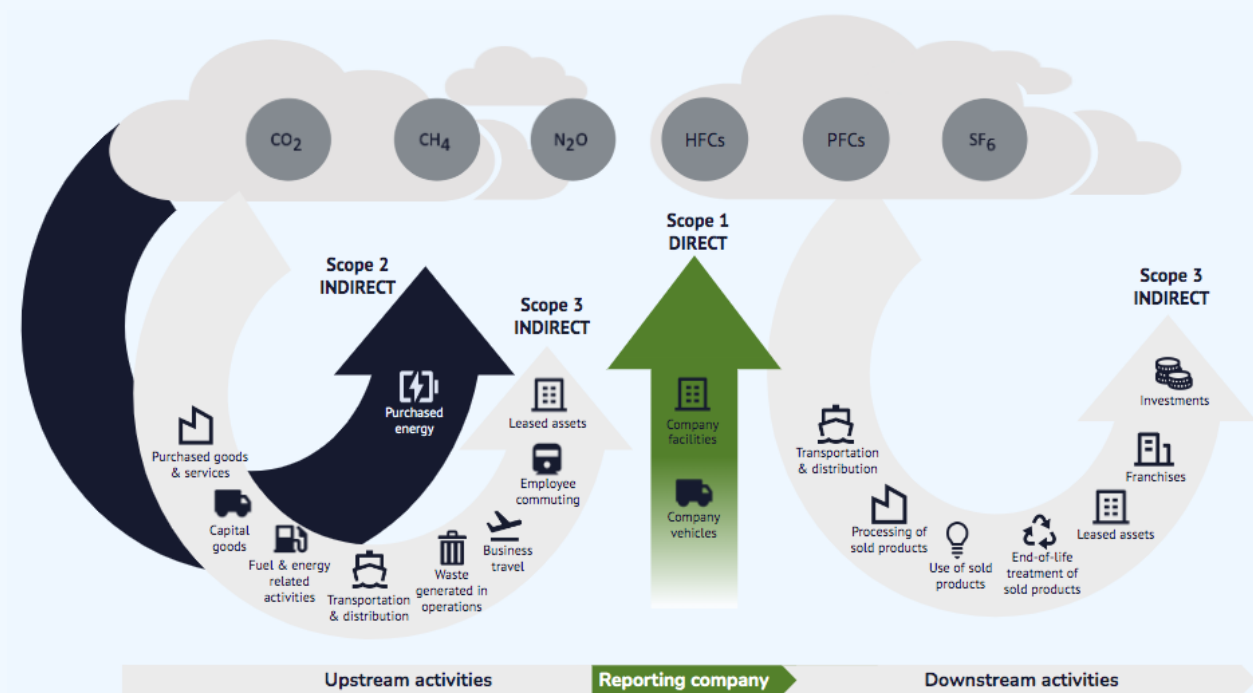


Figure 1. Overview of all categories in scope 1, 2 and 3 according to the GHG protocol.

Table 2. Overview of all scopes and categories included in this report

GHG Scopes	Included
<i>Scope 1 - Direct Emissions</i>	✓
<i>Scope 2 - Indirect Emissions</i>	✓
<i>Scope 3, cat. 1 - Purchased goods and services</i>	✓
<i>Scope 3, cat. 2 - Capital goods</i>	Studio Anneloes does not own any other offices or capital goods. Thus, considered insignificant and excluded from this study.
<i>Scope 3, cat. 3- Fuel- and energy related activities (not included in scope 1 or scope 2)</i>	✓
<i>Scope 3, cat. 4 - Upstream transportation and distribution</i>	✓
<i>Scope 3, cat. 5 - Waste generated in Operations</i>	✓
<i>Scope 3, cat. 6 - Business travel</i>	✓
<i>Scope 3, cat. 7 - Employee commuting</i>	✓
<i>Scope 3, cat. 8 - Upstream leased assets</i>	Studio Anneloes does not own any leased assets, therefore this is not included in this study.
<i>Scope 3, cat. 9 - Downstream transportation and distribution</i>	Studio Anneloes bears all transportation costs, thus there is no downstream transportation
<i>Scope 3, cat. 10 - Processing of sold products</i>	Considered insignificant and excluded from this study
<i>Scope 3, cat. 11 - Use of sold products</i>	Due to limited data availability on how Studio Anneloes's products are used, this is not considered.
<i>Scope 3, cat. 12 - End-of-life treatment of sold products</i>	Due to limited data availability on how Studio Anneloes's products are disposed of, this is not considered.
<i>Scope 3, cat. 13 - Downstream leased assets</i>	Considered insignificant and excluded from this study
<i>Scope 3, cat. 14 - Franchises</i>	Considered insignificant and excluded from this study
<i>Scope 3, cat. 15 - Investments</i>	Considered insignificant and excluded from this study

3 Data and methodology

This section describes the data collection, the databases used and the impact assessment method.

3.1 Data collection

The data collection was carried out by Studio Anneloes by Sustainability Manager Laura Koedijk and Sustainability coordinator Iris van Trigt. Hedgehog Company supported the data collection. The relevant input data is collected through Studio Anneloes.

