

## MUBEA GHG Report 2021

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### 1. Introduction

The calculation of Mubea’s emissions is based on the “Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard” (WRI, 2004) and “GHG Protocol Scope 2 Guidance” (WRI, 2015).

The Scope 3 emissions are calculated based on the “Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard”, (WRI, 2011) Categories are in accordance with the guidelines of the GHG Protocol Standard (at least “minimum boundaries”).

## 2. Descriptive information

Descriptive information	Company response
<b>Name of the company</b>	Mubea KG
<b>Description of the company</b>	<p>We are an international partner to the transportation industry and an innovative lightweight specialist for high-strength components and related products. As an owner operated family company, our name is synonymous with long-term, sustainable commercial success.</p> <p>Over the decades, we have evolved into a top automotive supplier with our products for chassis, car body, and powertrain. With new lightweight products, materials, and production technologies, we work closely together with our customers and scientific institutions to offer innovative solutions for lighter vehicles. We develop trailblazing new products that set international standards.</p> <p>It is our philosophy to develop new production technologies in house. We are therefore able to react flexibly to our customers’ requests. Engineering our own tools and facilities is at the heart of this strategy.</p> <p>As an owner operated family company, which that enjoys a high level of flexibility, short chains of command and a long-term strategy, we employ more than 15,000 people at 48 locations in 19 countries.</p>
<b>Chosen consolidation approach (equity share, operational control or financial control)</b>	Production sites of fully consolidated companies worldwide.
<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>Mubea reports scope 1 and scope 2 emissions from all production sites worldwide.</p> <p>Scope 3 emissions are reported for all Mubea 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 Mubeas’s stake.</p>
<b>The reporting period covered</b>	01/01/2021 -12/31/2021
<b>A list of activities <u>included</u> in the inventory</b>	<p><b>Scope 1:</b></p> <ul style="list-style-type: none"> <li>• Category 1: Direct emissions stationary</li> <li>• Category 2: Direct emissions mobile</li> </ul> <p><b>Scope 2:</b></p> <ul style="list-style-type: none"> <li>• Category 1: Indirect emissions electricity</li> </ul> <p><b>Scope 3:</b></p>

Descriptive information	Company response
	<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 generated in operations</li> <li>• Category 6: Business travel</li> <li>• Category 7: Employee commuting</li> </ul>
<p><b>A list of activities <u>excluded</u> from the report with justification for their exclusion</b></p>	<p><b>Scope 1:</b></p> <ul style="list-style-type: none"> <li>• Category 3: Direct emissions of gas These emissions are not reported as they are considered irrelevant for Mubea.</li> <li>• Category 4: Direct emissions from process Not relevant for Mubea.</li> </ul> <p><b>Scope 2:</b></p> <ul style="list-style-type: none"> <li>• Category 2: Indirect emissions cooling and heating Mubea does not consume heating and cooling energy.</li> <li>• Category 3: Indirect emissions steam Mubea does not consume steam.</li> </ul> <p><b>Scope 3:</b></p> <ul style="list-style-type: none"> <li>• Category 8: Upstream leased assets Not relevant for Mubea. We consider under upstream leased assets the emissions, which are out of our Scope 1 &amp; 2 reporting scope (locations &lt;50 employees and without an environmental management system on site). These locations are office buildings for sales &amp; development or small warehouses. We assume them to be rented for this calculation. According to HR reporting 1%, employees are not covered in the Scope 1 &amp; 2 footprint accounting for approx. 4,100 tons CO<sub>2</sub>e. CO<sub>2</sub> footprint 2019 410,000 t CO<sub>2</sub>e with 99% coverage. 100% -&gt; 414,100 t CO<sub>2</sub>e. Acc. definition, less than 5% is not considered significant and 4.100 tons CO<sub>2</sub>e is not considered as relevant by Mubea.</li> <li>• Category 9 to 12: (Category 9: Downstream transportation and distribution, Category 10: Processing of sold products, Category 11: Use of sold products, Category 12: End-of-life treatment of sold products) As Mubea supplies more than 95% of the sales volume to automotive industry we do not consider these impacts as they are already focused on by our customers and governmental regulations.</li> <li>• Category 13: Downstream leased assets Not relevant for Mubea.</li> </ul>

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Descriptive information	Company response
	<ul style="list-style-type: none"> <li>• Category 14: Franchises Not relevant, Mubea does not own or operate franchises.</li> <li>• Category 15: Investments Not relevant for Mubea</li> </ul>
<b>Once a base year has been established, the year chosen as base year and rationale for choosing the base year</b>	For scope 1, 2 and 3 the base year 2019 was chosen in context of our strategy for carbon neutrality called “Make Mubea Green”, because this was a typical year for Mubea.
<b>Once a base year has been established, emissions in the base year</b>	Scope 1, 2 and 3: Base year is 2019.
<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>	Scope 1, 2 and 3: The base year’s emissions are recalculated for this GHG Report 2021. Considered are changes in the company structure (e.g. M&A) as well as refinements (e.g. emission factors).

