Mubea

climate positive by 2035

Greenhouse Gas Report 2022

Content

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
Name of the company	Mubea KG
Description of the company	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. 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. 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. 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.
Chosen consolidation approach (equity share, operational control or financial control)	Operational control: Production sites of fully consolidated companies worldwide.
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)	Mubea reports scope 1 and scope 2 emissions from all production sites worldwide. 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 reporting period covered	01/01/2022 -12/31/2022
A list of activities <u>included</u> in the inventory	**Scope 1:** • Category 1: Direct emissions stationary • Category 2: Direct emissions mobile **Scope 2:** • Category 1: Indirect emissions electricity (market-based) • Category 1: Indirect emissions electricity (location-based) **Scope 3:** • Category 1: Purchased goods & services • Category 2: Capital goods

Descriptive information	Company response
	• Category 3: Fuel- and energy-related activities (not incl. in Scope 1 or 2) • Category 4: Upstream transportation and distribution • Category 5: Waste generated in operations • Category 6: Business travel • Category 7: Employee commuting • Category 8: Upstream leased assets • 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 • Category 13: Downstream leased assets • Category 14: Franchises • Category 15: Investments
A list of activities excluded from the report with justification for their exclusion	**Scope 1:** • Category 3: Direct emissions of gas These emissions are not reported as they are considered irrelevant for Mubea. • Category 4: Direct emissions from process Not relevant for Mubea. **Scope 2:** • Category 2: Indirect emissions cooling and heating Mubea does not consume heating and cooling energy. • Category 3: Indirect emissions steam Mubea does not consume steam.
Once a base year has been established, the year chosen as base year and rationale for choosing the base year	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.
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	Scope 1, 2 and 3: The base year’s emissions are recalculated for this GHG Report 2022. 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 2022

Scopes and categories	Metric tons CO2e	Percentage of emissions
Scope 1		
1 Direct emissions stationary	**96,011**	**3%**
2 Direct emissions mobile	**2,020**	**0%**
Scope 2, market-based		
1 Indirect emissions electricity	**109,904**	**3%**
Upstream scope 3 emissions		
1 Purchased goods and services	**1,900,743**	**58%**
2 Capital goods	**76,396**	**2%**
3 Fuel- and energy-related activities	**45,427**	**1%**
4 Upstream transportation and distribution	**43,460**	**1%**
5 Waste generated in operations	**592**	**0%**
6 Business travel	**2,300**	**0%**
7 Employee commuting	**15,333**	**1%**
8 Upstream leased assets	**0**	**0%**
Downstream scope 3 emissions		
9 Downstream transportation and distribution	**141,055**	**4%**
10 Processing of sold products	**285,382**	**9%**
11 Use of sold products: Direct use-phase	**577,470**	**17%**
12 End-of-life treatment of sold products	**16,791**	**1%**
13 Downstream leased assets	**0**	**0%**
14 Franchises	**0**	**0%**
15 Investments	**0**	**0%**
Total CO2e-emissions	**3,312,884**	
Offsetting	**0**	**-0%**
Total CO2e-emissions after offsetting	**3,312,884**	