When possible, primary data was collected and used. This means that data originates from the specific activity within the value chain of Studio Anneloes. If primary data was not available, literature, desk research and industry averages were used to calculate estimates.

Note that for every category, the exact values and emission sources that are used for the calculation can be found in the Appendix.

3.1.1 Scope 1 & 2

Scope 1 and 2 include the emissions from energy use in the Amsterdam office of Studio Anneloes. Direct emissions from energy use for Scope 1 refer to company fuel-powered vehicles, for which Studio Anneloes has collected the liters of fuel used in 2024. For scope 2, data for electricity use is received through the energy suppliers [2], and includes the electricity used to recharge electric cars on-site. To avoid double counting, these values are subtracted and broken down into energy purchased from Vattenfal and from van Leeuwen. The electric recharge of vehicles other than on-site are also taken into account and calculated by subtracting the energy use from van Leeuwen from the energy use declared by Shuttel Solutions [3].

For both scope 1 and 2, the emissions are calculated by making use of co2emissiefactoren.nl [4].

Although it falls outside of scope 1 and 2, it is important to note that Studio Anneloes owns and makes use of solar panels. Annual energy production in 2024 reaches 32400 kWh, 30600 kWh of which are self-consumed and the remaining is sold back to the energy provider.

3.1.2 Scope 3, Category 1 'Purchased goods and services'

This scope includes purchased goods, textiles and haberdashery used for producing the clothing, water, fabric waste at the production locations and energy use of the production locations. For the purchased goods within scope 3 'purchased goods and services', receipts and invoices were used. An overview of the total weight of the used types of fabric was provided by Studio Anneloes.

For Non-Travel fabrics, we utilized textile-specific emission factors provided by CE Delft [5]. For Travel fabrics, a hybrid approach was taken: product-specific Environmental Product Declarations (EPDs) were used where available. For other travel fabrics, an average of the calculated travel fabric EPDs was applied to ensure consistency.

The impact of the paper hangtags was calculated with an assumed weight in 2023, whereas in 2024 more specific information was available. This leads to a difference in total weight and impact for this purchased good.

For other purchased goods, a combination of databases was consulted:

- Ecoinvent v3.11 Database [6]: This activity-based environmental database was our primary source for modeling a significant portion of emissions in this category. Ecoinvent contains detailed environmental profiles for various processes and activities, including material production and industrial processes, covering metrics like extracted raw materials and emissions to water, air, and soil. It requires input data based on weight.
- UK DEFRA GHG Database [7]: For specific inputs like natural gas and textile waste, the UK DEFRA GHG database was used.

- Exiobase [8]: When the weight of an input was unavailable, but monetary values were known, we turned to Exiobase. This database, built on supply-use data per industry across different regions, uses Multi-Regional Environmentally Extended Supply-Use (MR-EESU) and Environmentally Extended Input-Output (EEIO) data. This allows us to link environmental data to the monetary consumption (€) of a product, proving particularly useful for purchased goods where only financial data is accessible.

Studio Anneloes also procures a confectioning service from contractors in Poland, as part of producing ready to wear clothing. Studio Anneloes has collected specific energy consumption data from their contractors. By applying an emission factor for the local grid [9], the emissions of this service are calculated. The purchased goods and services category considers all procurement activities of Studio Anneloes. The energy consumption of these facilities is also considered within this scope, as they are a purchased service.

3.1.3 Scope 3, Category 4 'Upstream transportation and distribution'

For scope 3 'Upstream transportation and distribution', Studio Anneloes has provided the litres of diesel consumed for some routes. For other routes the transportation locations, travelled kilometres, transportation modes and shipments' weights, including packaging were provided. This allows us to calculate the ton kilometers. Emissions are calculated by using the emission factors of CO₂ emissiefactoren [4].

When addresses or distances were not complete or provided, the centre of population was used to calculate distances, see Figure 2. Part of the route by boat has been added when necessary, although was not declared as a means of transport. This specifically applies to the routes from Morocco (for Alpi) and from Finland (for Post NL) to Studio Anneloes. For Infiknit, emissions it was not possible to calculate emissions, because of a lack of data. Therefore, the emissions provided by the data supplier were taken into account. Also, for Alpi and Seaborne, where means of transport was not specified, truck and air transport were assumed respectively.

