

# Scope 3 GHG Inventory Report

## Contents

1. Introduction.....	1
2. Descriptive information .....	2
3. Greenhouse gas emissions data .....	5
4. Biogenic carbon emissions.....	6
5. Description of scope 3 methodologies and data used .....	7

## 1. Introduction

The calculation of BASF's Scope 3 emissions is based on the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard and the Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain (WBCSD). The Scope 3 emissions are calculated by category in accordance with the guidelines of the GHG Protocol Standard (at least "minimum boundaries").

## 2. Descriptive information

Descriptive information	Company response
<b>Company name</b>	BASF
<b>Description of the company</b>	<p>At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. Around 111,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio comprises six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition &amp; Care and Agricultural Solutions. BASF generated sales of €78.6 billion in 2021. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at <a href="http://www.basf.com">www.basf.com</a>.</p>
<b>Chosen consolidation approach (equity share, operational control or financial control)</b>	<p>The emissions of BASF SE subsidiaries that are fully consolidated in the Group financial statements in which BASF holds an interest of less than 100% are included in full. The emissions of proportionally consolidated joint operations are disclosed pro rata according to BASF's interest.</p>
<b>Description of the businesses and operations included in the company's organizational boundary (Description of the inventory boundary, including an outline/description of the organizational (scope 1) boundaries of the reporting company)</b>	<p>BASF reports scope 1 and scope 2 emissions from all production sites of fully consolidated companies and proportionally consolidated joint operations worldwide. We do not report GHG emissions from mobile combustion and from facilities other than production and power plants. GHG emissions from equity-accounted joint ventures and equity-accounted associated companies as well as from subsidiaries and associated companies that are not financially consolidated due to immateriality are not included in BASF's scope 1 or scope 2 emissions. The GHG emissions from equity-accounted joint ventures and equity-accounted associated companies are reported in category 15 of scope 3 emissions.</p> <p>Scope 3 emissions are reported for all BASF Group companies included in the Consolidated Financial Statements on a full or proportional basis, unless stated otherwise. The emissions of joint operations are included pro rata, based on BASF's stake. Relevant scope 3 emissions categories (&gt; 1 million t CO<sub>2</sub> equivalents) that are part of BASF's Scope 3 emissions inventory are:</p> <ul style="list-style-type: none"> <li>• Category 1: Purchased goods &amp; services</li> <li>• Category 2: Capital goods</li> <li>• Category 3: Fuel- and energy-related activities (not incl. in Scope 1 or 2)</li> <li>• Category 4: Upstream transportation and distribution</li> <li>• Category 5: Waste in Operations</li> </ul>

	<ul style="list-style-type: none"> <li>• Category 9: Downstream transportation and distribution</li> <li>• Category 11: Use of sold products</li> <li>• Category 12: End-of-life treatment of sold products</li> <li>• Category 15: Investments</li> </ul>
<b>The reporting period covered</b>	01/01/2021 -12/31/2021
<b>A list of scope 3 activities included in the inventory</b>	<p>Category 1: Purchased goods &amp; services</p> <p>Category 2: Capital goods</p> <p>Category 3: Fuel- and energy-related activities (not incl. in Scope 1 or 2)</p> <p>Category 4: Upstream transportation and distribution</p> <p>Category 5: Waste generated in operations</p> <p>Category 6: Business travel</p> <p>Category 7: Employee commuting</p> <p>Category 8: Upstream leased assets</p> <p>Category 9: Downstream transportation and distribution</p> <p>Category 11: Use of sold products</p> <p>Category 12: End-of-life treatment of sold products</p> <p>Category 15: Investments</p>
<b>A list of scope 3 activities excluded from the report with justification for their exclusion</b>	<p>Category 10 (Processing of sold products): BASF does not calculate and report GHG emissions from processing of sold products. This is the result of a thorough analysis of and balancing the different relevance criteria for Scope 3 emissions sources and the five accounting and reporting principles of the GHG Protocol standards by WRI and WBCSD. BASF produces a large variety of intermediate goods. This application diversity cannot be tracked reasonably, and reliable figures on a yearly basis are virtually impossible to obtain. These circumstances strongly compromise the reporting principles completeness, consistency, and accuracy (and feasibility), thereby not serving our business goal of reducing GHG emissions along the value chain. In addition, the WBCSD Chemical Sector Standard “Guidance for Accounting &amp; Reporting Corporate GHG Emissions in the Chemical Sector Value Chain” emphasizes that “chemical companies are not required to report Scope 3, category 10 emissions, since reliable figures are difficult to obtain, due to the diverse application and customer structure”.</p> <p>Category 13 (Downstream leased assets): Not relevant (about 5% of Upstream leased assets according to BASF expert judgement).</p> <p>Category 14 (Franchises): Not relevant for BASF as we do not own or operate franchises.</p>
<b>Once a scope 3 base year has been established, the year chosen as base year and rationale for choosing the base year</b>	No Scope 3 base year was chosen.