Scope 2, location-based	
1 Indirect emissions electricity	**320,874**

3.2 Progress of Corporate Carbon Footprint

Scopes and categories	Metric tons CO2e 2022	Metric tons CO2e 2019 (Base Year)	Progress
Scope 1			
1 Direct emissions stationary	**96,011**	**100,742**	**-5%**
2 Direct emissions mobile	**2,020**	**3,232**	**-38%**
Scope 2, market-based			
1 Indirect emissions electricity	**109,904**	**308,666**	**-64%**
Scope 1&2 emissions	**207,935**	**412,640**	**-50%**
Upstream scope 3 emissions			
1 Purchased goods and services	**1,900,743**	**2,275,224**	**-16%**
2 Capital goods	**76,396**	**76,775**	**0%**
3 Fuel- and energy-related activities	**45,427**	**43,922**	**+3%**
4 Upstream transportation and distribution	**43,460**	**48,265**	**-10%**
5 Waste generated in operations	**592**	**911**	**-35%**
6 Business travel	**2,300**	**18,000**	**-87%**
7 Employee commuting	**15,333**	**17,576**	**-13%**
8 Upstream leased assets	**0**	**0**	**0%**
Scope 1-3 Upstream emissions	**2,292,186**	**2,893,313**	**-21%**
Downstream scope 3 emissions			
9 Downstream transportation and distribution	**141,055**	**205,405**	**-31%**
10 Processing of sold products	**285,382**	**331,231**	**-14%**
11 Use of sold products: Direct use-phase	**577,470**	**665,890**	**-13%**
12 End-of-life treatment of sold products	**16,791**	**17,936**	**-6%**
13 Downstream leased assets	**0**	**0**	**0%**
14 Franchises	**0**	**0**	**0%**
15 Investments	**0**	**0**	**0%**
Total CO2e-emissions	**3,312,884**	**4,113,775**	**-19%**
Offsetting	**0**	**0**	**0%**
Total CO2e-emissions after offsetting	**3,312,884**	**4,113,775**	**-19%**

4 Science Based Targets

4.1 Target Definition

In April 2023 Mubea joined the Science Based Targets initiative (SBTi).

The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI), and the World Wide Fund for Nature (WWF). It has in recent years become one of the leading climate action frameworks in the corporate sector by providing companies a framework to align themselves with climate science and the goals set in the Paris Agreement.

Mubea is a member of the 1.5°C campaign and committed to the following 4 targets:

Near-Term Targets (2030)

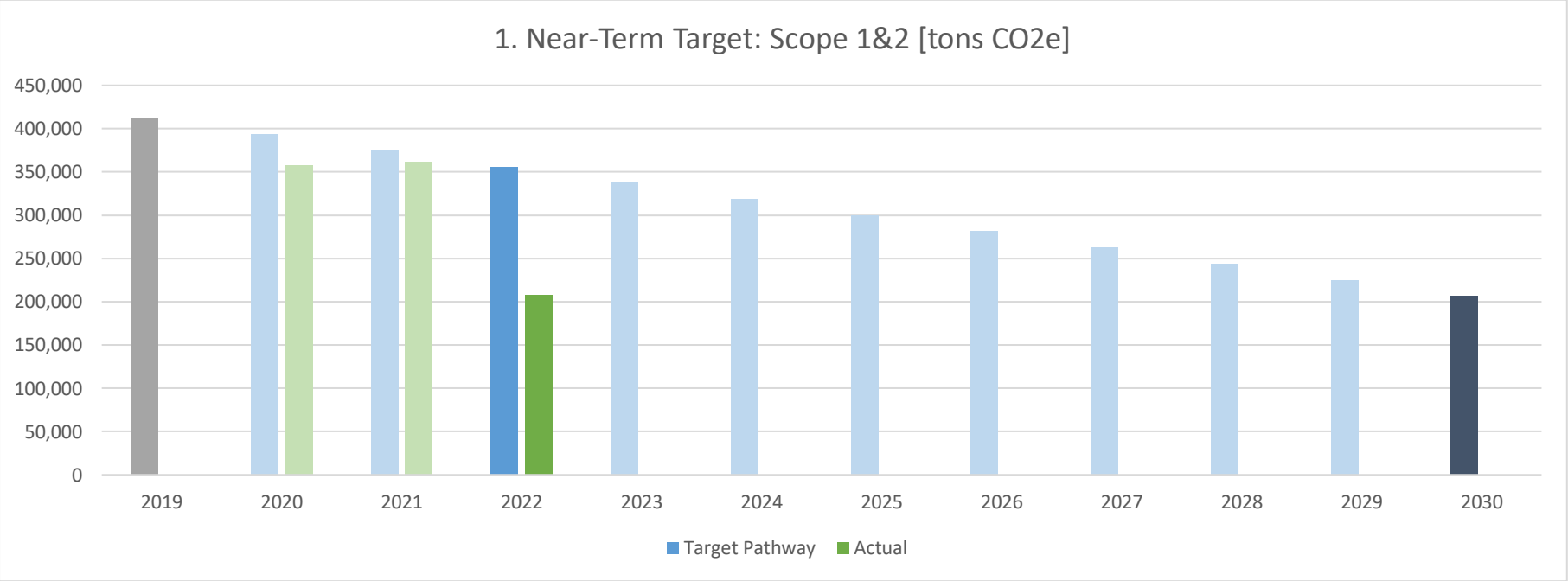
1. Muhr und Bender KG commits to reduce absolute scope 1 and 2 GHG emissions 50% by 2030 from a 2019 base year.
2. Muhr und Bender KG also commits to increase annual sourcing of renewable electricity from 2% in 2019 to 100% by 2030.
3. Muhr und Bender KG further commits to reduce scope 3 GHG emissions from purchased goods and services, capital goods, fuel and energy related activities, upstream transportation and distribution, waste generated in operations, business travel, employee commuting and upstream leased assets 57.5% per amount of procured raw materials within the same timeframe.