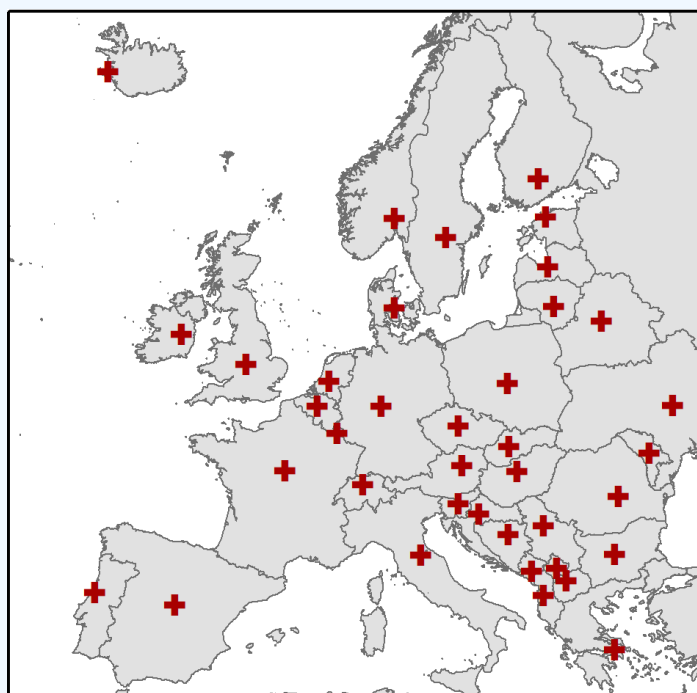


Figure 2. Centre population for each country in Europe from Vivid Maps [10].

3.1.4 Scope 3, Category 5 'Waste generated in operations'

For waste generated in operations, Studio Anneloes provided the weights of the following waste streams: paper and carton, plastic, residual waste, glass, PD (drinking cartons) and swill. By coupling the waste streams to the corresponding emission

factors from UK Government GHG Conversion Factors for Company Reporting [7], the emissions of this category are calculated.

Note that due to a change in waste handlers, Studio Anneloes received waste data from two different providers. The data covered six non-continuous months. Analogous waste streams from both handlers were aggregated, and the average waste generation was used to estimate waste for the remaining six months.

3.1.5 Scope 3, Category 6 'Business travel'

Business travel includes electric and fossil-fueled cars, national and international train travels, and short-haul, medium-haul, and long-haul flights. Studio Anneloes has provided data on the distances and the number of persons travelling. By choosing the related emission factors from CO₂emissiefactoren [4] the emissions are calculated.

When calculating emissions for cars, we use a 'per vehicle-kilometer' factor, assuming multiple occupants per car. For all other forms of transport, the emission factors are based on 'per passenger-kilometer.'

3.1.6 Scope 3, Category 7 'Employee commuting'

Studio Anneloes has provided data on the commuting habits of employees. By considering the total travel distance, the amount of days working from the office, and the amount of working weeks (50,9), total transport is calculated. This is multiplied with the emission factor for the used transport mode from CO₂ emissiefactoren [4].

3.3 Impact Assessment Method

The impact assessment method translates the inputs into environmental impact. Most databases use the Intergovernmental Panel on Climate Change Sixth Assessment Report (IPCC AR6) for the CO₂-emission factors. The emission data from Exiobase has been analyzed with the CML 2001, baseline method.

4 Results

This chapter presents the results of the organizational carbon footprint analysis of 2024. The results of this year serve as a baseline measurement for subsequent years.

The results are given in tonnes of CO₂ equivalents. CO₂ equivalents are used to express the contribution of greenhouse gases to global warming, in a single unit. This unit therefore expresses the contribution of the greenhouse gas, in the effect per kilogram of CO₂. For example, the emission of one kilogram of methane is equivalent to the emission of 28 kg of CO₂. In other words, one kilogram of methane contributes to global warming in the same way as 28 kilograms of CO₂. The effect per kilogram of greenhouse gas can vary greatly. For example, the effect of one kilogram of refrigerant with the number R407c is equivalent to the effect of 1,624 kg of CO₂.

4.1 Overview

Table 3 provides an overview of the results. The table shows the total CO₂ impact per scope and category in tonnes of CO₂ equivalents and the share of the total impact. Figure 3 visualizes the data from table 3.

Results show that the largest part (>99%) of the impact is caused by scope 3. Scope 1 and 2 contribute less than 1% to the total impact.

Table 3. Scopes and impact categories

GHG scopes	Total CO ₂ -impact (ton CO ₂ -eq.)	Contribution (%)
Scope 1 - Direct emissions	2	<1%
Scope 2 - Indirect emissions	11	<1%
Scope 3 - Indirect emissions (total)	5.478	>99%
Scope 3, cat. 1 'Purchased goods and services'	4.769	87%
Scope 3, cat. 3 'Fuel and energy related activities'	3	<1%
Scope 3, cat. 4 'Upstream transport and distribution'	591	11%
Scope 3, cat. 5 'Waste generated in operations'	<1	<1%
Scope 3, cat. 6 'Business travel'	36	1%
Scope 3, cat. 7 'Employee commuting'	79	1%
Total	5.492	100%

