Mercedes-Benz Group

360° ENVIRONMENTAL CHECK MERCEDES-BENZ C-CLASS WITH EQ TECHNOLOGY

Life cycle COMPACT

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Where to?
22.0
CANCEL

360° Environmental check Mercedes-Benz C-Class with EQ technology

Developed from scratch as a battery electric vehicle (BEV), the new electric C-Class is the next logical step in Mercedes-Benz's electrification strategy in the midsize segment.

The C-Class has been one of Mercedes-Benz's most important model series for decades and is synonymous with comfort, value appeal, and vehicle dynamics in the midsize segment. The portfolio is now being expanded to include a battery-electric variant that produces zero local CO_2 emissions while driving. The market launch will take place with the C 400 4MATIC with EQ technology (combined energy consumption: 18.5 – 14.1 kWh/100 km; combined CO_2 emissions: 0 g/km; CO_2 class: A)[1].

Among the technological highlights are the 800-volt architecture and the newly developed electric drive units. They form the basis for high efficiency and short charging times.

The high-voltage battery, with a usable energy content of 94 kWh, delivers an electric range of up to 762 km (WLTP)[2], making it well suited for both everyday driving and longer journeys. Thanks to its fast-charging capability, the vehicle can be recharged to deliver a range of up to 325 kilometers in just 10 minutes[3].

For the new C-Class with EQ technology, Mercedes-Benz is offering a vegan interior that has been certified by an independent organisation. To achieve this, the company relies on the expertise of the independent NGO The Vegan Society.

For the new C-Class, Mercedes-Benz Cars has also established quantitative interim targets for CO_2 emissions in the supply chains for production materials. The focus here is on materials and components that have high CO_2 emissions during production. These include steel, aluminum, certain plastics, and battery cells.

In this brochure we briefly summarise the results of the new Mercedes-Benz C-class LCA for you.

By the way: this brochure is available for download from http://group.mercedes-benz.com/.

[1] The specified values were determined in accordance with the WLTP (Worldwide harmonised Light vehicles Test Procedure) measurement method. The ranges given refer to ECE markets. The energy consumption and CO_2 emissions of a car depend not only on the efficient utilisation of the fuel or energy source by the car, but also on the driving style and other non-technical factors.

[2] The actual range depends on numerous factors, in particular the individual driving style, ambient conditions, the aging process of the battery, auxiliary consumers such as air conditioning, optional extras, tires, load and the route profile and can therefore deviate from the specified WLTP figure.

[3] The stated range (WLTP) after 10 minutes of charging was determined using the maximum DC charging power in accordance with ISO/SAE 12906 under the conditions described therein.

The facts

The Mercedes-Benz C 400 4MATIC 360° environmental check

- combined energy consumption: 18.5 – 14.1 kWh/100 km[4]
- electric range of 594 to 762 km (WLTP)[5]
- vegan interior (optional)
- Renewable Charging as part of MB.CHARGE Public

[4] The specified values were determined in accordance with the WLTP (Worldwide harmonised Light vehicles Test Procedure) measurement method. The ranges given refer to ECE markets. The energy consumption and CO_2 emissions of a car depend not only on the efficient utilisation of the fuel or energy source by the car, but also on the driving style and other non-technical factors.
[5] The actual range depends on numerous factors, in particular the individual driving style, ambient conditions, the aging process of the battery, auxiliary consumers such as air conditioning, optional extras, tires, load and the route profile and can therefore deviate from the specified WLTP figure.
[6] Reduction compared to the production without CO_2 reduction measures

CO_2-reduction by around 23 % in the supply chain[6]

CO_2 reduction of the high-voltage battery cell by around 40 percent through the use of electricity from renewable energies

Around two-thirds of the aluminum from electrolysis plants using renewable energies or with increased recycled content.