Long-Term Target (2035)

4. Muhr und Bender KG commits to reduce absolute scope 1, 2 and 3 GHG emissions 90% by 2035 from a 2019 base year.

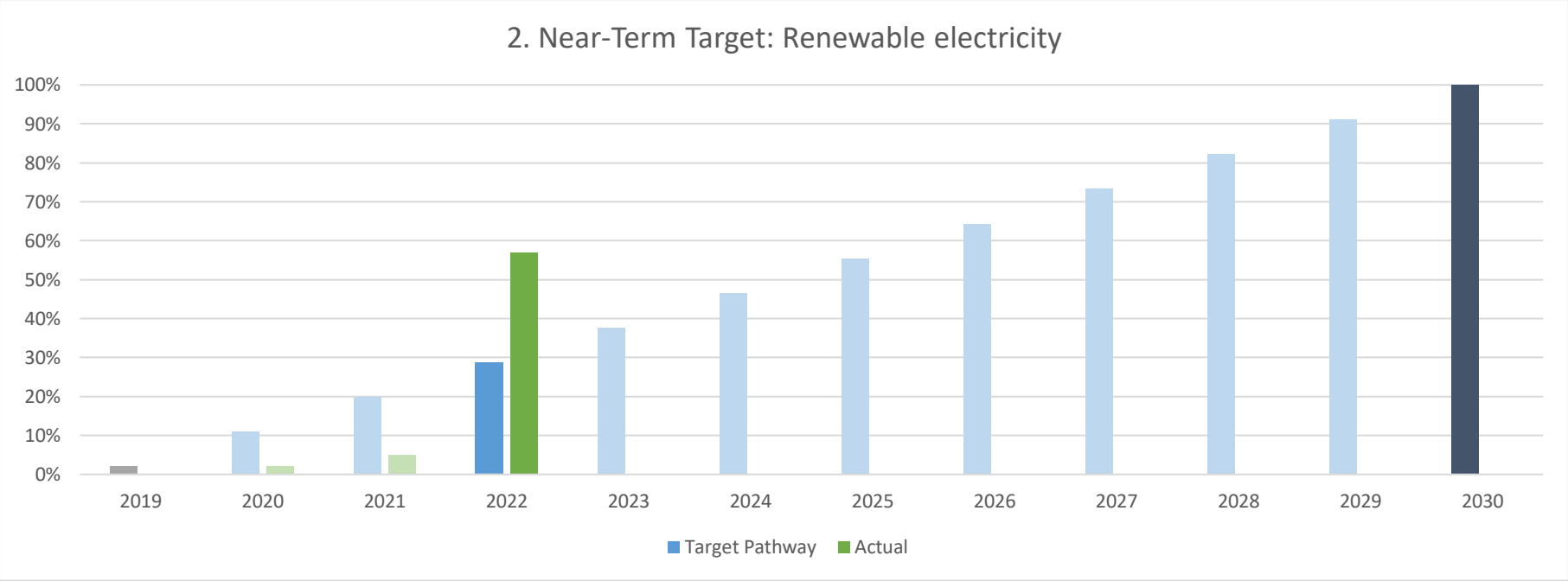
4.2 Target Pathway

We review our climate target performance by mapping a linear pathway from the base year to our near-term target years.