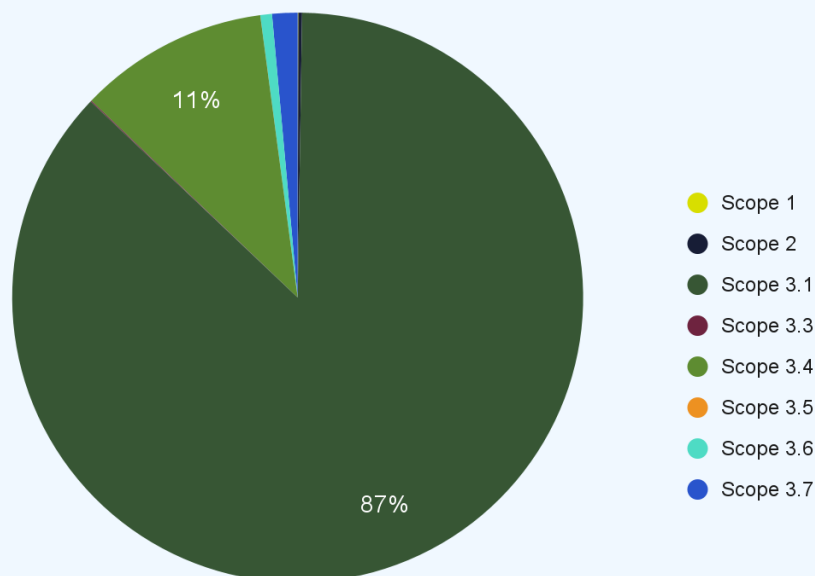


Figure 3. Impact per scope and/or category, expressed in percentage of total GHG emissions (scope 1, 2 and 3).

4.2 Scope 1 - Direct emissions

The direct emissions in scope 1 come from fuel consumption by non-electric company vehicles. Table 4 shows that company vehicles powered by diesel contribute 2 tonnes of CO₂-eq to the total scope 1 emissions.

Table 4. Sources of emission in scope 1

Emission sources	Unit	Quantity	Total CO ₂ -impact (ton CO ₂ -eq.)
Company vehicle - diesel	liter	789	2
Total scope 1	-	-	2

4.3 Scope 2 - Indirect emissions

Scope 2 includes all indirect emissions from purchased energy sources, primarily electricity used in the office. It also covers electricity used by electric company vehicles, see table 5.

The Studio Anneloes facility uses a heat pump for both heating and cooling. While the heat pump contains refrigerants, it operates within a closed system. Since no maintenance or refilling was required in 2024, there were no associated refrigerant emissions.

The office uses a mix of purchased wind energy and self-generated electricity from photovoltaic panels (which is outside of scope 2), thus the carbon impact of electricity use is considered to be zero. Moreover, it is worth noting that the use of solar panels contributes to lower Studio Anneloes' dependency on fossil sources.

Table 5. sources of emission in scope 2

Sources of emission	Unit	Quantity	Total CO2-impact (ton CO2-eq.)
Electricity - wind	kWh	195.579	0
Electric company vehicles	kWh	51.637	0
Electricity mix for business cars	kWh	42.247	11
Total scope 2	-	-	11

4.4 Scope 3 - indirect emissions

The emissions in scope 3 amounts to 3.190 ton CO2-eq, corresponding to 99.6.% of the total CO2 footprint. Within scope 3, emissions are produced mainly in the category 'Purchased goods and services', followed by the category 'Upstream transport and distribution'.

4.4.1 Scope 3, cat. 1 'Purchased goods and services'

This category contributes to 87% of the total emission of Studio Anneloes, being responsible for the emission of 4.769 ton CO2-eq. Table 6 and Figure 4 show that, within this category, the textiles contribute the most to the emissions, followed by waste. Both impacts can be explained by the high purchase of fabric.

Table 6. Sources of emissions in scope 3, category 1 'Purchased goods and services'.

Sources of emission	Unit	Quantity	Total CO2-impact (ton CO2-eq.)
<i>Packaging</i>			
Paptic garment bag	kg	910	<1
Etiquettes	kg	1.191	2
Shipping boxes	kg	27.468	28
Plastic garment bags	kg	4.039	15
Paper bag	kg	2.999	3
<i>Textiles</i>			
Acrylic	kg	4.149	44
Wool	kg	1.040	61
Cotton	kg	14.493	223
Recycled cotton	kg	250	2
Linen	kg	121	1
Polyamide	kg	16.201	308
Polyester	kg	12.434	149
Recycled polyester	kg	1.020	9
Viscose	kg	26.729	305
Leather	kg	513	3
Lurex	kg	6	<1
Cashmere	kg	10	<1
Elastane	kg	712	10
Mohair	kg	669	39

Modal	kg	88	<1
Recycled PET	kg	4	<1
Lyocell	kg	669	7
Alpaca	kg	524	31
Metallic yarn	kg	647	7
Recycled polyamide	kg	2.110	40
Other fibres	kg	53	1
Leather shoes	kg	2.668	17
Travel fabric	kg	207.843	2.810
<i>Other purchased goods and services</i>			
Post & office	euro's	21.668	4
Labels woven - recycled polyester	kg	276	1
Hangtags - paper	kg	5.603	14
Plastic hangers	kg	855	4
Power BI	-	-	<1
<i>Haberdashery</i>			
Elastic	kg	4.242	59
Metal buttons	kg	98	<1
Polyester buttons	kg	1.200	8
Pearl buttons	kg	20	<1
Pin - metal	kg	1	<1
Polyester zipper	kg	42	<1
Elastic, ribbons & cord (Vostex) - metal parts	kg	68	<1
Elastic, ribbons & cord (Vostex) - polyester parts	kg	128	<1
<i>Confectioning</i>			
Electricity	kWh	132.368	77
Electricity - PV	kWh	32.789	0
Gas	m3	1.788	4
<i>Waste</i>			
Cutting waste (waste treatment)	kg	33.800	<1
Cutting waste (textile mix)	kg	33.800	477
Total	-	-	4.769