### 3. Greenhouse gas emissions data

#### 3.1 Corporate Carbon Footprint 2021

Scopes and categories	Metric tons CO2e	Percentage of emissions
<b>Scope 1: Direct emissions from owned/controlled operations</b>		
1 Direct emissions stationary	97,116	4%
2 Direct emissions mobile	3,200	0%
<b>Scope 2, location-based: Indirect emissions from the use of purchased electricity, steam, heating, and cooling<sup>3</sup></b>		
1 Indirect emissions electricity	313,603	n/a
<b>Scope 2, market-based: Indirect emissions from the use of purchased electricity, steam, heating, and cooling</b>		
1 Indirect emissions electricity	260,954	10%
<b>Upstream scope 3 emissions</b>		
1 Purchased goods and services	2,180,547	80%
2 Capital goods	78,688	3%
3 Fuel- and energy-related activities (not included in scope 1 or scope 2)	60,616	2%
4 Upstream transportation and distribution	38,755	1%
5 Waste generated in operations	517	0%
6 Business travel	3,817	0%
7 Employee commuting	14,027	1%
<b>Total CO2e-emissions</b>		
Offsetting	0	-0%
<b>Total CO2e-emissions after offsetting</b>		
	<b>2,738,217</b>	

<sup>1</sup>Emissions data calculated using company-specific data.

<sup>2</sup>Emissions data calculated using: secondary, extrapolated and proxy data. See Table 7.4 on page 72 of the GHG Protocol Scope 3 Standard for examples of primary and secondary data.

### 3.2 Progress of Corporate Carbon Footprint

Scopes and categories	2021	2019 <sup>1</sup> (Base year)	Progress
<b>Scope 1: Direct emissions from owned/controlled operations</b>			
1 Direct emissions stationary	97,116	99,745	-3%
2 Direct emissions mobile	3,200	4,200	-24%
<b>Scope 2, location-based: Indirect emissions from the use of purchased electricity, steam, heating, and cooling<sup>2</sup></b>			
1 Indirect emissions electricity	313,603	320,524	-2%
<b>Scope 2, market-based: Indirect emissions from the use of purchased electricity, steam, heating, and cooling</b>			
1 Indirect emissions electricity	260,954	305,609	-15%
<b>Upstream scope 3 emissions</b>			
1 Purchased goods and services	2,180,547	2,371,562	-8%
2 Capital goods	78,668	76,775	+2%
3 Fuel- and energy-related activities (not included in scope 1 or scope 2)	60,616	43,487	+39%
4 Upstream transportation and distribution	38,755	38,818	0%
5 Waste generated in operations	517	911	-43%
6 Business travel	3,817	26,000	-85%
7 Employee commuting	14,027	17,576	-20%
<b>Total CO2e-emissions</b>	<b>2,738,217</b>	<b>2,984,683</b>	<b>-8%</b>
Offsetting	0	0	-0%
<b>Total CO2e-emissions after offsetting</b>	<b>2,738,217</b>	<b>2,984,683</b>	<b>-8%</b>

<sup>1</sup>Emissions data re-calculated compared to previous GHG Report 2019

### 4. Biogenic carbon emissions

Not applicable to Mubea.