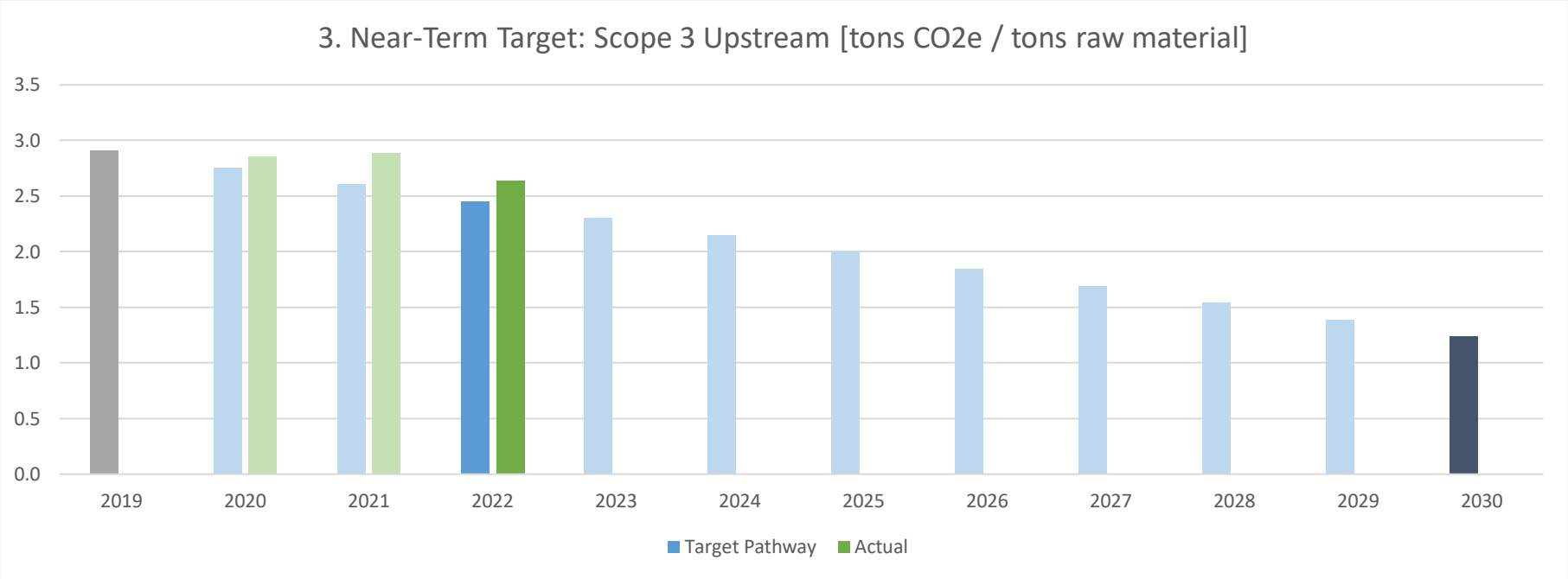
Scopes and categories	Metric tons CO2e 2019 (Base Year)	Metric tons CO2e Pathway 2022	Metric tons CO2e Actual 2022	Metric tons CO2e 1. Target 2030
Scope 1				
1 Direct emissions stationary	**100,742**		**96,011**	
2 Direct emissions mobile	**3,232**		**2,020**	
Scope 2, market-based				
1 Indirect emissions electricity	**308,666**		**109,904**	
Scope 1&2 emissions	**412,640**	**356,371**	**207,935**	**206,320**

In 2022 Mubea overachieved its linear pathway target of 359,371 tons of Scope 1&2 CO2e emissions with a total amount of 207,935 tons of CO2e emissions. We managed this by increasing the share of procured renewable electricity and consequently reducing our Scope 2 market-based emissions significantly. But to reach our 1. Near-term target by 2030 reducing Scope 2 emissions won't be sufficient, due to the planned company growth and therefore expected increase of Scope 1 CO2e emissions. We started the electrification of our gas-powered processes.