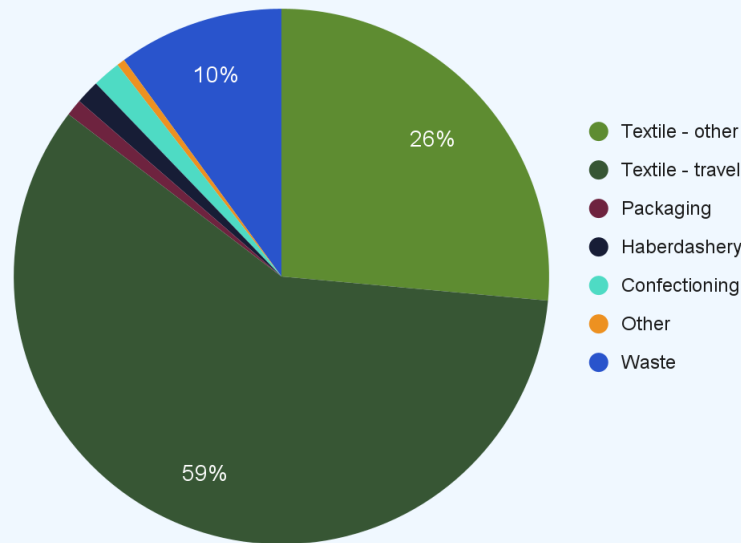


Figure 4. Emission sources of purchased goods and services.

Figure 4 also shows that overall, textiles contribute to 85% (considering travel textiles and other textiles) and cutting waste to 10% of the total emissions for this category.

4.4.3 Scope 3, cat. 3 'Fuel and energy related activities'

Table 7 shows the emissions of the upstream production of the energy consumed by Studio Anneloes (and reported in scope 1 and 2). The contribution of this category to the total emissions of Studio Anneloes is minimal.

Table 7. Sources of emissions in scope 3, category 3 'Fuel and energy related activities'.

Sources of emission	Unit	Quantity	Total CO2-impact (ton CO2-eq.)
Company vehicle - diesel	l	789	<1
Electricity - wind	kWh	195.579	0
Electric company vehicles	kWh	51.637	0
Electricity mix for business cars	kWh	42247	2
Total	-	-	3

4.4.4 Scope 3, cat. 4 'Upstream transport and distribution'

The category 'Upstream transportation & distribution' contributes 11% to scope 3 emissions. Table 8 gives an overview of all individual means of freight transport in 2024 and related carbon emissions. Figure 5 highlights that 60% of the emissions in this category stem from air freight from Shanghai to Rotterdam (note that these emissions were provided by the supplier and could not be verified nor calculated because of lack of data availability). The second largest contributor to this category is transport via diesel fueled trucks, which together generate 35% of the emissions.

Table 8. Emissions sources in scope 3, category 4 'Upstream transportation & distribution'.

Emissions source	Unit	Amount	Total carbon impact (tCO ₂ -eq.)
Airplane	tkm	24.661	25
Airplane (Shanghai - Rotterdam)	-	-	355
Truck	tkm	284.513	73
Own truck	liters	9.779	34
Outsourced truck	liters	29.200	101
Delivery van	tkm	2	1
Ship - within Europe	tkm	0,46	<1
Ship - intercontinental	tkm	33.312	3
Total	-	-	591

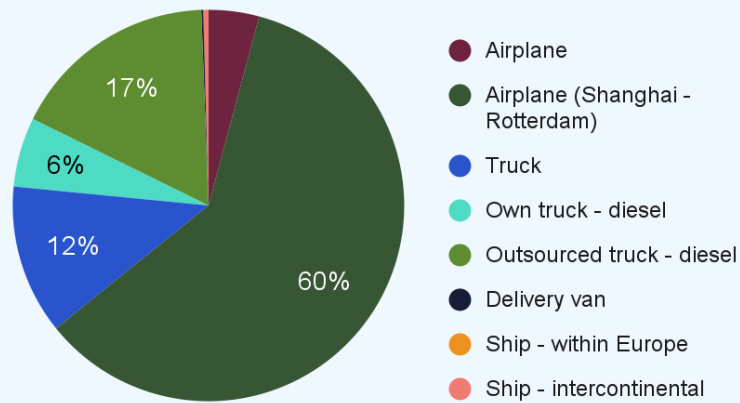


Figure 5. Emission sources of Upstream transport and distribution.

4.4.5 Scope 3, cat. 5 'Waste generated in operations'

Table 9 presents an overview of all waste streams and their respective GHG emissions. The contribution of this category to the total emissions of Studio Anneloes is negligible.