About 45 kg of steel from electric arc furnaces, produced with electricity from renewable energies

49 kg of thermoplastic recyclate. Exemplary components and their corresponding recycled content are as follows:

- Frunk tub 50 %
- Wheel arch liners 93 %
- Jack receptacles 100 %
- Fleece and yarn in seat covers 34 % and 50 % respectively
- Base carrier of the bumper claddings 30 %

The resources: what is needed to produce a car

Achieve more with less

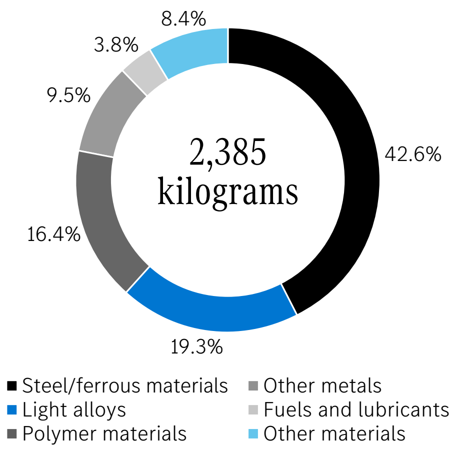
When it comes to the overall life cycle assessment[7], the C 400 4MATIC benefits from locally CO_2 emission-free operation and the high efficiency of the electric powertrain.

Material resources

In the case of the C 400 4MATIC, steel and ferrous materials account for the largest share of the materials at 42.6 %. They are followed by light alloys at 19.3 %, polymer materials at 16.4 %, and other metals (non-ferrous and special metals) at 9.5 %. Fuels and lubricants account for 3.8 %. The other materials (process polymers, electrics/electronics, etc.) account for 8.4 %.

The manufacture of the drive components for the C 400 4MATIC, which account for around one-third of the total vehicle mass, requires a substantial use of material and energy resources, making the production phase of the vehicle's life cycle more significant compared with conventional internal-combustion vehicles.

Mercedes-Benz C 400 4MATIC

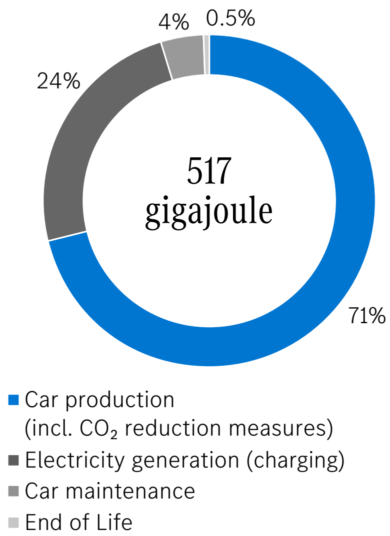


values are rounded

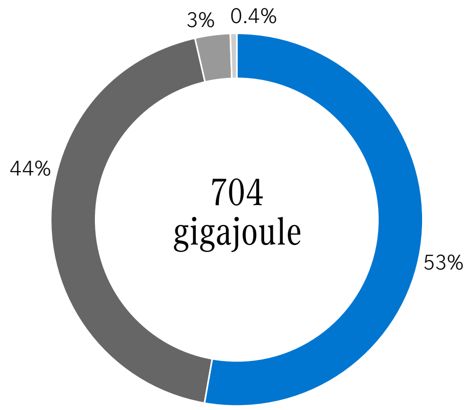
Energy resources

However, a comprehensive picture only emerges when the entire life cycle (material manufacturing, production, operation for 200,000 kilometres and end of life[8]) is examined. This is because during its operating phase, the C 400 4MATIC benefits from the high efficiency of the electric powertrain. For the life cycle of the C 400 4MATIC, two charging-current scenarios were examined: the EU electricity mix[9] and renewable electricity from hydropower[9].

Elctricity from hydropower



EU electricity mix



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The higher energy efficiency can be achieved by using electricity generated from renewable sources: for the entire C 400 4MATIC life cycle, the analysis here results in a primary energy demand of 517 GJ, of which 226 GJ come from fossil sources and 291 GJ from renewable sources. However, if the European electricity mix is used for charging, the primary energy requirement is significantly higher. In total over the entire life cycle, the primary energy demand here is 704 GJ.

[7] The environmental assessment covers the entire life cycle. Inbound/outbound logistics are not taken into account. The use phase of the base variant without optional equipment was calculated using an electricity consumption of 14.1 kWh/100 km. The end-of-life model exclusively includes the shredding process and the treatment of the shredder light fraction.
[8] No consideration of recycling credits for end of life accounting
[9] The LCA software and database (version: SP2026.1) by Sphera Solutions GmbH was used to carry out the life cycle assessment.

The emissions: the carbon footprint over the life cycle

It depends on the electricity mix

It is of decisive importance for the CO_2 balance, whether the power is produced from the renewable sources wind or hydro power, or whether the EU power mix forms the basis.

