



Corporate & Product Carbon Footprint 2019

Alutronic Kühlkörper GmbH und Co. KG

Table of content

| | |
|---|----|
| Summary of results | 3 |
| Corporate Carbon footprint 2019 | 4 |
| Product Carbon Footprint 2019 | 7 |
| Summary | 8 |
| Appendix | 9 |
| Climate protection and climate neutrality | 9 |
| Description of methodology | 10 |
| Process steps | 10 |
| Scope 1 | 11 |
| Scope 2 | 11 |
| Scope 3 | 11 |
| Disclosed Greenhouse Gases | 13 |
| Imprint | 14 |

Table directory

| | |
|--|----|
| Table 1: Corporate Carbon Footprint 2019 | 4 |
| Table 2: Comparison of the Corporate Carbon Footprint 2018 and 2019 in t CO ₂ | 6 |
| Table 3: Emissions per t CO ₂ | 6 |
| Table 4: Overview of the considered emissions of the CCF 2019 - Scope 1 | 11 |
| Table 5: Overview of the considered emissions of the CCF 2019 - Scope 2 | 11 |
| Table 6: Overview of the considered emissions of the CCF 2019 - Scope 3 | 12 |

Table of figures

| | |
|--|---|
| Figure 1: Percentage of emissions per scope | 4 |
| Figure 2: Percentage of emissions per emissions source | 5 |
| Figure 3: Percentage of emissions without the emissions from raw materials | 5 |
| Figure 4: Product life cycle phases and calculation approaches | 7 |

Summary of results

ClimatePartner Deutschland GmbH („ClimatePartner“) has calculated the Corporate Carbon Footprint („CCF“) for Alutronic Kühlkörper GmbH und Co. KG („Alutronic“) based on the standards defined in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol) for the fiscal year 2019.

The Corporate Carbon Footprint was created for the fifth time. This report includes a comparison to the previous year (2018).

The Corporate Carbon Footprint is an important component for the development of a climate protection strategy. By analysing the carbon footprint, it is possible to identify reduction potentials and mechanisms, to develop appropriate measures and to define climate protection goals.

This report provides an overview of the results of the accounted emissions.

| | Overall result (t CO ₂) | Total weight aluminium (t) | Emissions (CO ₂ /t aluminium) |
|-------------|--|-------------------------------|--|
| 2019 | 2,449.2 | 374,3 | 6.5 |
| vs. 2018 | 3,111.2 | 440.6 | 7.1 |

The amount corresponds to...



7,605,634

km driven with a passenger car.



... the yearly carbon footprint of

291

average European citizens.



... the yearly CO₂-capture of

195,920

beech trees.

The emission factors underlying the calculation are constantly being optimized and updated. When comparisons with the previous year are made, it must be taken into account that deviations from the emission factors may occur.

Corporate Carbon footprint 2019

The total emissions of the business activities at the production site in Halver were 2,449.2 tons CO₂.

112.5 t CO₂ were direct emissions (Scope 1). There were no indirect emissions through grid-based energy (Scope 2), since the company purchased green electricity. Other indirect emissions (Scope 3) caused 2,336.6 tonnes of CO₂.

The largest source of emissions is related to raw materials (86,3 %). The second largest item are emissions from employee commuting with 5.2 %. In third place is heating with 4.2 %.

Below is an overview of the corporate carbon footprint for the production site in Halver.

Table 1: Corporate Carbon Footprint 2019

| Emission source | | t CO ₂ | % |
|-------------------------|-----------------------------------|-------------------|----------------|
| Scope 1 | Heating | 102.3 | 4.2 |
| | Vehicle Fleet | 10.2 | 0.4 |
| <i>Subtotal Scope 1</i> | | <i>112.5</i> | <i>4,6</i> |
| Scope 2 | Electricity | 0.0 | 0.0 |
| <i>Subtotal Scope 2</i> | | <i>0.0</i> | <i>0.0</i> |
| Scope 3 | Raw materials (aluminium) | 2,112.6 | 86.3 |
| | Employee commuting | 127.3 | 5.2 |
| | Upstream emissions of electricity | 25.4 | 1.0 |
| | Upstream emissions of heating | 22.8 | 0.9 |
| | Packaging materials | 18.8 | 0.8 |
| | Raw materials (rest) | 12.5 | 0.5 |
| | Inbound logistics | 12.5 | 0.5 |
| | Upstream emissions of fuel | 2.0 | 0.1 |
| | Water | 1.1 | 0.0 |
| | Office paper | 0.8 | 0.0 |
| | Waste treatment | 0.6 | 0.0 |
| | Flights | 0.3 | 0.0 |
| | <i>Subtotal Scope 3</i> | | <i>2,336.6</i> |
| Result | | 2,449.2 | 100.0 |