Table 9. Emissions sources in scope 3, category 5 'Waste generated in operations'.

Emissions source	Unit	Amount	Total carbon impact (tCO ₂ -eq.)
Paper and carton	kg	9,536	<1
Plastic	kg	1.108	<1
Residual waste	kg	3.547	<1
Glass	kg	6	<1
Beverage cartons	kg	48	<1

Swill	kg	28	<1
Total	-	-	<1

4.4.6 Scope 3, cat. 6 'Business travel'

For business travel, the main contributor to total category 6 emissions is airplane travel, with half of the emissions for business travel stemming from medium haul flights. Overall, the flights emit 36 tons of CO₂-eq, thus contributing 1% of the total emissions for Studio Anneloes. Table 10 and figure 6 break down the contributions of each means of transport to carbon emissions.

Table 10. Emissions sources in scope 3, category 6 'Business travel' (pkm = passenger*kilometre, vkm = vehicle*kilometre).

Emissions source	Unit	Amount	Total carbon impact (tCO ₂ -eq.)
Car - benzine	vkm	533	<1
Car - unknown	vkm	180	<1
Train - dutch	pkm	32	0
Train - international	pkm	3.632	<1
Flight - regional <700 km	pkm	10.146	2
Flight - European 700 - 2,500 km	pkm	108.343	19
Flight - Intercontinental > 2,500 km	pkm	94.944	15
Total	-	-	36

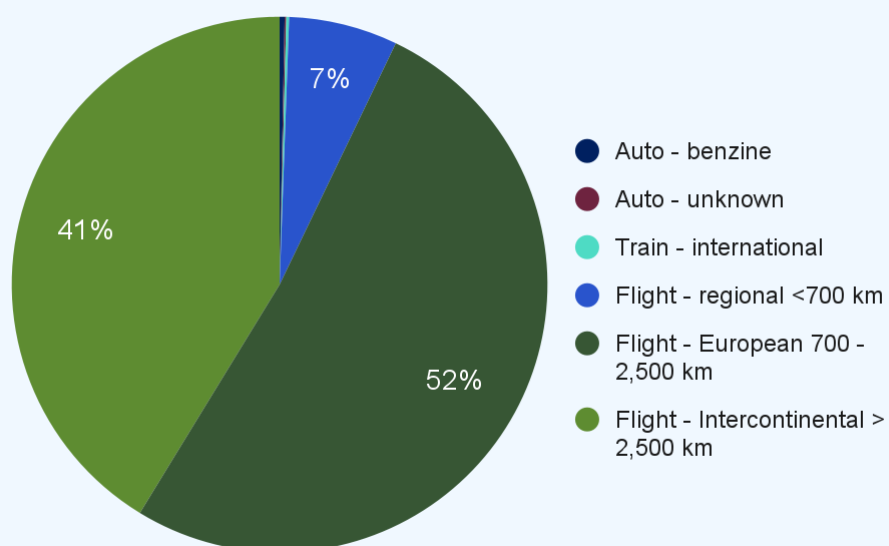


Figure 6. Emissions in scope 3, category 'Business travel'

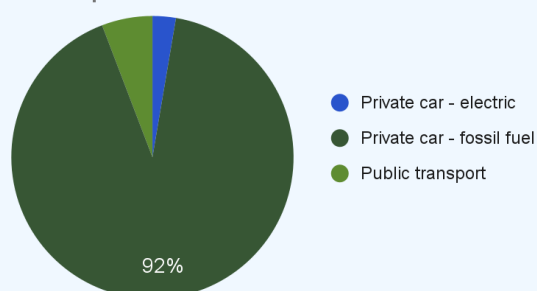
4.4.7 Scope 3, cat. 7 'Employee Commuting'

With 79 tCO₂-eq., employee commuting contributes 2% to Studio Anneloes's total carbon footprint. The impact within this category is primarily caused by the fossil-fueled cars used by the employees to commute to the Studio Anneloes offices. Table 11 gives an overview of all individual means of transport and related carbon emissions. These are also visualized in Figure 7, together with the distances travelled in 2024 by means of transport.

Table 11. Emissions sources in scope 3, category 7 'Employee commuting'.

Emissions source	Unit	Amount	Total carbon impact (tCO ₂ -eq.)
Private car - Electric	pkm	31.481	2
Private car -fossil fuel	pkm	374.284	72
Bike	pkm	42.425	0
Public transport	pkm	229.381	5
Total	-	-	79

GHG impact share



Distance travelled (pkm)

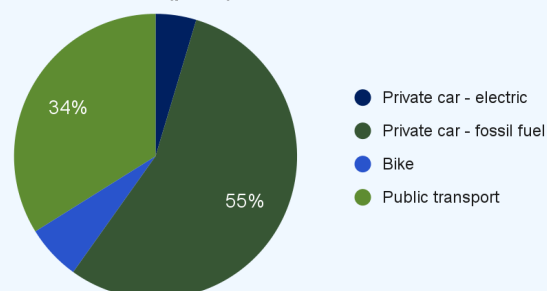


Figure 7. Emissions from scope 3, category 'Employee Commuting'

5 Conclusion

In 2024, Studio Anneloes's total carbon footprint amounted to 5.492 tonnes of CO₂-equivalent. Over 99% of these emissions fall under scope 3 (indirect emissions), driven by the manufacturing and transportation of purchased goods, particularly textiles used in clothing production. Scope 1 and Scope 2 emissions each accounted for less than 1% of total emissions, reflecting low direct and purchased electricity-related impacts.