<b>Once a base year has been established, scope 3 emissions in the base year</b>	Not applicable.
<b>Once a base year has been established, the chosen base year emissions recalculation policy and context for any significant emissions changes that trigger base year emissions recalculations</b>	Not applicable.

### 3. Greenhouse gas emissions data

Scopes and categories	Metric tons CO <sub>2</sub> e	Percentage of scope 3 emissions
Scope 1: Direct emissions from owned/controlled operations	18,668,000	-
Scope 2, market-based <sup>1</sup> : Indirect emissions from the use of purchased electricity, steam, heating, and cooling	2,464,000	-
Certificates sold to third parties (VCUs)	0	-
<b>Upstream scope 3 emissions</b>		
Purchased goods and services	55,195,000	54%
Capital goods	1,701,000	2%
Fuel- and energy-related activities (not included in scope 1 or scope 2)	2,904,000	3%
Upstream transportation and distribution	2,252,000	2%
Waste generated in operations	1,742,000	2%
Business travel	27,000	0%
Employee commuting	163,000	0%
Upstream leased assets	147,000	0%
<b>Downstream scope 3 emissions</b>		
Downstream transportation and distribution	1,702,000	2%
Use of sold products	4,050,000	4%
End-of-life treatment of sold products	28,340,000	28%
Investments	3,073,000	3%

<sup>1</sup>The location-based Scope 2 emissions amount to 3,362,000 metric tons CO<sub>2</sub>e.

Greenhouse gas emissions	CO <sub>2</sub>		CH <sub>4</sub>	
	Metric tons CO <sub>2</sub>	Metric tons CO <sub>2</sub> e	Metric tons CH <sub>4</sub>	Metric tons CO <sub>2</sub> e
Scope 1 <sup>1</sup>	18,181,000	18,181,000	1204	34,000
Scope 2	2,464,000 <sup>2</sup>	2,464,000 <sup>2</sup>	-	-

Greenhouse gas emissions	N <sub>2</sub> O		HFCs	
	Metric tons N <sub>2</sub> O	Metric tons CO <sub>2</sub> e	Metric tons HFCs	Metric tons CO <sub>2</sub> e
Scope 1 <sup>1</sup>	1,576	418,000	28	34,000
Scope 2	-	-	-	-

Greenhouse gas emissions	PFCs		SF <sub>6</sub>	
	Metric tons PFCs	Metric tons CO <sub>2</sub> e	Metric tons SF	Metric tons CO <sub>2</sub> e
Scope 1 <sup>1</sup>	0	0	0	1,000
Scope 2	-	-	-	-

<sup>1</sup>Emissions of N<sub>2</sub>O, CH<sub>4</sub>, HFC and SF<sub>6</sub> have been translated into CO<sub>2</sub> emissions using the Global Warming Potential, or GWP, factor. GWP factors are based on the Intergovernmental Panel on Climate Change (IPCC) 5<sup>th</sup> Assessment Report, 2014. HFC (hydrofluorocarbons) are calculated using the GWP factors of the individual components.