Figure 1: Percentage of emissions per scope

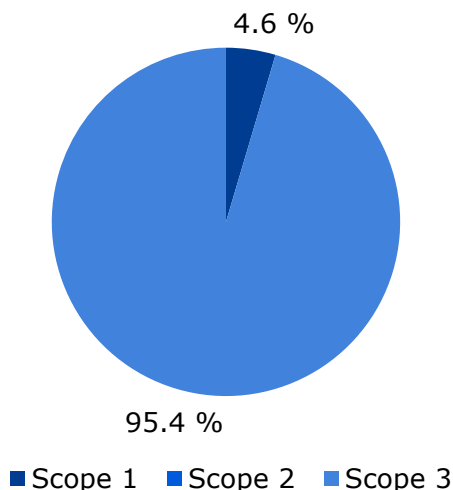


Figure 2: Percentage of emissions per emissions source

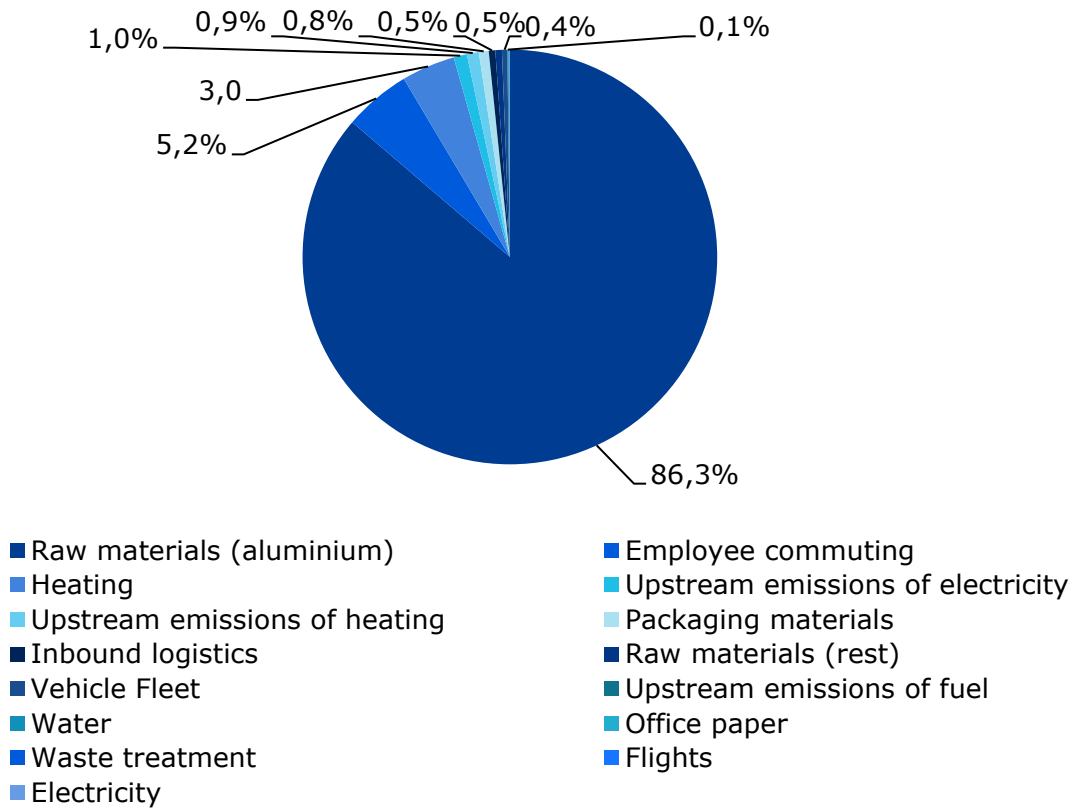
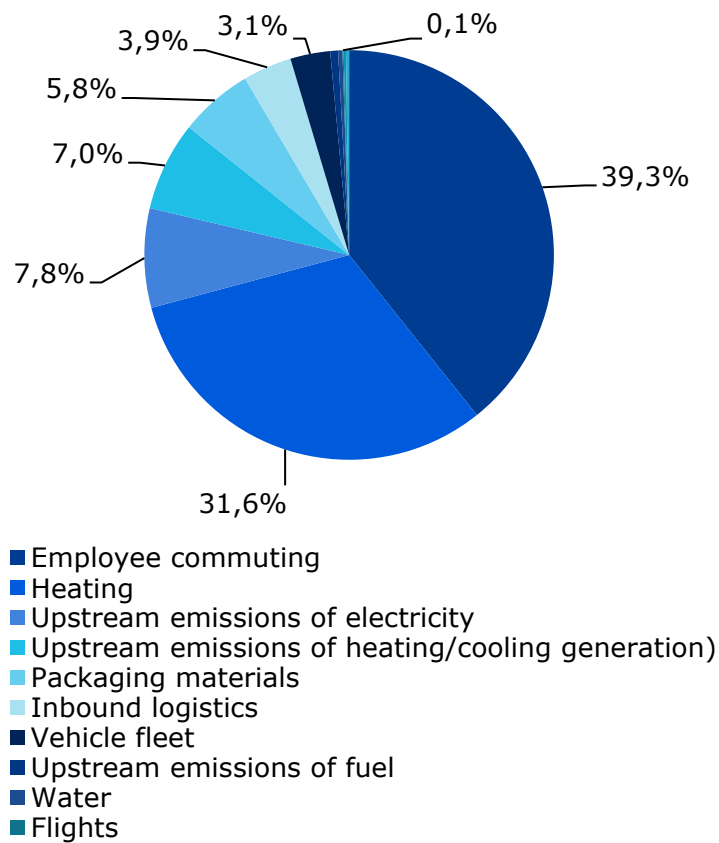