6 Comparison with carbon emissions in 2023

In 2024, Studio Anneloes increased its emissions by around 516 ton CO₂-eq compared to 2023. Despite lower emissions for scope 1 and 2, emissions for scope 3 increased by 10,7%. Also, lower emissions for scope 1 and 2 could be attributed to the introduction of scope 3.3, where part of the energy use impact is accounted for.

Within Scope 3, the largest increase in emissions is due to the category 'Purchased goods and services', which in 2023 scored 4.354 ton CO₂-eq against the 4.769 ton CO₂-eq in 2024. The emissions from the other categories in scope 3 are comparable to those in 2023.

It is important to keep in mind that compared to 2023, 2024 GHG calculations include more precise data and expanded coverage. Key changes include using actual weights for hangtags, liters of fuel for some upstream transport (instead of tonne-kilometers), and extrapolating travel fabric impacts to all purchased travel fabrics, rather than only considering fabrics with available product-specific impacts (as in 2023). Having higher data quality for the 2024 report led to significant differences in emissions compared to 2023, especially for scope 3.4. This is because data in 2023 were based on assumptions that likely led to an overestimation of the emission for this category. Data for 2024 rely on actual measurements, thus being more representative of the actual emissions. Moreover, Scope 3.3 emissions are now included, with some impacts previously included in scope 1 and scope 2 emissions reallocated to scope 3.3. Purchased fabrics are reported individually and not grouped as in 2023, although they use similar emission factors. However, this does not mean that they are all newly bought. Also, transport emissions up to the retailer that were reported under scope 3.9 (downstream transportation) in 2023, are now counted under scope 3.4 (upstream transportation) since Studio Anneloes bears all the costs associated with transportation. Waste calculation methods were refined to better estimate the data gaps due the change in waste handler by Studio Anneloes. Lastly, it is worth noticing that reduced on-site renewable energy generation occurred due to two broken solar converters.

7 Reduction steps

Based on this report, it can be noted that Studio Anneloes has already implemented strategies to reduce its carbon footprint, such as using solar energy. To further pursue this goal, recommendations for Studio Anneloes are to (1) avoid emissions and (2) keep reducing emissions.

To avoid emissions, Studio Anneloes could encourage circular practices that avoid the production of textile waste during the manufacturing process. This could be done through workshops, repair possibilities, and the promotion of high quality materials. A strong practice to reduce overproduction, which Studio Anneloes has also already implemented, is a make-to-order system which curbs overproduction.

As for reducing emissions, prioritizing the logistics by ships, trucks or trains over airplanes, especially in the European context, can contribute to significantly decrease emissions, particularly for the upstream transportation and the business travels. Similarly, to choose logistics partners with electric or low emission transportation would also benefit the decrease of carbon emissions. Studio Anneloes can apply the same prioritisation to sensitize its employees in their commuting choices, moving away from fossil powered cars in favour of other means of transportation, such as bikes, public transports and carpooling. Electric car incentive programs are particularly effective when use of self-generated solar power during peak production times is implemented. This would avoid further fossil related energy emissions. On this note, Studio Anneloes has already implemented and has been using solar panels energy for self-consumption. Further development of the solar energy plant from Studio Anneloes can favour a decrease in fossil fuel consumption thus lowering carbon emissions.

8 References

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9 Appendix

In this Appendix, the applied emission factors are presented. In all tables in the Appendix, databases are abbreviated in the following way: CO2 emissiefactoren.nl = CEF, the UK GHG conversion factors 2022 = UK GHG, Exiobase Hybrid 2017 = EX and the European Environmental Agency = EEA, Milieuinformatie textiel = MIT.

Table A. Scope 1 emissions 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Company vehicles - diesel	789	liter	2,652	CEF	6

Table B. Scope 2 emissions 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Electricity - wind	195579	kWh	0	CEF	0
Electric company vehicles	51637	kWh	0	CEF	0
Electricity mix for business cars	42247	kWh	0,27	CEF	14

Table C. Scope 3 emissions - Purchased goods and services 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
<i>Packaging</i>					
Paptic garmentbag	910	kg	1,040	Ecoinvent 3.11	<1
Etiquettes	1.191	kg	1,310	Ecoinvent 3.11	2
Shipping boxes	27.468	kg	1,020	Ecoinvent 3.11	28
Plastic garment bags	4.039	kg	3,60	Ecoinvent 3.11	15
Paper bag	2.999	kg	1,040	Ecoinvent 3.11	3
<i>Textiles</i>					
Acrylic	4.149	kg	10,70	MIT	44
Wool	1.040	kg	58,70	MIT	61