<sup>2</sup>Market-based approach. The location-based Scope 2 emissions amount to 3,362,000 metric tons CO<sub>2</sub>e.

#### 4. Biogenic carbon emissions

91,000 metric tons CO<sub>2</sub>e.

## 5. Description of scope 3 methodologies and data used

Information on methodologies and data used	Description of the types and sources of data used to calculate emissions	Description of the methodologies, allocation methods, and assumptions used to calculate emissions
<b>Upstream scope 3 emissions</b>		
<p><b>Category 1</b></p> <p><b>Purchased goods and services</b></p>	<p>Activity data (primary data): Quantity and monetary purchasing volume of the goods and services purchased in the reporting year were obtained from BASF internal business data management systems.</p> <p>Emissions factors (secondary data):</p> <p>a) Raw materials and packaging: Cradle-to-gate emissions factors were obtained from commercially and publicly available data sources such as GaBi (sphera), ecoinvent or PlasticsEurope as well as from BASF's own LCA database, which is based mainly on primary data.</p> <p>b) Technical goods &amp; services: Supply chain emission factors for spending on products and services were obtained from the 2012 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting, Annex 13 (indirect emissions from supply chain).</p>	<p>We analyzed the GHG emissions of our procured raw materials and precursor manufacturing at BASF's suppliers' facilities (including merchandise) by calculating the cradle-to-gate emissions, including all direct GHG emissions from raw material extraction, precursor manufacturing and transport, as well as indirect emissions from energy use. To do so, we determined the quantity of each single product purchased, and then applied emission factors for about 80 percent of the purchased products (by weight). If country-specific emission factors were available, we calculated a weighted Product Carbon Footprint to reflect the percentage of the regional distribution of the purchased material. We multiplied the CO<sub>2</sub>e emissions per kilogram of each product by the respective quantity of the product purchased to determine cradle-to-gate emissions. Finally, the resulting scope 3 emissions were extrapolated to 100% of the total purchasing volume to account for all procured raw materials and precursors. For calculating the emissions from packaging, we first determined the material compositions of the different packaging groups such as HDPE drums or steel drums. Then, we calculated GHG emissions by multiplying the number of purchased items of packaging by their respective cradle-to-gate emission factors. The GHG emissions from technical goods and services were assessed based on the monetary purchasing volume in the reporting year by multiplying the amount of spending (with inflation adjustment and considering VAT) by the GHG conversion factors from the Defra 2012 Guidelines.</p>
<p><b>Description of the data quality of reported emissions*</b></p> <p><b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b></p>		<p><b>Good</b></p> <p><b>0%</b></p>