Figure 3: Percentage of emissions without the emissions from raw materials



Total emissions have changed by 21,3 % compared to 2018, from 3.111,2 t CO₂ to 2,449.2 t CO₂.

Table 2: Comparison of the Corporate Carbon Footprint 2018 and 2019 in t CO₂

| Emission sources | | 2019 | 2018 | Difference 2018-2019 | Difference % |
|-------------------------|-----------------------------------|----------------|----------------|-------------------------|-----------------|
| Scope 1 | Heating | 102,3 | 106.4 | -4.1 | -3.9 |
| | Vehicle fleet | 10.2 | 10.6 | -0.4 | -3.8 |
| <i>Subtotal Scope 1</i> | | <i>112,5</i> | <i>117.0</i> | <i>-4.5</i> | <i>-3.8</i> |
| Scope 2 | Electricity | 0.0 | 0.0 | - | - |
| <i>Subtotal Scope 2</i> | | <i>0.0</i> | <i>0.0</i> | <i>-</i> | <i>-</i> |
| Scope 3 | Raw materials (aluminium) | 2,112.6 | 2,750.3 | -637.7 | -23.2 |
| | Employee commuting | 127.3 | 127.3 | 0.0 | 0.0 |
| | Upstream emissions of electricity | 25.4 | 25.7 | -0.3 | -1.2 |
| | Upstream emissions of heating | 22.8 | 23.7 | -0.9 | -3.8 |
| | Packaging materials | 18.8 | 19.6 | -0.8 | -4.1 |
| | Raw materials (rest) | 12.5 | 25.6 | -13.1 | -51,3 |
| | Inbound logistics | 12.5 | 13.6 | -1.1 | -8.1 |
| | Business travel / flights | 0.3 | 3.3 | -3.0 | -90.9 |
| | Upstream emissions of fuel | 2.0 | 2.1 | -0.1 | -4.8 |
| | Water | 1.1 | 1.4 | -0.3 | -21.4 |
| | Waste disposal | 0.6 | 0.8 | -0.2 | -25.0 |
| | Office paper | 0.8 | 0.8 | 0.0 | 0.0 |
| <i>Subtotal Scope 3</i> | | <i>2,336.6</i> | <i>2,994.2</i> | <i>-657.6</i> | <i>-22,0</i> |
| Result | | 2,449.2 | 3,111.2 | -662.1 | -21.3 |

The significant reduction of 21.3% in emissions is due to the higher reference quantity of secondary aluminium. In addition, 15 % less aluminium was purchased in 2019 (2019: 374.3 tons, 2018: 440.6 tons of aluminium).