Scopes and categories	Share 2019 (Base Year)	Share Pathway 2022	Share Actual 2022	Share 2. Target 2030
Scope 2, market based				
Annual sourcing of renewable electricity	**2%**	**29%**	**57%**	**100%**

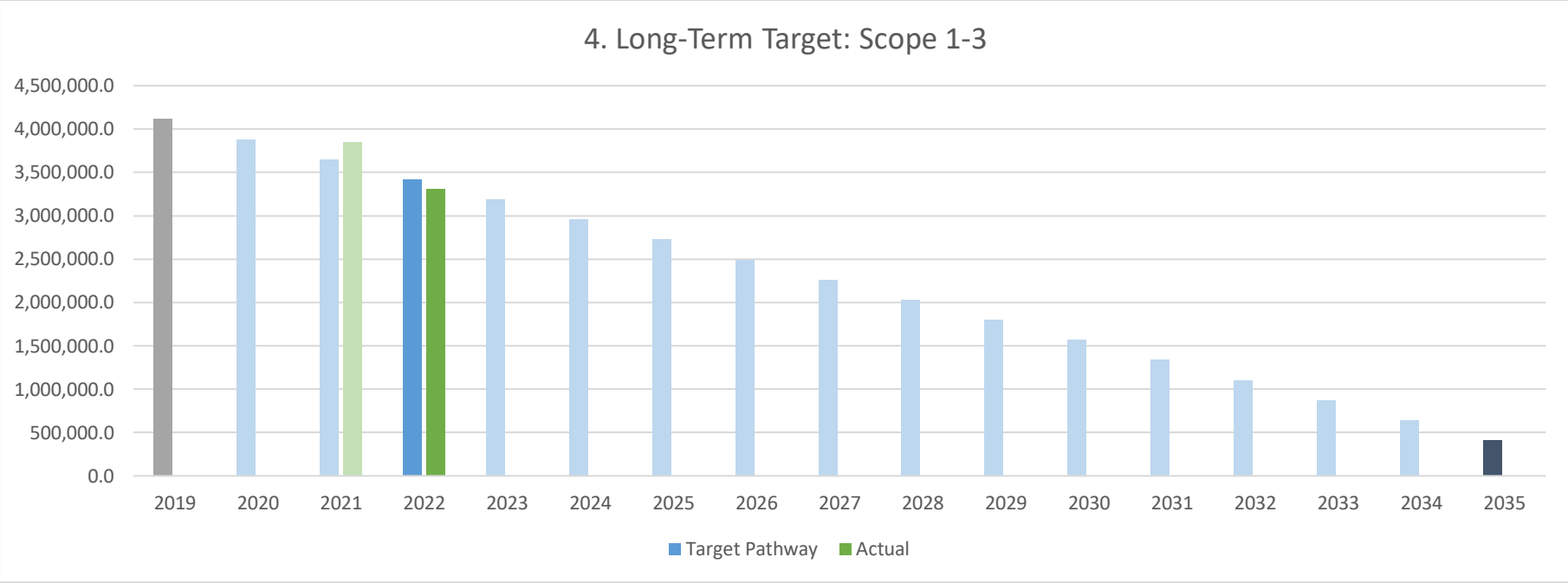
In 2022 we overachieved the linear pathway target of 29% renewable electricity with a total amount of 57% share of renewable electricity. We managed this by securing renewable electricity certificates for our locations in Germany, Czech Republic and the US. We also invested in wind turbines for the self-generation of renewable electricity in Germany, covering around 30% or our regional electricity demand. We are continuously re-evaluating opportunities for self-generation and our timeline for purchasing certificates, expecting to reach our 2. Near-term target earlier by 2030.



Scopes and categories	CO2e / Raw material 2019 (Base Year)	CO2e / Raw material Pathway 2022	CO2e / Raw material Actual 2022	CO2e / Raw material 3. Target 2030
1 Purchased goods and services	**2.74**		**2.46**	
2 Capital goods	**0.09**		**0.10**	
3 Fuel- and energy-related activities	**0.05**		**0.06**	
4 Upstream transportation and distribution	**0.06**		**0.06**	
5 Waste generated in operations	**0.00**		**0.00**	
6 Business travel	**0.02**		**0.00**	
7 Employee commuting	**0.02**		**0.02**	
8 Upstream leased assets	**0.00**		**0.00**	
Scope 3 Upstream emissions	**2.91**	**2.45**	**2.64**	**1.24**

Our 3. Near-term target is the reduction of Scope 3 Upstream GHG emissions per purchased ton of raw materials. We settled for an intensity climate target due to the ambitious company growth targets combined with the technological challenges to decarbonize processes through the supply chain.