<p><b>Category 2</b> <b>Capital goods</b></p>	<p>Activity data (primary data): Monetary purchasing volumes of capital goods purchased in the reporting year were obtained from BASF's internal business data management systems.</p> <p>Emissions factors (secondary data): Supply chain emission factors for spending on capital goods were obtained from the 2012 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting, Annex 13 (indirect emissions from supply chain)</p>	<p>The GHG emissions associated with BASF's capital goods were estimated based on the following approach: All sub-segments of BASF's global Technical Procurement related to the sourcing of capital equipment such as machinery and fabricated equipment were analyzed based on their monetary purchasing volume in the reporting year. Each sub-segment was assigned a corresponding SIC code because the conversion factors for greenhouse gas emissions are based on the standard classification system (SIC 2003). The amount of spending (with inflation adjustment and considering VAT) was then multiplied by the respective GHG conversion factor and subsequently added up to the total GHG emissions from capital goods.</p>
<p><b>Description of the data quality of reported emissions*</b> <b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b></p>	<p><b>Fair</b> <b>0%</b></p>	
<p><b>Category 3</b> <b>Fuel- and energy-related activities (not included in scope 1 or scope 2)</b></p>	<p>Activity data (primary data): The quantities of fuel and energy (electricity and steam) purchased in the reporting year were obtained from BASF internal business data management systems.</p> <p>Emissions factors (secondary data): The cradle-to-gate emissions factors were obtained from the GaBi database. The grid related loss factor was taken from IEA, International Energy Agency, Electricity Statistics (most recent year available).</p>	<p>The GHG emissions from the extraction, production and transportation of fossil fuels used for power and steam generation in BASF's owned (power) plants were determined by multiplying the amount of purchased fuels by their respective, region-specific cradle-to-gate CO<sub>2e</sub> emission factors. The GHG emissions from the extraction, production and transportation of fuels consumed in the generation of electricity and steam purchased by BASF in the reporting year were calculated as follows: The amount of primary energy was determined based on the amount of purchased electricity and steam and the respective fuel efficiencies (83% for steam generation; 37% for electricity generation). The share of the different fuel types of the total amount of primary energy was then calculated for each region based on the fuel shares of electricity generation (IEA, Electricity Statistics; most recent year available). The fuel shares were then multiplied by the respective region-specific CO<sub>2e</sub> emission factors to result in the overall GHG emissions. Generation of electricity, steam, heating and cooling that is consumed in a T&amp;D system: GHG emissions associated with losses of purchased electricity and steam were estimated based on our Scope 2 emissions in the reporting year and a grid-related loss factor. Losses associated with our own T&amp;D system due to our own generation of electricity and steam are already accounted for in our Scope 1 emissions which are based on fuel input. Generation of electricity and steam that is purchased by the reporting</p>



<p><b>Description of the data quality of reported emissions*</b>  <b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b></p>		<p>company and sold to end users is not applicable to BASF.</p> <p><b>Good</b></p> <p><b>0%</b></p>
<p><b>Category 4</b>  <b>Upstream transportation and distribution</b></p>	<p>Activity data (primary data):  Quantities, types of goods and regional split of purchase in the reporting year as well as origin and destination points, mode of transport and load factors were obtained from BASF internal business data management systems.</p> <p>Emissions factors (secondary data):  The CO2e emission factors used were taken from the GLEC Framework.</p> <p>For quantification of the GHG emissions from BASF's internal transports the emission factors incorporated in the IT solution EcoTransIT World were used (<a href="http://www.ecotransit.org/">//www.ecotransit.org/</a>).</p>	<p>GHG emissions associated with the transport of raw materials purchased by BASF in the reporting year were calculated by multiplying the quantities of products procured by a transportation distance and by an emissions factor for the mode of transport. For large-volume raw materials (make up more than 50% of the purchasing volume), the mode of transport and the transport distance were determined substance specifically. For the remaining raw materials transportation distances for each region were estimated by logistics experts. For procured products in Europe, the modal split from a Cefic survey for chemical transports was used; for all other regions only truck transport was assumed. The GHG emissions from BASF internal transports were calculated based on detailed transportation data using the IT solution EcoTransIT World. GHG emissions associated with the transportation of technical &amp; capital goods purchased by BASF were calculated based on an estimated weight for capital and technical goods derived from the monetary purchasing volume and an assumed material content. Weight of purchased packaging was calculated based on material composition. Only truck transportation and an average transportation distance of 500 km (1,000 km in USA) were assumed for the transport of technical goods.</p>
<p><b>Description of the data quality of reported emissions*</b>  <b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b></p>		<p><b>Fair</b></p> <p><b>0%</b></p>
<p><b>Category 5</b>  <b>Waste generated in operations</b></p>	<p>Activity data (primary data):  The quantities of solid waste and wastewater generated during production at all BASF production sites were obtained from BASF's in-house EHS database. The data collection method differentiates between on-site and off-site disposal as well as between different disposal methods (waste incineration with and without energy recovery, landfill, physical recovery, wastewater treatment and others).</p>	<p>The GHG emissions from on-site waste incineration, landfill and physical recovery are accounted for in our Scope 1 emissions. The off-site physical recovery (recycling) of waste is assigned zero emissions, following the cut-off approach in life cycle assessment. The GHG emissions from off-site waste incineration with energy recovery were calculated by multiplying the amount of waste in this category by a suitable emission factor. The GHG emissions from off-site waste incineration without energy recovery as well as from landfill disposal were calculated based on</p>