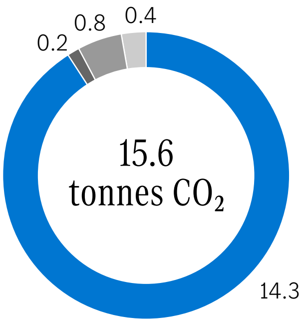
CO_2 emissions over the life cycle

Analysis of the emissions during the individual phases of the life cycle makes it clear: As more and more vehicles are turning to electric power, two factors are becoming increasingly important, the production of the high-voltage battery and the generation of the electricity for the external charging of the battery.

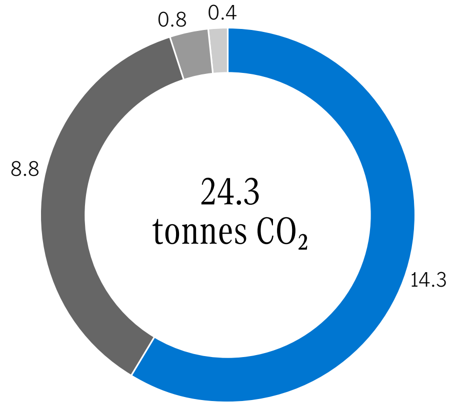
In the production of the C 400 4MATIC, around 40 % of the CO_2 emissions are caused by the high-voltage battery and battery peripheral components, and in particular the battery cells are highly relevant. In addition, steel and aluminum[10] in the bodyshell, wheels, axles, and drivetrain play a key role in CO_2 emissions. This is where the reduction measures agreed by Mercedes-Benz in the supply chain come in: By sourcing CO_2-reduced battery cells and using aluminum and steel produced with renewable energy, as well as recycled plastics, CO_2 emissions from car production can be significantly reduced.

In addition to vehicle production, the choice of charging current in the usage phase is a decisive factor for the overall CO_2 footprint. With the EU electricity mix, the C 400 4MATIC emits a total of 24.3 tonnes of CO_2 over its life cycle (car production, driving over 200,000 km and end of life[8]). Of this, 14.3 tonnes are attributable to car production, 8.8 tonnes to the generation of the charging current (EU electricity mix[9]), 0.8 tonnes to car maintenance[11], and 0.4 tonnes to End of Life. By using renewable charging electricity, life-cycle CO_2 emissions can be reduced by 36 percent.

Electricity from hydropower



EU electricity mix



- Car production (incl. CO_2 reduction measures)
- Electricity generation (charging)
- Car maintenance
- End of Life

values are rounded

[10] Recyclable production offcuts from the manufacture of steel and aluminium components are taken into account.
[11] Tires, brake pads and discs, starter battery, wiper blades, operating fluids.

Requirements for the supply chain

Sustainable supplier management

Mercedes-Benz relies on responsible procurement as the basis for decarbonising the new vehicle fleet across all stages of the value chain and the entire life cycle.

The Mercedes-Benz Group pursues sustainable supply chain management. Suppliers must comply with the Responsible Sourcing Standards (RSS) in order to participate in new contracts awarded by the Group. The RSS is the central contractual document for sustainability requirements on the part of suppliers and defines e.g. mandatory requirements with regard to environmental protection.

The RSS is therefore an important instrument for implementing the Mercedes-Benz Group's ambitious goals in the complex supply chains. These standards therefore form the guidelines for sustainable supply chain management.

For new model series and vehicle architectures, suppliers must comply with targets set by Mercedes-Benz Cars and Mercedes-Benz Vans, particularly with regard to reducing CO_2 emissions, and implement appropriate measures. These requirements apply in particular to CO_2 and energy-intensive focus materials such as steel, aluminum, polymers and battery cells. Target values for these materials and components were integrated as criteria in the awarding processes and used as key criteria in awarding contracts for the new Mercedes-Benz Electric Architecture Midsize (MB.EA-M) vehicle platform.