In 2022 we did not reach the linear pathway target of 2.45 tons of CO2e emissions per purchased ton of raw materials with a values of 2.64. As expected we face challenges regarding the decarbonization through the supply chain especially regarding the steel manufacturing processes.



Scopes and categories	Metric tons CO2e 2019 (Base Year)	Metric tons CO2e Pathway 2022	Metric tons CO2e Actual 2022	Metric tons CO2e 4. Target 2035
Total CO2e-emissions	**4,113,775**	**3,419,575**	**3,312,884**	**411,378**

We started monitoring all GHG emissions (incl. Scope 3 Downstream emissions) since 2021 and only re-calculated the values for our base year 2019.

In 2022 we overachieved the linear pathway target of 3,419,575 tons of CO2e emissions with a total amount of 3,312,884 tons of CO2e emissions. We managed this mainly by reducing our Scope 2 emissions (-64%), the Scope 3 Upstream emissions (-16%) and the Scope 3 Downstream emissions (-17%). Scope 1 emissions will be reduced by electrification of heat-treatment processes, Scope 2 by purchasing or self-generation of renewable energy, Scope 3 Downstream will be reduced naturally due to the increase of electric-powered vehicles. The biggest challenge remains the reduction of Scope 3 Upstream emissions.

5 Biogenic carbon emissions

Not applicable to Mubea.

6 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
Scope 1 emissions		
Category 1 **Direct emissions stationary**	**Activity data (primary data):** The consumption of natural gas is tracked and reported by each plant of the Mubea group and aggregated. **Emissions factors (secondary data):** Emission factor for gas is reported by each plant of the Mubea group based on the information from their gas provider.	The direct GHG emissions of consumption of natural gas were calculated by multiplying each plants consumption by their gas emission factor provided by their supplier. We include an uncertainty of +1% due to locations without energy reporting (<50 employees and without an environmental management system on site). These locations are office buildings for sales & development as well as small warehouses. According to HR reporting, 1% employees fall under this category. We therefore assume, that approximately 1% or our Scope 1&2 emissions are not recorded by the energy department and need to be calculated in addition.
Description of the data quality of reported emissions* **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Very Good 100%
Category 2 **Direct emissions mobile**	**Activity data (primary data):** The consumption of fuel for company cars, forklifts, etc. was calculated based on refueling bills for the Mubea group. **Emissions factors (secondary data):** Emission factors for fuels from the German emission trading authority (DEHSt).	The GHG emissions of direct emissions mobile are reported by each Mubea plant. The sum is multiplied with the emission factor for fuels. We include an uncertainty of +1% due to locations without energy reporting (<50 employees and without an environmental management system on site). These locations are office buildings for sales & development as well as small warehouses.

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
		According to HR reporting, 1% employees fall under this category. We therefore assume, that approximately 1% or our Scope 1&2 emissions are not recorded by the energy department and need to be calculated in addition.
Description of the data quality of reported emissions* **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Good 0%
Scope 2 emissions, location-based		
Category 1 **Indirect emissions electricity**	**Activity data (primary data):** The consumption of electricity is reported by each plant of the Mubea group. **Emissions factors (secondary data):** 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. We include an uncertainty of +1% due to locations without energy reporting (<50 employees and without an environmental management system on site). These locations are office buildings for sales & development as well as small warehouses. According to HR reporting, 1% employees fall under this category. We therefore assume, that approximately 1% or our Scope 1&2 emissions are not recorded by the energy department and need to be calculated in addition. 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%
Scope 2 emissions, market-based		
Category 1 **Indirect emissions electricity**	**Activity data (primary data):** The consumption of electricity is reported by each plant of the Mubea group. **Emissions factors (secondary data):** Emission factors for electricity were provided by suppliers (market-based). In case of missing feedback, the location-	The indirect GHG emissions of consumption of electricity were calculated by multiplying each plants consumption by the emission factors from their electricity suppliers if provided (85% market-based).