Emissions factors (secondary data):  
The emission factors were obtained from the GaBi database.

a carbon balance. It was assumed that all carbon contained in the waste is eventually converted to CO<sub>2</sub> during incineration or landfilling. From a survey of a variety of different chemical products, the average carbon content of a chemical product was determined. Multiplying the amount of waste by this factor yields the waste's total carbon content which is then converted to the amount of emitted CO<sub>2</sub>. The GHG emissions from other solid waste disposal methods were calculated by multiplying the amount of waste with a landfill emission factor for inert plastic waste. The GHG emissions of BASF-operated wastewater plants are accounted for in our Scope 1 or Scope 2 emissions, respectively. The CO<sub>2e</sub> emissions from non-BASF operated wastewater treatment plants were calculated as follows based on a TOC (Total Organic Carbon) material balance. It is assumed that 30% of the influent organic carbon load is insoluble and inert, as well as the non-biodegradable TOC in the effluent. It is also assumed that 25% of the remaining bio-treatable TOC is converted into bio-sludge during biotreatment. The residual TOC, which is about 50% of the total influent TOC, is converted into CO<sub>2</sub>. The CO<sub>2</sub> emissions were calculated from the residual TOC with a conversion factor of CO<sub>2</sub>/TOC=3.67.

**Description of the data quality of reported emissions\***

**Good**

**Percentage of emissions calculated using data obtained from suppliers or other value chain partners**

**0%**

**Category 6  
Business travel**

Activity data (primary data):  
Miles and kilometers per means of transportation travelled by BASF employees in the reporting year were collected by external partners such as travel agencies and provided to BASF's Travel Management. For some travel activities the travel providers directly reported the amount of emitted greenhouse gases for the reporting year (applies to rail travel in Germany and trips by rental car).

Emissions factors (secondary data):  
CO<sub>2e</sub> conversion factors for short-haul, medium-haul and long-haul flights including radiative forcing and fuel pre-chain emissions (well-to-tank) were taken from DEFRA's GHG Conversion Factors for Company Reporting (2021).

The GHG emissions associated with the transportation of all BASF Group employees for business-related activities were calculated as follows:

- a) GHG emissions from business travel by air: Miles were converted to CO<sub>2</sub> equivalents using conversion factors for the average passenger in short-haul, medium-haul and long-haul flights.
- b) GHG emissions from business travel by train: Rail miles were converted into CO<sub>2e</sub> emissions, using country-specific and/or railway-specific CO<sub>2e</sub> conversion factor for travel by train; for rail travel in Germany the external partner Deutsche Bahn directly reports the resulting GHG emissions (zero emissions due to 100% green power).
- c) GHG emissions from business travel by car: External partners (i.e., car rental companies) provided a summary of kilometers driven and the resulting GHG emissions for the reporting year.

CO<sub>2</sub>e conversion factors for travel by train (per country) were taken from: SNCF, 2020 for France; Thalys Network, 2017 for Belgium; Ferrovie dello stato italiane, 2019 for Italy; ÖBB, 2019/2020 for Austria; DEFRA, 2021 for UK; EPA, 2021 for the US; Via Rail, 2019 for Canada; IEA Railway Handbook, 2017 and the India GHG Program, 2015 for Asia Pacific.

**Description of the data quality of reported emissions**

**Good**

**Percentage of emissions calculated using data obtained from suppliers or other value chain partners**

**5%**

**Category 7**

**Employee commuting**

Activity data (primary data):  
Number of employees per region as well as distance and mode of transportation for a selected group of employees in Germany, who participated in a poll in 2017.