## 5. Description of 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>Scope 1 emissions</b>		
<b>Category 1</b> <u>Direct emissions stationary</u>	<b>Activity data (primary data):</b> The consumption of natural gas is reported by each plant of the Mubea group and aggregated. <b>Emissions factors (secondary data):</b> Emission factor for gas was taken from the German emission trading authority (DEHSt) for the whole Mubea group.	The GHG emissions of direct emissions stationary are reported by each Mubea plant. The sum is multiplied with the emission factor for natural gas.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Very Good 0%
<b>Category 2</b> <u>Direct emissions mobile</u>	<b>Activity data (primary data):</b> The consumption of fuel for company cars and forklifts was calculated based on refueling bills for the Mubea group. <b>Emissions factors (secondary data):</b> Emission factors for fuels	The GHG emissions of direct emissions mobile are reported by each Mubea plant. The sum is multiplied with the emission factor for fuels.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
<b>Scope 2 emissions, location-based</b>		
<b>Category 1</b> <u>Indirect emissions electricity</u>	<b>Activity data (primary data):</b> The consumption of electricity is reported by each plant of the Mubea group. <b>Emissions factors (secondary data):</b> Emission factors for electricity were taken from the German emission trading authority (DEHSt) for each country of the plants.	The indirect GHG emissions of consumption of electricity were calculated by multiplying each plants consumption by the location-based emission factors from the DEHSt.  GHG Scope 2 emissions location-based were calculated for reference, but not included into the total sum of emissions as market-based Scope 2 emissions are more accurate.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Very Good 0%
<b>Scope 2 emissions, market-based</b>		
<b>Category 1</b> <u>Indirect emissions electricity</u>	<b>Activity data (primary data):</b> The consumption of electricity is reported by each plant of the Mubea group.	The indirect GHG emissions of consumption of electricity were calculated by multiplying each plants consumption by the

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
	<p><b>Emissions factors (secondary data):</b> Emission factors for electricity were provided by suppliers (market-based). In case of missing feedback, the location-based emission factor was taken from the German emission trading authority (DEHSt) for each country of the plants.</p>	<p>emission factors from their electricity suppliers if provided (85% market-based).</p>
<p>Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners</p>		<p>Very Good 85%</p>
<p><b>Upstream scope 3 emissions</b></p>		
<p><b>Category 1</b> <u>Purchased goods and services</u></p>	<p><b>Activity data (primary data):</b> Weights of raw material and purchased components. Monetary purchase volume of other purchased components and services.</p> <p><b>Emissions factors (secondary data):</b> Cradle to gate data for steel based materials provided by suppliers – if available – provided or compared to other secondary databases/studies and verified as much as possible from Mubea Corporate Research &amp; Engineering department. Cradle to gate data for non-steel purchased raw materials from German government: Bundesamt für Wirtschaft und Ausfuhrkontrolle, Informationsblatt CO<sub>2</sub>-Faktoren, 2021.</p> <p>Supply chain emission factors for spending on other goods/components and services were obtained from the Quantis Scope 3 Evaluator, a free scope 3 screening tool developed in cooperation with GHG Protocol and suggested by the Science Based Targets Initiative. According to their documentation of methodologies, for any purchase types identified by the user as Standard Good or Service, the sector of purchase chosen by the user is linked to a 2009 world multiregional estimate of average environmental impacts by region-sector combined with global warming potential impact assessment (Timmer 2012, IPCC 2007).</p>	<p>The GHG emissions of our procured raw materials and precursor manufacturing at Mubeas’s suppliers’ facilities was evaluated 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 product group purchased, and then applied emission factors for the purchased products (by weight). 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.</p> <p>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 by the GHG conversion factors from Quantis Scope 3 Evaluator.</p>
<p>Description of the data quality of reported emissions*</p>		<p>Good</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
Percentage of emissions calculated using data obtained from suppliers or other value chain partners		0%
<b>Category 2</b> <u>Capital goods</u>	<b>Activity data (primary data):</b> Monetary purchasing volumes of capital goods purchased in the reporting year were obtained from Mubeas’s internal business data management systems. <b>Emissions factors (secondary data):</b> Supply chain emission factors for spending on capital goods were obtained from the Quantis Scope 3 Evaluator, a free scope 3 screening tool developed in cooperation with GHG Protocol and suggested by the Science Based Targets Initiative. Acc. to their documentation of methodologies ,for any purchase types identified by the user as Capital Good (regardless of Direct Procurement or Indirect Procurement), the identified sector of purchase points to a 2009 world multiregional estimate of average environmental impacts by region-sector combined with global warming potential impact assessment (Timmer 2012, IPCC 2007).	The GHG emissions that are associated with Mubea’s capital goods were estimated based on technical procurement and building management spending. Each sub-segment was assigned a corresponding conversion factors for greenhouse gas emissions based on the Quantis Scope 3 Evaluator. The amount of spending was then subsequently added up to the total GHG emissions from capital goods.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
<b>Category 3</b> <u>Fuel- and energy-related activities (not included in scope 1 or scope 2)</u>	<b>Activity data (primary data):</b> The quantities of fuel and energy (electricity and gas) purchased in the reporting year were obtained from Mubea’s MEEP reporting. <b>Emissions factors (secondary data):</b> The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2021	The GHG emissions of extraction, refining and transportation were calculated from the consumption of electricity and natural gas per Mubea plant multiplied by the DEFRA 2021 Well-to-tank (WTT) conversion factors. Average factors used. For our gas emissions it is fuels – natural gas. For electricity the sum of generation and T&D as suggested by the standard.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
<b>Category 4</b> <u>Upstream transportation and distribution</u>	<b>Activity data (primary data):</b> Movement data were tracked per carrier, tonnage, distance and quantities through Mubea’ transport desk. <b>Emissions factors (secondary data):</b>	The GHG emissions associated with the upstream transportation and distribution were calculated by movement data of all Mubea paid transports. The tonnage mileage per carrier was multiplied with the DEFRA 2021 emission factors