Requirements for the supply chain

CO_2-reduced supply chain

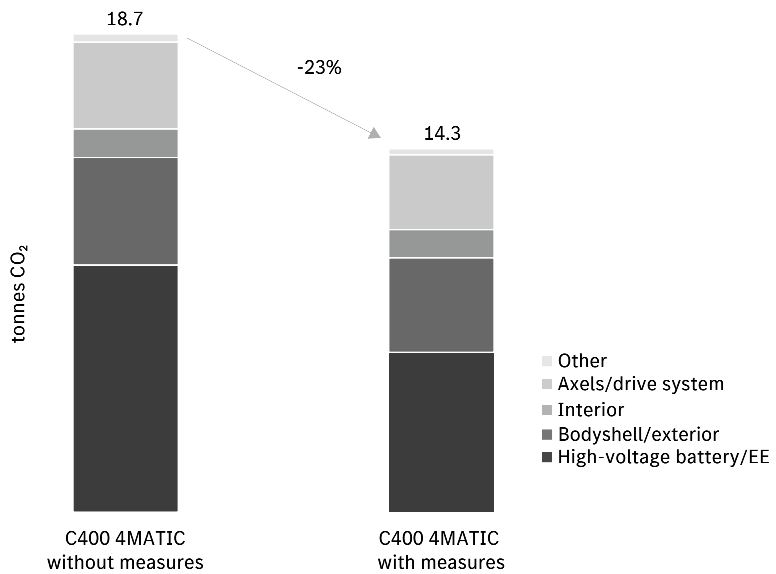
The measures agreed with suppliers can reduce CO_2 emissions for the production of the C 400 4MATIC by around 23 % compared to the production without these measures.

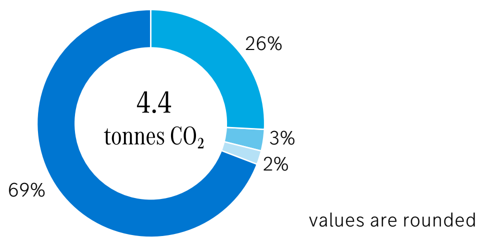
The battery is the component in the vehicle that contributes the most CO_2 during production. To reduce this value, the new C-class uses battery cells that are CO_2-reduced from the outset. Various reduction measures in the high-voltage cell reduce the CO_2 footprint by around 40 % per cell compared to the production without these measures. In addition to the use of renewable electricity in cell production, electricity from renewable sources is also used in the production of cathode, anode, and cell housing materials. Looking at an entire battery, this corresponds to a reduction of around 3 metric tons of CO_2.

Around two thirds of the aluminum used in the C-class is produced in electrolysis plants using renewable energies or with an increased proportion of recycled material. This reduces the CO_2 footprint for these components by around 30 % compared with production without these measures and saves a total of around 1.1 metric tons of CO_2 emissions in case of the C 400 4MATIC.

Steel and ferrous materials account for 43 % of the materials used in the manufacture of the C 400 4MATIC. In this context, Mercedes-Benz AG is working with various steel suppliers and supporting them in their transformation in order to drive decarbonisation of the supply chain. The growing availability of CO_2-reduced steel is an important lever for reducing the CO_2 footprint of Mercedes-Benz vehicles. The construction of industrial direct reduction plants and smelting units is therefore an important prerequisite for the gradual decarbonisation of the steel supply chain. If the direct reduction process is combined with the electric steel process, and green hydrogen (instead of natural gas) and renewable energies are used to operate the electric arc furnace during direct reduction, nearly CO_2-free steel production could be possible in the future. For the new C-class, CO_2 reduction measures are already being taken in steel production. Around 45 kg of steel from electric arc furnaces, which are manufactured using electricity from renewable energy sources, is used for the steel scopes produced in-house in our own stamping plants.

By using recycled plastics, CO_2 emissions can be reduced by a further around 80 kilograms compared to primary materials, while at the same time conserving resources.





CO_2 reduction is achieved through measures in the area of:

- Battery cells: Electricity generated from renewable resources for cell production and cell materials.
- Aluminum: Electricity generated from renewable sources for electrolysis or with an increased proportion of recycled material.
- Steel: Electric arc furnaces using electricity generated from renewable resources and use of scrap stock.
- Plastics: Thermoplastic recyclate.

Renewable charging for MB.CHARGE Public

Mercedes-Benz offers charging solutions for on the road under the Digital Extra MB.CHARGE Public[12].

Through MB.CHARGE Public, private and business customers of Mercedes-Benz electric vehicles and plug-in hybrids in over 35 countries on four continents have easy access to one of the largest charging networks in the world: over 2.9 million charging points[13] from more than 1,500 charging station operators. More than 1,000,000 of these charging points are located in Europe, over 180,000 of them in Germany.