Emissions factors (secondary data):  
The CO<sub>2</sub>e emissions factors used for car, motorbike, and public transportation were taken from DEFRA's GHG Conversion Factors for Company Reporting (2021) and EPA's Emission Factors for Greenhouse Gas Inventories (2021).

GHG emissions from employee commuting in Europe were calculated based on the results of a representative poll conducted among BASF SE employees in 2017 (19,560 out of 35,809 employees). Employees were asked about the distance travelled between their homes and workplaces and their means of transportation.

GHG emissions were calculated by multiplying the travelled distance (220 days per year, back and forth) by the respective CO<sub>2</sub>e emissions factor accounting for the different means of transportation. The resulting GHG emissions were subsequently extrapolated to all BASF Group employees in Europe.

For North America, the calculations were based on Bureau of Transportation Statistics on principal means of transportation to work. It was assumed that employees travel 236 days per year and 30 kilometers one-way.

For Asia and South America, it was assumed that all employees travel 30 km by car (one-way) and 230 or 222 days per year, respectively.

The corresponding emissions were calculated by multiplying the distance by the number of employees, number of working days and the emission factor for cars per km from DEFRA for Asia and the emission factor from EPA for North and South America.

Due to the corona pandemic mobile working was established in all BASF regions. For 2021 it was estimated that about 30% of all employees worked from home for a period of 9 months and hence did not commute to work. This fact was considered in the calculations of GHG emissions from employee commuting.

**Description of the data quality of reported emissions\***

**Fair**

**Percentage of emissions calculated using data obtained from suppliers or other value chain partners**

**0%**

<p><b>Category 8</b></p> <p><b>Upstream leased assets</b></p>	<p>Activity data (primary data)</p> <p><i>Leased cars:</i> Vehicle miles as defined in the leasing contracts for BASF SE employees in the reporting year.</p> <p><i>Leased office and storage space:</i> Leased office and storage space for the reporting year was obtained from BASF internal business data management systems.</p> <p><i>Leased equipment:</i> The monetary purchasing volume for leased equipment in the reporting year was derived from BASF internal business data management systems.</p> <p>Emissions factors (secondary data):</p> <p>The CO<sub>2</sub> emission factors for leased cars were provided by the car manufacturers. They differentiate between fuel type (diesel/gasoline) as well as cubic capacity. For electric cars the electricity consumption of the models was taken from the manufacturer's specification.</p> <p>The energy consumption (electricity and heat energy) per square meter of office space and warehouses in Europe was taken from a study of the German Federal Ministry for Economic Affairs and Energy (BMWi, 2015). For North America and South America, it was taken from the Commercial Buildings Energy Consumption Survey (EIA, 2012). For Asia, it was taken from a study by Ding et al., 2017.</p> <p>Region-specific CO<sub>2</sub> emissions factors per MWh were obtained from IEA, 2021.</p> <p>For assessing the GHG emissions from leased equipment the emission factors were taken from the 2012 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting, Annex 13 (indirect emissions from supply chain).</p>	<p>GHG emissions from leased assets were calculated for three different categories.</p> <p>1) Leased cars: GHG emissions from cars leased by BASF SE were calculated by multiplying the vehicle miles travelled, which were derived from the respective leasing contracts, by the relevant CO<sub>2</sub> emission factors. Since only the leasing contracts of BASF SE were evaluated, the resulting GHG emissions were subsequently extrapolated based on the number of employees to account for the entire BASF Group. Emissions from electric cars leased by the BASF Group were similarly extrapolated from BASF SE leasing data. First the total electricity consumption of all electric cars leased by BASF SE was determined by multiplying the vehicle miles travelled with the respective vehicle model's electricity consumption. From there the total electricity consumption was extrapolated for the BASF Group. This extrapolated global electricity consumption was then distributed among the four regions (Europe, Asia, North America, South America) based on the share of employees. For each region the electricity consumption was multiplied by a region-specific electricity emission factor. The resulting GHG emissions per region were then added up to yield the total GHG emissions from leased electric vehicles.</p> <p>2) Leased offices and storage space: The GHG emissions from leased offices and storage space were assessed based on the leased space (in square meters) and the annual energy consumption per square meter of office and storage space, respectively. Only for Asia no distinction was made between office and storage space.</p> <p>3) Leased Equipment: The GHG emissions from leased equipment such as hardware (i.e., computers or printers) were assessed based on the monetary purchasing volume in the reporting year (with inflation adjustment and considering VAT) and the corresponding GHG conversion factors.</p>
<p><b>Description of the data quality of reported emissions*</b></p> <p><b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b></p>		<p><b>Fair</b></p> <p><b>0%</b></p>