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
	based emission factor was taken from the German emission trading authority (DEHSt) for each country of the plants.	We include an uncertainty of +1% due to locations without energy reporting (<50 employees and without an environmental management system on site). These locations are office buildings for sales & development as well as small warehouses. According to HR reporting, 1% employees fall under this category. We therefore assume, that approximately 1% or our Scope 1&2 emissions are not recorded by the energy department and need to be calculated in addition.
Description of the data quality of reported emissions* **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Very Good 85%
Annual sourcing of renewable electricity	**Activity data (primary data):** The consumption of electricity is reported by each plant of the Mubea group. **Renewable factors (secondary data):** Renewable factors for electricity were provided by the central energy department, which coordinates purchases and building of renewable energy.	The share of annual sourcing of renewable electricity is calculated by the total electric energy consumption in sites covered by self-generated or purchased renewable energy divided by the total consumption of electric energy. We consider under renewable energy sources only water, wind and solar powered plants (not nuclear power).
Description of the data quality of reported emissions* **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Very Good 100%
Upstream scope 3 emissions		
Category 1 **Purchased goods and services**	**Activity data (primary data):** Weights of raw material and purchased components. Monetary purchase volume of other purchased components and services. Both tracked and recorded by purchasing department. **Emissions factors (secondary data):** 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 & Engineering department.	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 CO2e emissions per kilogram of each product by the respective quantity of the product purchased to determine cradle-to-gate emissions.

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
	Cradle to gate data for non-steel purchased raw materials from German government: Bundesamt für Wirtschaft und Ausfuhrkontrolle, Informationsblatt CO2-Faktoren, 2022. 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).	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.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
Category 2 Capital goods	**Activity data (primary data):** Monetary purchasing volumes of capital goods purchased in the reporting year were obtained from Mubeas's internal business data management systems. **Emissions factors (secondary data):** 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.

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
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 0%
Category 3 Fuel- and energy-related activities (not included in scope 1 or scope 2)	**Activity data (primary data):** The quantities of fuel and energy (electricity and gas) purchased in the reporting year were obtained from Mubea's MEEP reporting. **Emissions factors (secondary data):** The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2022.	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 2022 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%
Category 4 Upstream transportation and distribution	**Activity data (primary data):** Movement data were tracked per carrier, tonnage, distance and quantities through Mubea' transport desk. **Emissions factors (secondary data):** The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2022.	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 2022 emission factors 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%
Category 5 Waste generated in operations	**Activity data (primary data):** The quantities of waste and waste water generated during production at Mubea production sites were obtained from the in-house KPI-EE Reporting. **Emissions factors (secondary data):** The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2022.	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 2022 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%
Category 6 Business travel	**Activity data (primary data):** Travel data were tracked per air travel distance (differentiated between flight classes) and car travel distance. **Emissions factors (secondary data):**	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-

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, 2022.	continental travels. The resulting sum of total flight kilometers for each category is then multiplied by their respective DEFRA 2022 business travel – air factors (including RF effects). For car travel the total distance is multiplied with the DEFRA 2022 business travel – land factor.
Description of the data quality of reported emissions **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Good 0%
Category 7 **Employee commuting**	**Activity data (primary data):** Number of employees per region and per workforce category (direct and indirect labor), average commuting distance, number of work days per region and average rate of attendance at work (difference to mobile working) was used. Numbers are provided by human resources department. **Emission factors (secondary data):** Region specific CO2e emissions factors transportation were taken from UK Government GHG Conversion Factors for Company Reporting, 2022. 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) due to their different total number of work days. We also evaluated direct and indirect employees differently, as home office is only available for indirect employees. 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. 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%
Category 8 **Upstream leased assets**	Mubea does not have leased assets.	
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%
Downstream scope 3 emissions		
Category 9 **Downstream transportation and distribution**	**Activity data (primary data):** Weights of raw material and purchased components, tracked and recorded by purchasing department. **Emission factors (secondary data):** Emission factors for Downstream transportation and distribution were derived from the Nonfinancial Report of the	GHG emissions from Downstream transportation and distribution were calculated by the tonnage of procured raw materials (as a substitute for delivery amount) multiplied with the total GHG emission factor for Up-and Downstream transportation and distribution minus our Upstream transportation and distribution GHG emissions factor.