Looking at emissions as an indicator per purchased ton of aluminum, total emissions have fallen by -7.3 %. This significant reduction is due to the results of the renewed supplier survey on the proportion of recycled aluminium. It was previously assumed that the raw material aluminium consists of 80 % primary aluminium and 20 % secondary aluminium.

Considering the development of the emissions excluding the emissions from aluminum, an increase of 9.8 % per ton of aluminum can be seen. Table 3 shows an overview of the key figures.

Table 3: Emissions per t CO₂

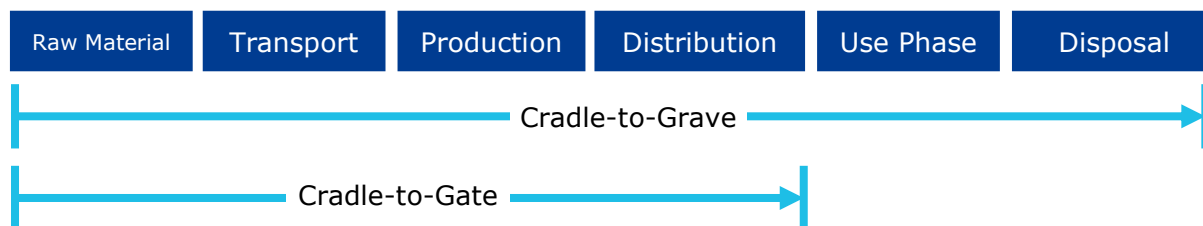
| | 2019 | 2018 | Difference 2019-2018 |
|--|-------|-------|-------------------------|
| Total weight aluminium [t] | 374.3 | 440.6 | -15.0 % |
| Emissions [CO ₂ /t aluminium] | 6.5 | 7.1 | -7.3 % |
| Emissions (excl. raw material aluminium) [CO ₂ /t aluminium] | 0.9 | 0.8 | +9.8 % |

Product Carbon Footprint 2019

The Product Carbon Footprint per ton of aluminium can be derived from the Corporate Carbon Footprint and the quantities of aluminium purchased in a given year.

The determination of a product's CO₂ emissions refers to the various product life cycle phases, such as the extraction of raw materials, transport of the products, production, use and disposal, and can be calculated using various approaches (Figure 4).

Figure 4: Product life cycle phases and calculation approaches



Within the framework of this balancing, the cradle-to-gate approach was chosen for the creation of the Product Carbon Footprints. These include all emissions that can be directly or indirectly influenced by Alutronic Kühlkörper. This means that the life cycle phases from the extraction of raw materials and the manufacture of the products, including auxiliary materials used and secondary packaging ("cradle"), to the Alutronic factory gate ("gate") were taken into account. In addition, the calculation also included the incoming logistics, i.e. the transport of the products and packaging from the suppliers to Alutronic Kühlkörper.

Results

Below the result of the PCF using the cradle to gate approach per tonne of aluminium is given:

| | 2019 |
|---|-------------|
| Total weight aluminium [t] | 374.3 |
| Total emissions CCF [t CO ₂] | 2,449.2 |
| Unternehmensemissionen [t CO ₂] | 292.8 |
| Product-related emissions (raw materials, packaging and inbound logistics) [t CO ₂] | 2,156.3 |
| PCF [total emissions t CO₂/ t aluminium] | 6.5 |
| PCF [product-related emissions t CO₂/ t aluminium] | 5.8 |

For the report, the result including and excluding corporate emissions is balanced (Scope 1, Scope 2 and non-product-related emissions Scope 3 of the CCF). The corporate emissions are offset annually by Alutronic Kühlkörper. The product-related emissions can be offset by Alutronic Kühlkörper customers on request.

Summary

The present carbon footprint forms an important component for a successful climate protection commitment of Alutronic. Based on the Corporate Carbon Footprint it is possible to:

- identify the most important fields of action for CO₂ reduction
- define carbon reduction targets along the value chain
- measure progress in avoiding and reducing CO₂ emissions
- compensate the unavoidable CO₂ emissions by supporting climate protection projects

Alutronic is aware of its responsibility for climate protection and has calculated a carbon footprint for the fifth time. In addition a survey of the aluminum supplier was renewed. Based on the survey, a purchasing strategy can be developed in the future.