Information on methodologies and data used	Description of the types and sources of data used to calculate emissions	Description of the methodologies, allocation methods, and assumptions used to calculate emissions
<b>Downstream scope 3 emissions</b>		
<b>Category 9</b> <b>Downstream transportation and distribution</b>	<p>Activity data (primary data):  Quantities of product, origin and destination points, mode of transport and load factors were obtained from BASF internal business data management systems.</p> <p>Emissions factors (secondary data):  The emission factors incorporated in the IT solution EcoTransIT World were used (<a href="http://www.ecotransit.org/">//www.ecotransit.org/</a>).</p>	<p>For the calculation of the GHG emissions associated with the transport of BASF products sold in the reporting year, the respective shipments from BASF sites to BASF customers were evaluated using the IT solution EcoTransIT World.</p>
<b>Description of the data quality of reported emissions*</b> <b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b>		<b>Good</b>  <b>0%</b>
<b>Category 11</b> <b>Use of sold products</b>	<p>Activity data (primary data):  Quantities and types of products sold in the reporting year were obtained from BASF internal business data management systems.</p> <p>Emissions factors (secondary data): not applicable. GWPs were taken from the Fifth Assessment Report, IPCC, 2013. In the case of some fluorinated hydrocarbons, GWPs are based on manufacturers' information.</p>	<p>Chemical products vary strongly in their GHG emissions during their use phase. Most chemical products do neither cause nor prevent GHG emissions, e.g. food and feed additives like vitamins or pigments for paints and dyes. For the calculation of the GHG emissions associated with the use of sold BASF products we only considered the direct use-phase emissions of sold products over their expected lifetime, i.e. the GHGs and products that contain or form GHGs that are emitted during use.</p> <p>1) GHG emissions from products sold in the reporting year that form greenhouse gases: Nitrogenous fertilizers release nitrous oxide (N<sub>2</sub>O) to the atmosphere because of microbial action in the soil. The associated GHG emissions were calculated based on the amount of N-containing fertilizers sold in the reporting year, the nitrogen content and on the fact that about 1% (in the presence of a nitrification inhibitor only 0.5%) of the nitrogen contained in the fertilizer is converted into N<sub>2</sub>O-N. CO<sub>2</sub> from the use of urea (as fertilizer and diesel exhaust liquid) and from carbonates (used as leavening agent) was calculated based on the sold product quantity and the contained CO<sub>2</sub> amount.</p> <p>2) GHG emissions from products sold in the reporting year that contain greenhouse gases such as dry ice, CO<sub>2</sub> as gas for the beverage industry and HFCs as foaming agents to produce polyurethane foams: GHG emissions from dry ice and CO<sub>2</sub> sold to the beverage industry were considered based on the sold quantity. GHG emissions from HFCs were</p>