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
	Volkswagen Group, 2022 – representative for our customer activities as our biggest partner.	Fortunately, the Volkswagen Group reported the GHG emission factor per vehicle for all Up- and Downstream transportation and distribution. By dividing this emission factor with the average weight of a vehicle, we get the GHG emissions factor per kg weight.
Description of the data quality of reported emissions* **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Fair 100%
Category 10 **Processing of sold products**	**Activity data (primary data):** Weights of raw material and purchased components, tracked and recorded by purchasing department. **Emission factors (secondary data):** Emission factors for processing of sold products were derived from the Nonfinancial Report of the Volkswagen Group, 2022 – representative for our customer activities as our biggest partner.	GHG emissions from further processing of our sold products were calculated by the tonnage of procured raw materials (as a substitute for delivery amount) multiplied with the average GHG emission factor from customers for finishing (e.g. assembly) of parts into a vehicle in relation to its weight. Customers – like Volkswagen Group – report their amount of Scope 1 & 2 emissions per vehicle. By dividing this emission factor with the average weight of a vehicle, we get the GHG emissions factors of our customers processing steps per kg weight.
Description of the data quality of reported emissions* **Percentage of emissions calculated using data obtained from suppliers or other value chain partners**		Fair 100%
Category 11 **Use of sold product:**	**Activity data (primary data):** Weights of drivetrain products sold to customers tracked and recorded by the project management & sales department of the business units. Drivetrain products consists of: belt tensioners, tubular shafts, transmission disc springs, separating springs and valve springs. We separated the weights in 5 vehicle types: Diesel/Petrol passenger vehicles, Hybrid passenger vehicles, Plug-In Hybrid Electric vehicles, Electric vehicles and Vans. **Emission factors (secondary data):** The emissions factors for the average emissions of the 5 listed vehicle types during their use-phases per kilometer were obtained from UK Government GHG Conversion Factors for	GHG emissions during use phase of sold products were calculated by the total tonnage of sold drivetrain products per vehicle category multiplied with the average GHG emission factor of a vehicle type in relation to its weight. In order to calculate the average GHG emission factor of a vehicle per mass, we multiplied the emissions factors of vehicles during their use phases per kilometer with the total driving distances divided with the average weight of a vehicle.

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
	Company Reporting, 2022. The average total driving distance of a vehicle during its life cycle and the average weight of a vehicle were obtained from the Kraftfahrt-Bundesamt, 2022. The resulted emission factor was validated against 1. External studies about weight effect on fuel consumptions 2. Information derived from Nonfinancial Report of the Volkswagen Group, 2022 – representative for our customer activities as our biggest partner. Both alternative approaches resulted in similar/ a little lower emission factors. We therefore settled for the highest/least favorable emission factors.	
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Good 100%
Category 12 End-of-life treatment of sold products	**Activity data (primary data):** Weights of raw material and purchased components, tracked and recorded by purchasing department. **Emission factors (secondary data):** The emissions factors were obtained from UK Government GHG Conversion Factors for Company Reporting, 2022.	The GHG emissions end-of-life treatment of our products were calculated by the tonnage of procured raw materials (as a substitute for delivery amount) multiplied with the disposal or closed-loop factors for respective materials.
Description of the data quality of reported emissions* Percentage of emissions calculated using data obtained from suppliers or other value chain partners		Fair 0%
Category 13 Downstream leased assets	Mubea does not have downstream leased assets.	
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%
Category 14 Franchises	Mubea does not own or operate franchises.	
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%
Category 15	Mubea does have investments not considered in other scopes of GHG emissions.	

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
Investments		
Description of the data quality of reported emissions*		Very Good
Percentage of emissions calculated using data obtained from suppliers or other value chain partners		0%

7 Appendix

A. Evaluation of the data quality indicators

Score	***Representativeness to the activity in terms of:***				
	Technology	***Time***	***Geography***	***Completeness***	***Reliability***
Very good	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[3] data based on measurements[4]
Good	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
Fair	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)
Poor	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