Cotton	14.493	kg	15,40	MIT	223
Recycled cotton	250	kg	9,90	MIT	2
Linen	121	kg	11,00	MIT	1
Polyamide	16.201	kg	19,00	MIT	308
Polyester	12.434	kg	12,00	MIT	149
Recycled polyester	1.020	kg	8,90	MIT	9
Viscose	26.729	kg	11,40	MIT	305
Leather	513	kg	6,50	MIT	3
Lurex	6	kg	10,70	MIT	<1
Cashmere	10	kg	58,70	MIT	<1
Elastan	712	kg	13,80	MIT	10
Mohair	669	kg	58,70	MIT	39
Modal	88	kg	10,70	MIT	<1
Recycled PET	4	kg	8,90	MIT	<1
Lyocell	669	kg	10,70	MIT	7
Alpaca	524	kg	58,70	MIT	31
Metallic yarn	647	kg	10,70	MIT	7
Recycled polyamide	2.110	kg	19,00	MIT	40
Other fibers	53	kg	19,00	MIT	1
Leather shoes	2.668	kg	6,50	MIT	17
Travel fabric	207.843	kg	-	product specific impact	2.810
<i>Other purchased goods and services</i>					
Post & office	21.668	euro's	0,185	EX	4
Labels woven - recycled polyester	276	kg	4,00	Ecoinvent 3.10	1
Hangtags - papier	5.603	kg	2,530	Ecoinvent 3.11	14
Plastic hangers	855	kg	4,290	Ecoinvent 3.11	4
Power BI	-	-	-	Supplier specific emissions	<1
<i>Haberdashery</i>					
Elastic	4.242	kg	13,80	MIT	59
Metal buttons	98	kg	5,82	Ecoinvent 3.11	<1

Polyester buttons	1.200	kg	6,440	Ecoinvent 3.11	8
Pearl buttons	20	kg	6,440	Ecoinvent 3.11	<1
Pin - metal	1	kg	5,820	Ecoinvent 3.11	<1
Polyester zipper	42	kg	6,440	Ecoinvent 3.11	<1
Elastic, ribbons & cord (Vostex) - metal parts	68	kg	5,820	Ecoinvent 3.11	<1
Elastic, ribbons & cord (Vostex) - polyester parts	128	kg	6,2 0	Ecoinvent 3.11	<1
<i>Confectioning</i>					
Electricity	132.368	kWh	0,583	Nowtricity	77
Electricity - PV	32.789	kWh	0,0 0	-	-
Gas	1.788	m3	2,045	UK GHG	3,66
<i>Waste</i>					
Cutting waste (waste treatment)	33.800	kg	0,006	UK GHG	<1
Cutting waste (textile mix)	33.800	kg	14,11	MIT	477

Table D. Scope 3 emissions - Fuel and energy related activities 2024

Sources	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Company vehicle - diesel	789	l	0,816	CEF	0,64
Electricity - wind	195.579	kWh	0,0 0	CEF	0
Electric company vehicles	51.637	kWh	0,0 0	CEF	0
Electricity mix for business cars	42.247	kWh	0,058	CEF	2,45

Table E. Scope 3 emissions - Upstream transportation 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Airplane	44,839	tkm	0,550	CEF	380
Airplane (Shanghai - Rotterdam)	-	-	-	Provided by supplier	355

Truck	284.513	tkm	0,256	CEF	73
Own truck	9.779	liters	3,468	CEF	34
Outsourced truck	29.200	liters	3,468	CEF	101
Delivery van	2	tkm	0,363	CEF	1
Ship - within Europe	0,46	tkm	0,031	CEF	<1
Ship - intercontinental	33,312	tkm	0,007	CEF	3

Table F. Scope 3 emissions - Waste generated 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Paper and carton	9,536	kg	0,006	UK GHG	<1
Plastic	1.108	kg	0,006	UK GHG	<1
Restafval (residual waste)	3.547	kg	0,006	UK GHG	<1
Glass	6	kg	0,006	UK GHG	<1
PD bedrijven	48	kg	0,006	UK GHG	<1
Swill	28	kg	0,008	UK GHG	<1

Table G. Scope 3 emissions - Business travel 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Car - benzine	533	vkm	0,204	CEF	<1
Car - unknown	180	vkm	0,193	CEF	<1
Train - dutch	32	pkm	0,0 0	CEF	0
Train - international	3.632	pkm	0,017	CEF	<1
Flight - regional <700 km	10.146	pkm	0,234	CEF	2
Flight - European 700 - 2,500 km	108.343	pkm	0,172	CEF	19
Flight - Intercontinental (> 2,500 km)	94.944	pkm	0,157	CEF	15

Table H. Scope 3 emissions - Employee commuting 2024

Source	Amount	Unit	Emission factor (kg CO2-eq/unit)	Database	Tonnes CO2-eq
Private car - Electric	31481	pkm	0,067	CEF	2
Private car -fossil fuel	374284	pkm	0,193	CEF	72
Bike	42425	pkm	0,0 0	CEF	0
Public transport	229381	pkm	0,020	CEF	5