	<p><b>Description of the data quality of reported emissions*</b>  <b>Percentage of emissions calculated using data obtained from suppliers or other value chain partners</b></p>	<p>calculated based on the procured HFC-quantities and the loss rate of HFCs in the polyurethane foams during their use phase (100% over the entire life cycle).</p> <p><b>Good</b> <b>0%</b></p>
<p><b>Category 12</b> <b>End-of-life treatment of sold products</b></p>	<p>Activity data (primary data):  Quantity of products (raw materials, pre-products as well as packaging) purchased in the reporting year and percentage of BASF's sales in Europe and in the other regions were obtained from BASF internal business data management systems.  The ratio of the different waste disposal methods (incineration, landfill, recycling) in each country/region was derived from data on municipal waste treatment provided by Eurostat (2020), OECD statistics (2017, 2018) and the Chinese National Bureau of Statistics (2018). The following shares of waste disposal methods were used for the different regions:  Europe: 34% incineration (97% with energy recovery), 29% landfilling, 37% recycling; North America: 5% incineration with energy recovery, 66% landfilling, 29% recycling; Asia: 42% incineration (98% with energy recovery), 49% landfilling, 9% recycling; South America: over 99% landfilling and less than 1% incineration or recycling.</p>	<p>GHG emissions from the disposal of all BASF products (except the products that are already disposed of during their use phase and therefore accounted for in Category 11) manufactured in the reporting year were calculated presuming that these products at the end of their lives are either disposed of by landfilling or incineration or recycled. It was assumed that the products would be used and disposed of in the countries to which BASF sold them.  The amount of GHG emissions was calculated separately for each region and end-of-life method. Recycling was assigned zero emissions following the cut-off approach in life cycle assessment. The emissions from landfilling and incineration were calculated based on a carbon balance. It was assumed that all carbon contained in the products is eventually converted to CO<sub>2</sub> after disposal. For this end-of-life calculation, the same range of materials as in Category 1 (purchased materials) was considered since their amounts and C-contents are known. The total amount of disposed carbon going into landfilling was determined by multiplying the region's landfilling share by the materials' carbon content, which is calculated for each material by multiplying the amount of a material by its carbon percentage. This amount of disposed carbon was then converted into the amount of emitted CO<sub>2</sub> from landfilling. The same method was applied to determine the emissions from incineration. Incineration with energy recovery was considered proportionately in Europe, North America and Asia. Thus, a proportion of the calculated emissions from waste incineration in these two regions were allocated to energy generation. For the calculation of these emissions allocated to energy generation, the heating value methodology was used by assessing the energy content of the products of Category 1 that are incinerated at the end of their lives. Under the assumption that the efficiency of steam generation is 75% and the incineration plant requires 25% of the steam for its own power requirements, the produced net</p>

steam was determined. In accordance with the Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, the total emissions from incineration with energy recovery was then allocated to the waste treatment and the energy generation with a zero emission factor by using an economic allocation approach based on the proportions of total costs of waste treatment (i.e. costs per tons of waste multiplied by the amount of waste; allocation share is 51%) and total revenues from the sale of generated steam and electricity (i.e. costs per tons of steam/electricity multiplied by the net amount of steam; allocation share is 49%).

Since this carbon balance calculation was done based on purchased materials, some corrections were necessary to avoid double counting of carbon that does not enter the end-of-life treatment stage. Therefore, process emissions, emissions occurring in the use phase and emissions from treatment of waste in operations were subtracted from the total amount of emissions from end-of-life treatment.

**Description of the data quality of reported emissions\***

**Good**

**Percentage of emissions calculated using data obtained from suppliers or other value chain partners**

**0%**

**Category 15  
Investments**

Activity data (primary data): Scope 1 and scope 2 emissions of BASF's equity-accounted associated companies and joint ventures were obtained from the respective companies upon inquiry.

GHG emissions from equity-accounted joint ventures and equity-accounted associated companies are not included in BASF's scope 1 or scope 2 emissions. The GHG emissions from these companies are evaluated on a regular basis by inquiring these data from the respective companies. GHG emissions were calculated based on BASF's equity share in these companies, but only from non-consolidated companies of which BASF holds a minimum interest of 20%.

**Description of the data quality of reported emissions\***

**Good**

**Percentage of emissions calculated using data obtained from suppliers or other value chain partners**

**100%**

\* Subjective evaluation of the data quality of the direct emissions data, activity data, and emission factors. The type of evaluation according to the criteria (Technology, Time, Geography, Completeness, and Reliability) is based on the GHG Protocol Scope 3 standard (page 77).