Mercedes-Benz is continuously expanding the charging network to which MB.CHARGE Public provides access through its own activities to build public charging infrastructures worldwide. Over 40,000 charging points in the global Mercedes-Benz Charging Network and the joint ventures IONITY, IONNA and IONCHI are to be established in Europe, North America, and China by the end of the decade.

Mercedes-Benz consistently relies on the use of electricity from renewable sources. ”Renewable Charging“ is an integral part of MB.CHARGE Public in Europe, Canada, the USA and China. If electricity from renewable energy sources is not yet available at the respective charging station, MB.CHARGE Public uses renewable energy certificates[14]. These ensure that an equivalent amount of electricity from renewable energies is fed into the grid for charging processes via MB.CHARGE Public. They originate exclusively from wind and solar power plants that are less than six years old. ”Renewable Charging“ is also a crucial part of the Mercedes-Benz Charging Network. This is preferably handled via green power supply contracts, wherever possible, or through the use of renewable energy certificates.

[12] To use the Digital Extras, you must create a Mercedes me ID and agree to the Terms of Use for Digital Extras and the Mercedes me ID Terms of Use as amended. In addition, the respective vehicle must be linked to the user account. At the end of the limited term, the Digital Extras can be renewed for a fee, provided they are still available for the respective vehicle at that time. In order to use the Digital Extra MB.CHARGE Public, a customer’s own separate charging contract with a selected third-party provider is required, which is used for payment and billing of the charging processes.
[13] The number of charging points can vary depending on the vehicle model. Some models, for example, require a 400V/800V inverter, the availability of which depends on the equipment and the country.
[14] With the EKOenergy ecolabel

Usage of materials C-Class with EQ Technology

Responsible resource utilisation

Closing material cycles and using secondary raw materials are the key levers for the responsible use of resources.

Vehicle production requires a high level of material use. In order to conserve natural resources and strengthen the circular economy, we aim to decouple resource consumption from volume growth. To this end, we intend to further increase the proportion of secondary raw materials and make greater use of resource-conserving materials.

Measures to conserve resources are firmly embedded in the development process of our vehicles. This includes the "Design for Environment" approach, which is taken into account right from the start of vehicle development. Furthermore, the use of secondary materials is explicitly defined in the requirements for our suppliers. In addition, supplier dialogues were held, new recycling technologies were discussed, and the necessary decisions were made to ensure that the use of secondary materials is implemented in accordance with the specifications.

In the development of the C-Class, special care was taken to use as many secondary materials as possible. As a result, the proportion of secondary material in the C 400 4MATIC with regard to thermoplastics was increased to 49 kg. Around 30 percent of this secondary material comes from post-consumer sources. For example, the jack receptacles are entirely made from recycled bumpers from end-of-life vehicles.

The frunk tub contains 50% post-consumer recyclate. Secondary material is also used as standard in many body trim and panel parts, such as the base carriers of the bumpers and the wheel well liners. A total of around 300 components and numerous small parts are produced with secondary material content.

Facts and figures

LCA results[15]

Input parameters

Material resources	**C 400 4MATIC EU electricity mix**	**C 400 4MATIC electricity from hydropower**	**Delta to C 400 4MATIC EU electricity mix**
Bauxite/Aluminium* [kg]	968	969	0 %
Dolomite [kg]	81.7	79.6	-3 %
Iron [kg]*	1,287	1,312	2 %
Non-ferrous metals (Cu, Pb, Zn) [kg]*	266	265	0 %
* as elementary resources			
Energy resources			
ADP fossil [GJ]**	**322**	**215**	**-33 %**
Primary energy [GJ]	704	517	-27 %
Proportionately			
Lignite [GJ]	36.1	10.8	-70%
Natural gas [GJ]	131	80.3	-39%
Crude oil [GJ]	72.5	64.6	-11%
Hard coal [GJ]	81.7	59.2	-28%
Uranium [GJ]	79.7	11.5	-86%
Renewable energy resources [GJ]	303	291	-4%
** CML 2001, as of August 2016,			
ADP = abiotic depletion potential			