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
	The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2021	Freighting goods for each type of transportation. Air transportation emissions factor includes the RF effects.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
<b>Category 5</b> <u>Waste generated in operations</u>	<b>Activity data (primary data):</b> The quantities of waste and waste water generated during production at Mubea production sites were obtained from the in-house KPI-EE Reporting.  <b>Emissions factors (secondary data):</b> The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2021	The GHG emissions were calculated from the volumes for water supply, waste water, dangerous and non-dangerous waste of the Mubea production plants as reported on a monthly basis. They were then multiplied with the DEFRA 2021 Water supply, Water treatment and Waste disposal emission factors. Waste disposal emissions factors is type Combustion.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
<b>Category 6</b> <u>Business travel</u>	<b>Activity data (primary data):</b> Travel data were tracked per air travel distance (differentiated between flight classes), car travel distance and nights stayed in hotels (differentiated between countries)  <b>Emissions factors (secondary data):</b> The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2021	The GHG emissions associated with the business travel were calculated by travel data of all Mubea employees. For air travel our data differentiated between economy, premium economy and business classes. Furthermore travel distances a grouped for in-country, continental and inter-continental travels. The resulting sum of total flight kilometers for each category is then multiplied by their respective DEFRA 2021 business travel – air factors (including RF effects). For car travel the total distance is multiplied with the DEFRA 2021 business travel – land factor. For emission caused by hotel stays business travels are grouped according to their country of destination. The number of night stays is calculated by the total sum of business travel days minus number of business travels for each country. The number of nights is then multiplied by the DEFRA 2021 Hotel stay factors acc. to the country.
Description of the data quality of reported emissions Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%

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>Category 7</b> <b>Employee commuting</b>	<b>Activity data (primary data):</b> Number of employees per region, average commuting distance, number of work days per region and average rate of attendance at work (difference to mobile working) was used. <b>Emission factors (secondary data):</b> Region specific CO2e emissions factors transportation were taken from UK Government GHG Conversion Factors for Company Reporting, 2021. Validity check with benchmark data from other companies broken down per employee.	GHG emissions from employee commuting were separated between the 4 major Mubea regions: Europa, Asia, North America (NA) and South America (SA). Total number of employees per region was then multiplied with the average commuting distance to work, the number of work days in a year and the rate of attendance (which was lower due to short work and enforcement of mobile working during the COVID-19 pandemic). The calculation expresses the total distance travelled by all employees from a region in the year. These total distances were then multiplied by the DEFRA CO2e emissions factors transportation.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Fair 0%

## 6. Appendix

### A. Evaluation of the data quality indicators

Score	Representativeness to the activity in terms of:				Completeness	Reliability
	Technology	Time	Geography			
<b>Very good</b>	Data generated using the same technology	Data with less than 3 years of difference	Data from the same area		Data from all relevant sites over an adequate time period to even out normal fluctuations	Verified <sup>3</sup> data based on measurements <sup>4</sup>
<b>Good</b>	Data generated using a similar but different technology	Data with less than 6 years of difference	Data from a similar area		Data from more than 50 percent of sites for an adequate time period to even out normal fluctuations	Verified data partly based on assumptions or non-verified data based on measurements
<b>Fair</b>	Data generated using a different technology	Data with less than 10 years of difference	Data from a different area		Data from less than 50 percent of sites for an adequate time period to even out normal fluctuations or more than 50 percent of sites but for a shorter time period	Non-verified data partly based on assumptions, or a qualified estimate (e.g. by a sector expert)
<b>Poor</b>	Data where technology is unknown	Data with more than 10 years of difference or the age of the data are unknown	Data from an area that is unknown		Data from less than 50 percent of sites for shorter time period or representativeness is unknown	Non-qualified estimate