In the past three years, the corporate emissions (excluding raw materials, packaging and inbound logistics) were offset by investing in a climate protection project. Alutronic has been a climate-neutral company since 2017:

www.climatepartner.com/12274-1702-1001

In the following years, a regular update of the Corporate Carbon Footprint is recommended. This makes it possible to monitor the development and the evaluation of climate protection measures. The carbon footprint is a useful tool for analysing business activities that impact climate change. Furthermore, the update of the corporate carbon footprint serves to better communicate climate protection to employees, suppliers, and customers.

Appendix

Climate protection and climate neutrality

Integrated climate protection follows the principle: avoid unnecessary emissions, reduce existing emissions, and offset unavoidable emissions.

A regularly updated carbon footprint is a crucial tool for companies and organizations to identify significant emissions mitigation and reduction potential and to track climate protection measures over time.

Companies, processes or products are climate neutral when all carbon emissions have been calculated and offset by supporting carbon offset projects.

The mechanism of carbon offsetting is based on the fact that greenhouse gases are evenly distributed in the atmosphere and greenhouse gas concentrations are therefore approximately the same throughout the world. Therefore, for the global greenhouse gas concentration and the greenhouse effect, it is relevant where on Earth emissions are caused or avoided. Emissions that cannot be avoided locally can therefore be mathematically offset by climate protection measures at another location. This offset is rendered possible by carbon offset projects.

In the case that emissions are offset, a safety margin of 10 % is added to the overall result. This compensates for potential uncertainties that naturally arise when collecting and processing the underlying data, e.g. through the use of database values, assumptions or estimates. This ensures that all emissions generated are compensated within the system boundaries. The total amount of CO₂ emissions to be compensated is therefore 2,694.1 t

The first actions have already been taken to reduce and avoid CO₂ emissions at company level - for example by purchasing green electricity and surveying suppliers. By compensating the emissions generated at the production site in Halver (emissions excl. Raw materials, packaging and logistics), Alutronic is a carbon neutral company since 2017 and draws attention to its commitment to climate protection.

If all emissions are offset, including raw materials, packaging and logistics, the manufactured products can also be labelled as climate neutral.

Thanks to the availability of climate neutral products, customers become increasingly aware about climate protection. In addition, customers are given the opportunity to make a conscious decision for climate protection by purchasing products from Alutronic.

Description of methodology

In the following sections the procedures and underlying principles for calculating a Corporate Carbon Footprint in accordance with the guidelines of the GHG Protocol Corporate Accounting and Reporting Standard ("GHG Protocol") are described.

Reporting Standard

The GHG Protocol is the internationally recognized standard for greenhouse gas accounting on the corporate level. It was developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

It defines five fundamental principles for the calculation of carbon footprints:

- **Relevance:** The principle of relevance requires that all major emissions sources be considered in calculating a company's carbon footprint, and the report should be useful for internal and external decision making.
- **Completeness:** The principle of completeness means that all relevant emissions sources within the boundaries must be respected.
- **Consistency:** To facilitate the comparison of results over time, accounting methods and boundaries must be adhered to and maintained in the following years. Any changes in methodology and boundaries must be mentioned and justified.
- **Accuracy:** Distortions and uncertainties should be reduced as much as possible so that the results offer a solid basis for decisions by stakeholders.
- **Transparency:** The results should be presented in a transparent and comprehensible manner.

Process steps

The following steps are necessary to calculate a carbon footprint:

- Definition of goals
- Definition of boundaries
- Data collection
- Calculation of the carbon footprint
- Documentation of results

Goals

The Corporate Carbon Footprint serves to identify the largest sources of emissions within the company and along the upstream and downstream value chain. It thus forms the basis for the development of a climate protection strategy in which targets, measures and responsibilities for the reduction of greenhouse gas emissions are defined. In subsequent years, it serves to check whether the goals have been achieved, in which areas progress has been made, and in which areas there is a need for action to reduce CO₂.

Definition of boundaries

Carbon accounting based on the Greenhouse Gas Protocol requires a clear determination of the inventory boundaries for the carbon footprint. This includes organizational and operational boundaries.

The organizational boundaries describe the organizational unit and the timeframe to which the Corporate Carbon Footprint refers. The system boundaries may be drawn according to operational or financial control or according to equity share.