Output parameters

Emissions to air	**C 400 4MATIC EU electricity mix**	**C 400 4MATIC electricity from hydropower**	**Delta to C 400 4MATIC EU electricity mix**
GWP* [t CO_2-equiv.]**	**26.6**	**17.3**	**-35 %**
AP [kg SO_2-equiv.]**	**163**	**145**	**-11 %**
EP [kg phosphate-equiv.]**	**10.7**	**8.0**	**-25 %**
POCP [kg ethene-equiv.]**	**10.0**	**8.5**	**-14 %**
CO_2 [t]	24.3	15.6	-36 %
CO [kg]	47.2	38.9	-18 %
NMVOC [kg]	8.2	6.6	-19 %
CH_4 [kg]	65.1	45.3	-30 %
NO_x [kg]	44.3	33.8	-24 %
SO_2 [kg]	107	99.0	-7 %
Emissions to water			
BOD (biological oxygen demand) [kg]	0.25	0.22	-11 %
Hydrocarbons [kg]	0.89	0.81	-9 %
NO_3- [kg]	14.8	9.7	-34 %
PO_4^{3-} [kg]	0.025	0.024	-5 %
SO_4^{2-} [kg]	134	116	-13 %
** CML 2001, as of August 2016, *** IPCC AR6 GWP 100			
AP = acidification potential, EP = eutrophication potential, GWP = global warming potential, POCP = photochemical ozone creation potential			

[15] The environmental assessment covers the entire life cycle. Inbound/outbound logistics are not taken into account. The use phase of the base variant without optional equipment was calculated using an electricity consumption of 14.1 kWh/100 km. Maintenance includes tires, brake pads and discs, starter battery, wiper blades, and operating fluids. The end-of-life model includes only the shredding process and the treatment of the shredder light fraction.

TÜVRheinland®

Statement of Validity

TÜV Rheinland Energy & Environment GmbH confirms that a critical review of the life cycle assessment (LCA) study and product-related environmental information of **Mercedes-Benz AG, Mercedesstraße 120, 70372 Stuttgart** for the following passenger car:

Mercedes-Benz C-Klasse with EQ Technology – 2026 model year

was performed.

Proof has been provided that the requirements of the international standards

- ISO 14040:2006 + A1:2020: Environmental management – life cycle assessment – principles and framework
- ISO 14044:2006 + A1:2018 + A2:2020: Environmental management – life cycle assessment – requirements and guidelines
- ISO/TS 14071:2024: Environmental management – life cycle assessment – critical review processes and reviewer competencies: additional requirements and guidelines to ISO 14044
- ISO 14020: 2022: General principles of environmental labeling and declarations and ISO 14021: 2016: Environmental supplier declarations (Type II environmental labeling).

are considered.

Results:

- The LCA study for the variant C 400 4MATIC with EQ Technology (basis of the environmental brochure) was carried out according to the international standards ISO 14040:2006 + A1:2020 and ISO 14044:2006 + A1:2018 + A2:2020. The methods and the modelling of the product system are suitable to fulfill the goals stated in the study. The report and environmental brochure are comprehensive and provides a transparent description of the framework of the study.
- The assumptions used in the LCA study especially energy consumption based on the current WLTP (Worldwide harmonized Light vehicles Test Procedure) were verified and discussed.
- The assessed samples of data and environmental information included in the LCA study and environmental brochure are plausible.

Review process and level of detail:

The sample-based verification of input data and environmental information, as well as the check of the LCA process was performed in course of a critical data review. The data review considered the following aspects:

- Check of the applied methods and the product model,
- Inspection of technical documents (e.g. type approval documents, parts lists, supplier information, measurement results, etc.) and
- Sample-based check of LCA input data (e.g. weights, materials, fuel and energy consumption, etc.).

24th June 2026

...chs
...ert, Carbon Services

Susanne Jorre
Senior Sustainability Expert, Carbon Services

...bility for the content of the LCA rests with Mercedes Benz AG. TÜV Rheinland Energy and Environment GmbH was ...d LCA study for compliance with the methodical requirements, and to verify and validate the correctness and credibility ...rein.

Mercedes-Benz has published product-related environmental information since 2005, reflecting the results of environmentally compatible product development and verified by independent experts.

The brochures are made available to the wider public as the "Lifecycle" series.
They can be downloaded at https://group.mercedes-benz.com/responsibility/sustainability/.

As of: June 2026

Mercedes-Benz Group Communications, 70546 Stuttgart, Germany – www.group.mercedes-benz.com
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