The operational boundaries describe the emissions sources that are considered within the organizational boundaries. For the classification of different emissions sources, the Greenhouse Gas Protocol differentiates between three categories ("Scopes"), which are the basis of each Corporate Carbon Footprint:

Scope 1

Scope 1 includes all carbon emissions that can be directly managed by the accounting corporation (direct carbon emissions). This includes the combustion of fossil fuels (mobile and stationary) and carbon emissions generated by chemical and physical processes as well as emissions during the use of refrigeration and air conditioning equipment. Table 4 gives an overview of the emission sources considered in the category Scope 1.

Table 4: Overview of the considered emissions of the CCF 2019 - Scope 1

| Category | Emission sources | Considered emissions |
|--|---|-----------------------------|
| Stationary combustion of fuels | Generation of electricity and heat | considered |
| Combustion of fuels in mobile combustion sources | Vehicle fleet | considered |
| Physical or chemical processing | Manufacture or processing of chemicals and materials and waste processing | no emissions |
| Fugitive emissions | Emissions during the use of refrigeration and air conditioning equipment | no emissions |

Scope 2

Scope 2 represents indirect carbon emissions from purchased electricity, steam, district heating and cooling. All emissions that are caused by fossil fuel combustion by external energy providers are listed here. The identification in separate categories avoids double counting when comparing CO₂ emissions from different companies. Table 5 gives an overview of the emission sources considered in the category Scope 2.

Table 5: Overview of the considered emissions of the CCF 2019 - Scope 2

| Category | Emission sources | Considered emissions |
|------------------|----------------------------|-----------------------------|
| Electricity | Purchased electricity | considered |
| Steam | Purchased steam | no emissions |
| District Heating | Purchased district Heating | no emissions |
| District Cooling | Purchased district Cooling | no emissions |

Scope 3

All remaining carbon emissions belong to Scope 3 (other indirect carbon emissions). This includes all carbon emissions that are related to products and services used or processed by the accounting corporation. Carbon emissions that are associated with the use of sold

products and services are also included, if direct carbon emissions are generated. Table 6 gives an overview of the emission sources considered in the category Scope 3.

According to the Greenhouse Gas Protocol, the calculation of carbon emissions in Scope 1 and Scope 2 is mandatory but voluntary in the Scope 3 category.

Table 6: Overview of the considered emissions of the CCF 2019 - Scope 3

| Category | Emission sources | Considered emissions |
|---|---|--|
| Purchased goods and services | Raw material, packaging | considered |
| Capital goods | Production of machinery, computer etc. | not considered |
| Fuel- and energy-related activities (not Scope 1/2) | Provision of fuels, transmission losses in power grids | considered |
| Upstream transportation and distribution | Transportation of purchased materials and goods | considered |
| Waste disposal | Domestic waste, production waste, transport and recovery / landfill | considered |
| Employee business travel | Flights, train trips, rental cars | considered |
| Employees commuting to and from work | Everyday transportation of the employees | considered |
| Leased assets | Emissions from rented facilities that are not counted under Scope 1 or 2 of the company | not applicable |
| Downstream transportation and distribution | Transportation of sold materials and goods | not included, outside of the system boundaries |
| Processing | Further processing of sold goods | not included, outside of the system boundaries |
| Usage phase of sold products | Use of sold goods that require energy | not included, outside of the system boundaries |
| Disposal | Dealing with goods sold at the end of their life cycle | not included, outside of the system boundaries |
| Lessor | Leased equipment not included in Scope 1 and 2 of the company | not applicable |
| Franchising | Activities of franchisees that the franchisor does not report in Scope 1 and 2 | not applicable |
| Investments | Emissions from investment activities that are not reported under Scope 1 and 2 | not applicable |

Data collection and calculation

For the calculation, consumption data and emission factors were translated into carbon emissions. The data collected and evaluated are classified as primary and secondary data.

Primary data are data that are collected in direct relation to an object of investigation. Secondary data represent data obtained by the processing and modelling of primary data.

For the conversion of consumption data into carbon emissions, primary as well as secondary data from lifecycle analysis databases (e.g. ecoinvent or GEMIS) were used.

Disclosed Greenhouse Gases

The present Corporate Carbon Footprint shows all emissions as CO₂ equivalents. This means that in addition to CO₂, the calculations also take into account the six other greenhouse gases regulated in the Kyoto Protocol: methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and nitrogen trifluoride (NF₃). For better legibility, the emissions are simply referred to as carbon emissions and reported in units of tons of CO₂.

Imprint

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